CITY
ENGINEERING COLLEGE

DEPARTMENT OF BASIC SCIENCE

ACADEMIC YEAR 19-20 EVEN SEMESTER

CIRCULAR

Ref No: CEC/BS/DAC/ACY/2019-20/OR/01 Date: 07-02-2020

This is to inform the members of Department Advisory Committee that meeting is scheduled on 12-02-2020 at 10: 00 AM in Physics Laboratory.

Agenda:

- Commencement of classes for 2nd semester students
- Organizing Battle of Science- Project Exhibition
- Organizing value added courses/ circular courses in the curriculum
- Organizing FDP

HOD
Dr. Jyothi P
Department of Mathematics

HOD Department of Mathematics
City Engineering College
Doddakallasandra, Bangalore-62

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CITY ENGINEERING COLLEGE
Kanakapura Main Road, Bangalore-560061

CITY ENGINEERING COLLEGE

DEPARTMENT OF BASIC SCIENCE

Department Advisory Committee Meeting

Date: 12-02-2020
Time: 10:00 AM
Venue: Physics Laboratory

List of DAC Members

Sl. No	Member Name	Designation	Role
1	Dr. P Rajasekar	HOD & Professor	Convenor
2	Mrs. Sunitha N	Assistant Professor	Member
3	Mrs. Anu Radha U	Assistant Professor	Member
4	Mrs. Sowmya P	Assistant Professor	Member
5	Dr. K Sujatha	HOD & Professor	Member
6	Mrs. Nagashree G	Assistant Professor	Member
7	Mrs. Ashwini Hindiholi	Assistant Professor	Member
8	Dr. Jyothi P	Associate Professor	Member
9	Vanitha G R	Assistant Professor	Member
10	Mrs. Gayatri	Assistant Professor	Member
11	Mrs. Kalavathi	Assistant Professor	Member
12	Mrs. Gana Priya	Assistant Professor	Member
13	Mrs. Reena Patro	Assistant Professor	Member

Agenda of the Meeting:

- Commencement of classes for 2nd semester students
- Organizing Battle of Science- Project Exhibition
- Organizing value added courses/ certificate courses in the curriculum
  Organizing FDP

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Minutes of Meeting:

The members discussed suggestions for improvement and reviewed the meeting agenda.

- Battle of Science is a project exhibition focuses on displaying interests and diverse projects.
- Discussed about a location with enough space for display of projects and ECE laboratory are chosen for exhibition.
- Setting up a registration process for participants.
- Providing certificates to all participants and cash prize for winners.
- Certificate Course on public speaking skills to be organized.

Convenor
Dr. Rajasekhar P
Department of Chemistry

Dr P. RAJASEKHAR,
M.Sc; M.Phil; Ph.D
HEAD OF THE DEPT. OF CHEMISTRY
CITY ENGINEERING COLLEGE,
Doddakallasandra, Kanakapura Main Road
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Ph (O) 26669313 (M) 92428 92734

HOD
Dr. Jyothi P
Department of Mathematics

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City Engineering College
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Academic Calendar of VTU, Belagavi for EVEN Semester of 2019-2020 (Jan 2020 – July 2020)

	II Sem B. E. / B. Tech. / B. Arch	IV & VI Sem B. E. /B. Tech. IV, VI&VIII Sem B. Arch.	VIII Sem B.E / B.Tech & X Sem B. Arch	IV Sem MCA	VI Sem MCA	IV Sem MBA	IV Sem M. Tech.	IV Sem M. Arch.	II Sem M. Tech.	II Sem MCA	II Sem MBA	II Sem M. Arch.
Commencement of EVEN Semester	10.02.2020	10.02.2020	10.02.2020	27.01.2020	27.01.2020	10.02.2020	27.01.2020	27.01.2020	05.03.2020	05.03.2020	14.02.2020	14.02.2020
Last Working day of EVEN Semester	01.06.2020	01.06.2020	01.06.2020	20.05.2020	20.05.2020	01.06.2020	20.05.2020	20.05.2020	22.06.2020	22.06.2020	05.06.2020	05.06.2020
Practical Examination	03.06.2020 To 13.06.2020	03.06.2020 To 13.06.2020	-	26.05.2020 To 30.05.2020	-	-	-	-	25.06.2020 To 30.06.2020	25.06.2020 To 30.06.2020	-	-
Theory Examinations	**15.06.2020 To 04.07.2020**	**15.06.2020 To 20.07.2020**	**03.06.2020 To 11.06.2020**	**03.06.2020 To 18.06.2020**	-	**03.06.2020 To 28.06.2020**	**03.06.2020 To 10.06.2020**	-	**01.07.2020 To 11.07.2020**	**01.07.2020 To 11.07.2020**	**08.06.2020 To 20.06.2020**	**09.06.2020 To 20.06.2020**
Viva Voce	-	-	15.06.2020 To 20.06.2020	-	-	-	-	-	-	-	-	-
Summer Project / Professional training	-	-	-	-	22.05.2020 To 30.05.2020 (Submission of report to VTU)	01.04.2020 To 15.04.2020 (Submission of report to VTU)	12.06.2020 To 25.06.2020 (Submission of report to VTU)	-	13.07.2020 To 31.07.2020	-	23.06.2020 To 21.07.2020	01.07.2020 To 25.08.2020
Commencement of ODD Semester	27.07.2020	27.07.2020	27.07.2020	27.07.2020	-	-	-	-	03.08.2020	27.07.2020	27.07.2020	28.08.2020

NOTE

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

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10.1.2020.

REGISTRAR

CITY ENGINEERING COLLEGE BENGALURU 560061 ACADEMIC CALENDER APPLIED SCIENCE AND HUMANITIES 2019-2020

DAY	DATE	FEBUARY-2020		März-2020		April-2020		Mai-2020		Juni-2020	
WED		EVENT	DATE	EVENT	1	EVENT	DATE	EVENT	DATE	EVENT
THU					2					
FRI					3		1	MAYDAYGH		
SAT	1				4		2			
SUN	2		1		5		3			
MON	3		2		6	MAHAVIRAJAYANTIGH	4		1	LAST WORKINGDAY OF 2nd, 4th, 6th&8thsemester
TUE	4	Momoncurriculamenri chment andmomoncurriculam	3		7		5		2	THEORY EXAMS 8thSEM03.6.20to11.06.20VIVAV OCE 8thSem 15.06.20to20.06.20
WED	5		4		8		6	ETHNICDAY	3	
THU	6		5		9		7	SPORTSDAY	4	
FRI	7		6		10	GOODFRIDAY-GH	8		5	
SAT	8	2ndSatuarday	7		11	2ndsatuardayholiday	9	CHRONICLES	6	
SUN	9		8		12		10		7	
MON	10	Startingof2nd, 4th, 6th, and8thsemester	9		13		11		8	THEORY EXAMS 4th &6thSEMs 15.06.20to20.07.20
TUE	11	PHASE-2INDUCTIONPRO GRAMME 10.2.2020 TO 20.2.20	10		14	AMBEDKAR JAYANTI	12		9	
WED	12		11		15		13		10	
THU	13		12		16		14		11	
FRI	14		13		17		15		12	THEORY EXAMSSECONDSEM 15.06.20to04.07.20
SAT	15		14	2ndSaturday	18		16	OPEN DAY/EXHIBITION	13	
SUN	16		15		19		17		14	
MON	17	PHASE-2INDUCTIONPRO GRAMME 10.2.2020 TO 20.2.20	16	FIRSTINTERNALASSESME NT 2nd,4th,6th&8thsemester	20		18		15	PRACTICALEXAMS 2nd, 4th&6thSEMESTERS 03.06.20to13.06.20GRADUAT IONDAYAFTER 20.07.2020
TUE	18		17		21		19		16	
WED	19		18		22		20	THIRD INTERNALTESTASSRS SMENT2ND,4TH,6TH,& 8th semesters	17	
THU	20		19		23		21		18	
FRI	21	MAHASHIVARATHRI-GH	20		24	BATTLE OF SCIENCE EVENT(First year)	22		19	

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR: 2019-20

DEPARTMENT OF BASICSCIENCE

COURSE PREFERENCE

Name of the Faculty: Dr. Sujatha K

Designation: Professor and HOD

Sl. No	Course Code and Name	Year/Semester
1.	18PHY22 ENGINEERING PHYSICS FOR C SECTION	2020/II

Signature of Faculty

Department of Physics

HOD

Department of Physics

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR: 2019-20

DEPARTMENT OF BASICSCIENCE

COURSE PREFERENCE

Name of the Faculty: Mrs. Nagasree G

Designation: Assistant Professor

Sl. No	Course Code and Name	Year/Semester
1.	18PHY22 ENGINEERING PHYSICS FOR C SECTION	2020/II

Signature of Faculty

Department of Physics

HOD

Department of Physics

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CITY ENGINEERING COLLEGE
TIME TABLE –SECOND SEMESTER MAY – 2020-21
PHYSICS CYCLE

SECTION: C **ROOM NO: A005**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON	CIV	ELE	BREAK	MAT	PHY	LUNCH	EGD	EGD	
TUE	ELE	PHY		CIV	MAT		←------PHYL/EGDL/ELEL/C1/C2/C3-----→		
WED	MAT	ELE		PHY	EGH		←------PHYL/EGDL/ELEL/C2/C3/C1-----→		
THU	PHY	MAT		ELE	CIV		PHY	EGH	LIBARARY
FRI	MAT	←-----PHYL		EGDL/ELEL/ C3/C1/C2-----→			EDUSAT/DEP/COLLEGE ACVIVITIES		
SAT	ELE	CIV		PHY					

MAT- Dr. Jyothi.P
CIV - Prof.Veeresh
EGH - Dr.K.Sujatha & Prof. Nagashree G
PHYL-Dr.K.Sujatha & Prof. Nagashree G

ELE – Dr. Shalini Prasad
PHY - Dr.K.Sujatha & Prof. Nagashree G
EGD – Prof. Shruthi & Prof Anil
ELEL - Prof. Mallikarjuna.G.S & Dr. Shalini Prasad

PROCTORS - Prof. Nagashree G & Prof. Shruthi

HOD

Principal
City Engineering College,
Bangalore-560 061

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TIME TABLE –FIRST SEMESTER DEC – 2019-20
PHYSICS CYCLE

Dr. K. Sujatha **SUBJECT CODE: 18PHY12**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON			BREAK		C	LUNCH			
TUE							←------PHYL/C1-----→		
WED							←------PHYL/C2-----→		
THU	C	←PHYL/B3		PHYL/B3 ----------→					
FRI									
SAT									

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TIME TABLE –FIRST SEMESTER DEC – 2019-20
PHYSICS CYCLE

Mrs. Nagashree. G **SUBJECT CODE: 18PHY12**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON			/BREAK			LUNCH			
TUE		C							
WED				C					
THU									
FRI		←-----PHYL		EGDL/ELEL/ C3/C1/C2-----→					
SAT				C					

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

B.E. SYLLABUS FOR 2018-2022

ENGINEERING PHYSICS

(Common to all Branches)

(Effective from the academic year 2018-19)

Course Code : 18PHY12/22	**CIE Marks : 40**
Contact Hours/Week : 05(3L+2T)	**SEE Marks: 60**
Total Hours: 50 (8L+2T per module)	**Exams. Hours: 03**
Semester: I/II	**Credits: 04(3:2:0)**

Course Learning Objectives: This course (18PHY12/22) will enable students to

- Learn the basic concepts in Physics which are very much essential in understanding and solving engineering related challenges.
- Gain the knowledge of newer concepts in modern physics for the better appreciation of modern technology

MODULES

MODULE-I :

Oscillations and Waves

Free Oscillations: Definition of SHM, derivation of equation for SHM, Mechanical and electrical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion. Equation of motion for free oscillations, Natural frequency of oscillations.

Damped and forced oscillations: Theory of damped oscillations: over damping, critical & under damping, quality factor. Theory of forced oscillations and resonance, Sharpness of resonance. One example for mechanical resonance.

Shock waves: Mach number, Properties of Shock waves, control volume. Laws of conservation of mass, energy and momentum. Construction and working of Reddy shock tube, applications of shock waves.

Numerical problems

(RBT Levels L1, L2, L3)

MODULE-II:

Elastic properties of materials:

Elasticity: Concept of elasticity, plasticity, stress, strain, tensile stress, shear stress, compressive stress, strain hardening and strain softening, failure (fracture/fatigue), Hooke's law, different elastic moduli: Poisson's ratio, Expression for Young's modulus (Y), Bulk modulus (K) and Rigidity modulus (n) in terms of α and β. Relation between Y, n and K, Limits of Poisson's ratio.

Bending of beams: Neutral surface and neutral plane, Derivation of expression for bending moment. Bending moment of a beam with circular and rectangular cross section. Single cantilever, derivation of expression for young's' modulus

Torsion of cylinder: Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation.

Numerical problems

(RBT Levels L1, L2, L3)

MODULE- III:

Maxwell's equations, EM waves and Optical fibers

Maxwell's equations: Fundamentals of vector calculus. Divergence and curl of electric field and magnetic field (static), Gauss' divergence theorem and Stokes' theorem. Description of laws of electrostatics, magnetism and Faraday's laws of EMI. Current density & equation of Continuity; displacement current (with derivation) Maxwell's equations in vacuum

EM Waves: The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations), Plane electromagnetic waves in vacuum, their transverse nature, polarization of EM waves(Qualitative)

Optical fibers: Propagation mechanism, angle of acceptance. Numerical aperture. Modes of propagation and Types of optical fibers. Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient. Discussion of block diagram of point to point communication. Merits and demerits

Numerical problems

(RBT Levels L1, L2)

MODULE IV:

Quantum Mechanics and Lasers

Quantum mechanics: Introduction to Quantum mechanics, Wave nature of particles, Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation, Significance of Wave function, Normalization, Particle in a box, Energy eigen values of a particle in a box and probability densities

Lasers: Review of spontaneous and stimulated processes, Einstein's coefficients (derivation of expression for energy density). Requisites of a Laser system. Conditions for laser action. Principle, Construction and working of CO2 and semiconductor Lasers.

Application of Lasers in Defense (Laser range finder) and Engineering (Data storage)

Numerical problems

(RBT Levels L1, L2, L3)

MODULE-V:

Material science

Quantum Free electron theory of metals: Review of classical free electron theory, mention of failures. Assumptions of Quantum Free electron theory, Mention of expression for density of states, Fermi-Dirac statistics (qualitative), Fermi factor, Fermi level, Derivation of the expression for Fermi energy, Success of QFET.

Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band, Hole concentration in valance band (only mention the expression), Conductivity of semiconductors(derivation), Hall effect, Expression for Hall coefficient(derivation)

Dielectric materials: polar and non-polar dielectrics, internal fields in a solid, Clausius-Mossotti equation(Derivation), mention of solid, liquid and gaseous dielectrics with one example each. Application of dielectrics in transformers.

Numerical problems

(RBT Levels L1, L2, L3)

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Course Outcomes:

Upon completion of this course, students will be able to

1. Understand various types of oscillations and their implications, the role of Shock waves in various fields and Recognize the elastic properties of materials for engineering applications
2. Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication.
3. Compute Eigen values, Eigen functions, momentum of Atomic and subatomic particles using Time independent 1-D Schrodinger's wave equation
4. Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields
5. Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.

Question paper pattern:

Note:- The SEE question paper will be set for 100 marks and the marks will be proportionately reduced to 60.

- The question paper will have **ten** full questions carrying equal marks.
- Each full question consisting of **20** marks.
- There will be **two** full questions (with a **maximum** of **four** sub questions) from each module.
- Each full question will have sub question covering all the topics under a module.
- The students will have to answer **five** full questions, selecting **one** full question from each module.

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CITY ENGINEERING COLLEGE

DEPARTMENT OF PHYSICS

LESSON PLAN FOR EVEN SEMESTER FOR ACADEMIC YEAR 2019 - 20

Course Title: Engineering Physics	Course Code : 18PHY22
Total contact hours: L:T:P:S :: 05 (3L+2T)	End Tenn Marks : 100
Internal Marks : 40	
Semester : II	Academic year 2019-20
Lesson plan Author: Dr k Sujatha & Nagashree G	Date 10/02/2020

Course Objective:

This course (18PHY12/22) will enable students to

C Learn the basic concepts in Physics which are very much essential in understanding and solving engineering related challenges.

O Gain the knowledge of newer concepts in modern physics for the better appreciation of

Course Outcomes:

On completion of this course, students will have know ledge. in:

CO I: Understand various types of oscillations and their implications, the role of Shock waves in various fields and Recognize the elastic properties of materials for engineering applications

C02: Realize the interrelation between time varying eleiric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication.

C03: Compute Eigen values, Eigenfunctions, mom..:ntum of Atomic and subatomic particles using Time indepe ndent 1-D Schrodinger's wave quati on

C04: Apprehend theoreti cal background of laser, construction and working of diffe rent types of laser and its applicati ons in different fields

COS: Understand various electrica l and theimal prope rties of materials like conductors, semiconductors and dielectrics using difthent theoretical models.

MODULE-I

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
I	I	Definition of SHM, derivation of equation for SHM, Mechani cal and electrica l simpl e harmonic oscillators (mass suspended to sprin g osc illator), complex notation and phasor representation of simple harmonic motion.	R,U .	COl
	2	Equati on of moti on for free osc illations, Ntura l frequency o r oscillations.	R,U	COl

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		dampingQual ity factor.		
	4	Theory offorced oscillations and resonance, Sharpness of resonance. One example for mechanical resonance.	R,U,E,C	COl
2	1	Mach number, Properties of Shock waves, control volume.	R,U	COl
	2	Laws of conservation of mass, energy and momentum	R,U	CO l
	3	Construction and working of Reddy shock tube, applications of shock waves. Numerical problems	R,U	COl

MODULE-2

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
4	1	Concept of elasticity, plasticity, stress, strai n, tensile stress, shear stress, compressive stress, strain hardening and strain softening	R,U	C02
	2	Failure (fracture/fati gue), Hooke's law, different elastic moduli : Poisson's ratio, Expression for Young's modulus (Y)	R,U	C02
	3	Bulk modulus (K) and Rigidity modulus (n) in terms of and p. Relation between Y, n and K, Limits of Poisson's ratio	R,U	C02
5	1	Neutral surface and neutra l plane, Derivation of expression for bending moment	R,U	C02
	2	Bending moment of a beam with circular and rectan gular cross section	R,U	CO2
	3	Single cantileve r, deri vation of expression for young's' modu lus	R,U	C02
	4	Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation. Numerical problems	R.U	CO2

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MODULE-3

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Levei	Course Outcome (CO)
6	1	Fundamentals of vector calculus.	R.U	C03
	2	Divergence and curl of electric field and magnetic field .(static), Gauss' divergence theorem and Stokes' theorem.	R.U	C03
	3	Description of laws of electrostatics, magnetism and Faraday's ·Jaws of EMl	R,U,E	C03
	4	Current density & equation . of Continuity; displacement current (with derivation) Maxwell's equations in vacuum	R,U	C03
7	I	The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations),	R,U	C03
	2	Plane electromagnetic waves in vacu um, their transverse nature, polarization of EM waves(Qual itative)	R,U	C03
8	I	Propagation mechanism, angle of acceptance. Numerical apertu re.	R.U,C	C04
	2	Modes of propagation and Types of optical fibers.	R,U,Al	C04
	3	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient.	R,U	C04
	4	Discussion of block diagram of point to point communication. Merits and demerits	R,U	C04
	5	Numerical problems	R,U	C04

MODULE-4

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (COl
9	I	Introduction to Quantum mechanics, Wave nature of particles, Heisenberg's uncertainty principle and appl ications	R,U,	C04
	2	Schrodinger time independent wave equation, Si gnificance of Wave function	R,U	C04
	3	Normal izati on, Particle in a box, Energy eigen values of a particle in a box and proba bilit y densities .	R,U	C04 -
10	1	Review of spomtaneous and stimul ated processes, Einstein's	R,U	C04

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		_coefficients (derivation of e pr sion for energy density)		
	2	Requisites of a Laser system.	B,,U	C04
	3	Conditions for laser action. Principle Construction and working of C02 and semiconductor Lasers.	R,U	C04
	4	Application of Lasers in Defense (Laser range finder) and Engineering (Data storage) ' Numerical problems	R,U	C04

MODULE-S

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO_l
13	I	Review of classical free electron theory, mention of failures.	R,U,A2	C04
	2	Assumptions of Quantum Free electron theery	R,U	C04
	3	Mention of expression for density of states	R,U	COS
	4	Fermi-Dirac statistics (qualitative), Fermi factor	RU	COS
14	1	Fermi level, Derivation of the expression for Fermi energy, Success ofQFET.	R,U,E	COS
	.2	Fermi level in intrinsic semiconductors	R,U	COS
	3	Expression for concentration of electrons in conduction band	R,U	COS
	4	Hole concentration in valance band (only mention the expression)	R,U	COS
15	I	Conductivity of semiconductors(derivation), Hall effect, Expression for Hall coefficient(derivation)	R,U	COS
	2	polar and non-polar dielectrics	R,U.Al,C	COS
	3	interna l fields in a solid	R,U	COS
	4	Clausius-Mossotti equation(Derivation)	R,U	COS
16	1	mention of solid, liquid and gaseous	R,U	COS
	2	dielectrics with one example each.	R,U	COS
	3	Application of dielectrics in transformers	R,U	COS
	4	Numerical problems	R.U,Al,C	COS

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Bloom's Taxonomy Level

R-Remembering U-Understanding A-Applying A2-Analysing E-Evaluating C-Creating

Text Books:

1. A Text book of Engineering Physics- M.N A vadhanulu and P.G. Kshirsagar, lOth revised Ed, S. Chand & Company Ltd, New Delhi
2. Engineering Physics-Gaur and Gupta-Dhanpat Rai Publications-2017
3. Concepts of, Modem Physics-Arthur Beiser: 6th ;Tata McGraw Hill Edu Pvt Ltd- New Delhi 2006

Reference books:

I. Introduction to Mechanics —MK Verma: 2nd Ed, University Press(lndia) Pvt Ltd, Hyderabad 2009
2. Lasers and Non Linear Optics – BB laud, 3rd Ed, New Age International Publishers 2011
3. Solid State Physics-S O Pillai, 8th Ed- New Age International Publishers-2018
4. Shock waves made simple- Chintoo S Kumar, K Takayama and K.PJ Reddy: Willey India Pvt. Ltd. New Delhi2014
5. Introduction to Electrodynamics- David Griffiths: 4th Ed, Cambridge University Press 2017

Signature of Staff **Signature of HOD**

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Question Bank

Course Name: Engineering Physics **Course Code: 18PHY22**

Semester: II **Section: C**

Module 1-Free oscillations

1. Define Simple Harmonic Motion. Derive the equation of motion foe SHM.

2.Derive the expression for force constants for series and parallel combination of springs.

3.Explain how Complex notation Phasor representation is represented.

4.Define free oscillations with example. Mention the equation of motion of natural frequency of vibration.

5.What are Damped oscillations. Give the theory. Discuss the case of under damping, over damping and critical damping.

6.Define Quality factor with equation. Give its Physical significance.

7.What are Forced Oscillations .Derive the expressions for amplitude and Phase of Forced vibrations. Explain all the three cases.

8.Write a short notes on a)Sharpness of Resonance b)Helmoltz Resonator

Shock waves

o

1. Define Mach Number and Mach angle

2.Distinguish between Acoustic ,Ultrasonic ,subsonic, supersonic, transonicand hypersonic waves.

3.What are shock waves and mention the properties of shock waves.

4.Explain Control Volume.

5.State and explain the law of conservation of mass ,momentum and energy with expressions .

6.Describe the construction and working of Reddy Shock tube experiment.

7.What are the applications of Shock waves.

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Module 2-Eiastic properties of materials

1.Explain Elasticity and Plasticity with examples.

2.Explain the importance of elasticity in engineering materials.

3.Explain the terms Stress and Strain. Discuss the three types of Stresses.

4.Discuss briefly the effect of stress, temperature, annealing and impurities on elasticity.

5.Describe Strain hardening and Strain softening.

6.State and explain Hooke's law with stress-strain curve.

7.Discuss three different moduli of elasticity with equations.

8.Define Lateral Strain and Linear Strain and s derive the expression for Poisson's ratio.

9.Derive the relation between shear strain, longitudinal strain and compression strain.

1O. Derive the relation between Y, η and 6.

11. Derive the relation between K, Y and 6.

12. Derive the relation between K, and Y.

13.Discuss the limiting values of 6 and limitations of Poisson's ratio.

14.Define Beam and explain different types of beams and mention their engineering applications .

15.Define neutral surface and neutral axis.

16.Define bending moment and derive the expression for bending moment in terms of moment of inertia. Mention the expression for bending moment for circular and rectangular cross section.

17.Describe a single cantilever and hence derive the expression for depression.

18.Explain Torsional oscillations. Derive the expression for Couple per unit twist for a solid cylinder.

19.Mention the expression for Time period for Torsional oscillations .Briefly explain the applications of torsional pendulum.

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Module 3

Maxwell's Equations and Electro magnetic waves

1.Explain Scalar Product and Vector product.

2.Describe Vector Operator and explain the concepts of gradient, divergence and curl along with physical significance.

3.Discuss three different types of integration like linear ,surface and volume integrations.

4.Explain Gauss flux theorem in electrostatics and magnetism.

5.Derive Gauss Divergence theorem. Mention Stokes theorem.

6.Discuss Maxwell- Ampere's law, Biot-Savarts law.

7.Explain briefly the Faraday's law of electromagnetic induction. Express the same in the differential form of maxwell's equation in the case of time-varying fields.

8.Discuss Continuity equation. Define Dispalcement current and arrive the expression for the same.

9.List the Maxwell's equations for time-varying condition and for static conditions .

1O.Derive wave equation in terms of electric field using Maxwell's equations.

ll .Explain the plane electromagnetic waves in vacuum along with the equations for E,B
and c.

12. Explain the transverse nature of electromagnetic waves and explain linear ,elliptical and circular polarizations.

Optical Fibers

1.Describe the propagation mechanism of light through in an optical fiber.

2.What is numerical aperture? Obtain an expression for numerical aperture in an optical fiber and then arrive the condition for propagation .

3.Explain modes of propagation and V number.

4.Explain different types of optical fibers.

5. Define attenuation. Explain different types of attenuation, mention the expression for attenuation coefficient.

6.Explain point to point communication system with the help of block diagram.

7.Explain merits and demerits of optical fiber communications.

Module 4- Quantum Mechanics

1.Give a brief account of blackbody radiation and Planck's radiation law with two conditions .

2.Explain dual nature of matter waves.

3.State de Broglie's hypothesis. Show tat the deBroglie wavelength of an electron is found to be equal to 1.226N nm.

4. Explain Heisenberg's uncertainity principle and show that electrons cannot exists within the nucleus.

5.Construct one dimensional time independent schrodinger wave equation.

6.What are the properties of wavefunction.

7.Explain the terms probability density , normalization.

8.Discuss Eigenvalues and Eigenfunctions.

9.Solve schrodinger wave equation for the allowed energy values in the case of particle in a box.

10. Discuss Probability for a particle in a potential well of infinite height.

Lasers

1.Explain Induced absorption, Spontaneous emission, stimulated emission.

2.Derive the expression for energy density using Einstein's coefficients.

3.Explain the requisites of a laser system.

4.Explain the condition for laser action.

5.Explain three different vibrational modes of $C0_2$ molecule. With a neat energy level diagram explain the construction and working of $C0_2$ laser .

6. Explain the construction and working of Semiconductor laser .

7.Describe how a laser range finder is made use of in defense.

8.Explain how data storage is achieved in a compact disc.

Module 5 -Material Science

1.What are the assumptions of classical free electron theory and the failures of classical free electron theory.

2.What are the assumptions of Quantum free electron theory.

3.Define density of states and mention the expression for density of states.

4.Explain Fermi levei, Fermi energy, Fermi-Dirac statistics.

5.Define Fermi Factor. Discuss the variation of Fermi Factor on different conditions of temperature and energy.

6.Derive the expression for Fermi energy at zero Kelvin. Mention the expression for Fermi velocity and Fermi temperature.

7. Discuss the success of Quantum free electron theory.

8.Discuss the Fermi level in intrinsic semiconductor. Mention the expression for electron and hole concentration in intrinsic semiconductor.

9.Derive the relation between Fermi energy and energy gap for an intrinsic semiconductor.

10.Derive the expression for electrical conductivity of semiconductors.

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12.What are dielectric materials .Explain the types of dielectric materials. Discuss solid ,liquid and gaseous dielectic with one example each.

13.Explain polarization and the types of polarization. Mention the relation between dielectric constant and polarization.

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15.Derive Clausius-Mossotti equation.

16.Mention the application of dielectric in transformers.

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Assignment Questions

Odd Semester 19-20

Course Name: Engineering Physics **Course Code: 18PHY22**

Semester: II **Section: C**

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5. Define attenuation. Explain different types of attenuation, mention the expression for attenuation coefficient.

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Lasers

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6.Derive the expression for Fermi energy at zero Kelvin. Mention the expression for Fermi velocity and Fermi temperature.

7. Discuss the success of Quantum free electron theory.

8.Discuss the Fermi level in intrinsic semiconductor. Mention the expression for electron and hole concentration in intrinsic semiconductor.

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9.Derive the relation between Fermi energy and energy gap for an intrinsic semiconductor.

10.Derive the expression for electrical conductivity of semiconductors.

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SUB CODE:18PHY22

CITY ENGINEERING COLLEGE

I Internal Test

Sem & Branch: CS/EC/CIV/ME
Sub Name: Engineering Physics
Max Marks: 50

Date:17/03/2020
Time: 10:30-12:00
Duration: 1:30 hr.

Note: Answer all Questions selecting any ONE FULL questions from each part

Q No.	Sub Q No.	Questions	Marks	CO's
		PART-A		
1	a	Define SHM. Derive the equation for SHM.	6	CO2
	b	A mass 0.5 kg causes an extension 0.03 m in a spring and the system is set for oscillations. Find (i) force constant K of the spring (ii) angular frequency ω and (iii) period T of the resulting oscillation	4	
		OR		
2	a	Distinguish between acoustic, ultrasonic, subsonic, supersonic, transonic and hypersonic waves.	6	CO2
	b	The distance between two pressure sensors in a shock tube is 150 mm. The time taken by a shock wave to travel this distance is 0.3 ms. If the velocity of sound under the same condition is 340 m/s, find the Mach number of the shock tube.	4	
		PART-B		
3		What are damped oscillations? Give the theory. Discuss the case of under damping.	10	CO2
		OR		
4		Describe the construction, working and characteristics of Reddy Shock tube with suitable diagram.	10	CO3

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PART-C

5	a	Derive the expressions for force constants for series and parallel combination of springs.	6	CO3
	b	A free particle is executing simple harmonic motion in a straight line.The maximum velocity it attains during oscillation is 62.8 m/s . Find the frequency of oscillation, if its amplitude is 0.5 m.	4	

OR

6	a	Give the description of shock waves and mention the applications of Shock waves.	6	CO2
	b	Write a short notes on Sharpness of resonance.	4	

PART-D

7		Define three elastic Modulus. Derive the relation between shearing strain, longitudinal strain and compression strain.	10	CO3

OR

8		What are forced oscillations? Derive the expressions for amplitude and phase of the forced vibrations.	10	CO3

9	a	State and explain the law of conservation of mass, momentum and energy with expressions.	6	CO1
	b	Explain Control volume.	4	

OR

10	a	State and explain Hooke's law with stress strain curve.	6	CO1
	b	Discuss briefly the effect of stress, temperature, annealing and impurities on elasticity.	4	

CO1—Understand various types of oscillations and their implications, the role of shock waves in various fields and recognize the elastic properties of materials for engineering applications.

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DEPARTMENT OF ..... PHYSICS .....

SCHEME FOR VALUATION

Internal Test ... I .....

Semester & Section: 'C' Sec / 2nd Sem Date: 17/3/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part-A		
1 (a)	SHM definition & Explanation	3M	6
	arrive upto $\frac{d^2x}{dt^2} + \omega^2 x = 0$	3M	
	$\omega = \sqrt{\frac{k}{x}}$		
(b)	Data, $x = 0.03m$, $m = 0.5\ kg$	2M	
	$k = \frac{Fk}{x} = 163.3\ N/m$		4
	$\omega = \sqrt{k/m} = 18.1\ rad/s$	2M	
	$f = \frac{\omega}{2\pi} = 2.877\ Hz$, $T = \frac{1}{f} = 0.355$		
	(OR)		
2 (a)	Distinguish blw all the waves	2M×3	6M
(b)	$M = \frac{v_s}{a}$, $v_s = \frac{d}{t}$, $M = 1.47$	2M 2M	4M
	Part-B		
3	Damped oscillations definition &	2M	
	theory	2M	
	arrive up to $m\frac{d^2x}{dt^2} + r\frac{dx}{dt} + kx = 0$	4M	10M
	up to $x = Ce^{(-b+\sqrt{b^2-\omega^2})t} + De^{(-b-\sqrt{b^2-\omega^2})t}$	2M	

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DEPARTMENT OF PHYSICS

SCHEME FOR VALUATION

Internal Test I

Semester & Section: 'C', 2nd Sem Date: 17/3/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
	upto $x = \frac{x_0}{2}\left\{\left[1+\frac{b}{\sqrt{b^2-\omega^2}}\right]e^{(-b+\sqrt{b^2-\omega^2})t} + \left[1-\frac{b}{\sqrt{b^2-\omega^2}}\right]e^{(-b-\sqrt{b^2-\omega^2})t}\right\}$ Explain underdamping case with graphs	4M	10M
4	(OR) Explanation of shock wave & Reddy tube expt. Explanation construction and working	2M 4M 4M	10M
	Part C		
5 a	Explanation & diagrams	2M	
	Derive upto $K_S = \frac{K_1 K_2}{K_1 K_2}$	2M	6M
	and upto $K_p = K_1 + K_2$.	2M	
b	Given $V_{max} = 62.8$ m/s & $a = 0.5$ m	1M	
	w.k.t $x = a\sin\omega t$	1M	
	$v = \frac{dx}{dt} = a\omega\cos\omega t = a\omega\sqrt{1-\sin^2\omega t}$	1M	4M
	$V_{max} = \omega a$, $\omega = \frac{V}{a} = 125.6$ rad/s	1M	
	$V = \frac{\omega}{2\pi} = 20$ Hz		

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DEPARTMENT OF PHYSICS

SCHEME FOR VALUATION

Internal Test I

Semester & Section: 'C' Sec Date: 17/3/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
	(a)		
6 (a)	shock waves description	3M	6M
	shock waves applications	3M	
(b)	short notes on sharpness of resonance	2M 2M	4M
	Part - D		
7	Definition of Y_1, K_1 and η	6M	
	arrive relation b/w, all the three strains	4M	10M
	elongation strain + compression strain = shearing strain		
	(OR)		
8	Define and explain forced vibrations	2M	
	resultant force $= -\eta\frac{dx}{dt} - kx + f\sin pt$	2M	
	upto $\frac{d^2x}{dt^2} + 2b\frac{dx}{dt} + \omega^2 x = \frac{f}{m}\sin(pt)$	2M	10M
	upto $a = f/m\sqrt{4b^2p^2 + (\omega^2 - p^2)^2}$	4M	

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DEPARTMENT OF ..... Physics .....

SCHEME FOR VALUATION

Internal Test ..... I .....

Semester & Section: 2nd / C Sec

Date: 17/3/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
9 (a)	Explanation of Conservation of mass, momentum and energy	3×2M	6M
(b)	Control volume explanations	4M	4M
	(OR)		
10 (a)	Hooke's law explanation graph and explanation	3M 3M	6M
(b)	Explanation of stress, temp annealing and importance on elasticity.	2M 2M	4M

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SUB CODE:18PHY2

CITY ENGINEERING COLLEGE

II Internal Test

Sem & Branch: CS/EC/CIV/ME
Sub Name: Engineering Physics
Max Marks: 50

Date:09/06/2020
Time: 10:30-12:00
Duration: 1:30 hr.

Note: Answer all Questions selecting any ONE FULL questions from each part

Q No.	Sub Q No.	Questions	Marks	CO's
		PART-A		
1	a	Derive the relation between K ,Y and σ	6	CO1
	b	Define neutral surface and neutral axis	4	CO1
		OR		
2	a	Explain different types of Optical fibers.	6	CO2
	b	The refractive indices of core and cladding are 1.5 and 1.48 respectively in an optical fiber. Find the numerical aperture and angle of acceptance.	4	CO2
		PART-B		
3		Derive the expression for energy density using Einstein's coefficients.	10	CO4
		OR		
4		Define attenuation. Explain different types of attenuation with suitable diagrams.	10	CO2
		PART-C		
5	a	Explain Spontaneous emission and Stimulated emission	6	CO4
	b	The average output power of a laser source is emitting a laser beam of wavelength 6328 A° is 5 mw. Find the number of photons emitted per second by the laser .	4	CO4
		OR		

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6		Define Bending moment and derive the expression for bending moment in terms of moment of inertia.	10	CO1 CO1

PART-D

7		What is numerical aperture. Obtain the expression for numerical aperture in an optical fiber and then arrive the condition for propagation.	10	CO2

OR

8		Explain three different vibrational modes of co_2 molecule. With a neat energy level diagram explain the construction and working of co_2 laser.	10	CO4

PART - E

9	a	Describe how a laser range finder is made use of in defence.	6	CO4
	b	Calculate the angular twist of a wire of length 0.3 m, and radius 0.2×10^{-3} m when a torque of 5×10^{-4} Nm is applied. Rigidity modulus of the material 8×10^{10} N/m^2	4	CO4

OR

10		Explain Torsional oscillations. Derive the expression for Couple per unit twist for a solid cylinder.	10	CO1

CO1—Understand various types of oscillations and their implications, the role of shock waves in various fields and recognize the elastic properties of materials for engineering applications.

CO2---Reliaze the interrelation between time varying electric field and magnetic field,the transverse nature nature of the EM waves and their role in Optical fiber communications.

CO4---Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields.

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DEPARTMENT OF ..... Physics .....

SCHEME FOR VALUATION

Internal Test ... II ...

Semester & Section: II Sem / C Sec

Date: 09/06/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part - A		
1 (a)	Relation btw K, Y, σ, diagram up to $1(2-2\sigma)3T$ up to $Y = 3K(1-2\sigma)$		6
(b)	neutral surface explanation neutral axis explanation		4
	(OR)		
2 (a)	Optical fibers explanation three types		6
(b)	$N.A = \sqrt{n_1^2 - n_2^2}$, $n_1 = 1.5$, $n_2 = 1.48$ $N.A = 0.244$ $\theta = 14.1^\circ$		4
	Part - B		
3 (a)	Explanation on absorption and emission processes, all three arrive up to $v_\lambda = \frac{A}{1B(e^{h\nu/kT}-1)}$		10
	(OR)		
4	Attenuation definition. three different types of attenuation with explanation with diagrams		10

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DEPARTMENT OF ..... Physics .....

SCHEME FOR VALUATION

Internal Test ..... I .....

Semester & Section: 1st / C Sec Date: 9/6/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
5 (a)	Part-C Spontaneous and stimulated emission explanation		6
(b)	$\Delta E = \frac{hc}{\lambda}$ $\lambda = 6328\ A^{\circ}$ $N \times \Delta E = 5\ mW$ Output = 5 mW $\Delta E = 3.143 \times 10^{-19}\ J$ $N = 1.59 \times 10^{16}$		4
	(OR)		
6	Bending moment definition diagram and explanation arrive up to Linear Strain $= \frac{Y}{R}$ arrive up to bending moment $= \frac{Y}{R} I_g$		10
	Part-B		
7	Numerical aperture explanation diagram and explanation arrive upto N.A $= \sqrt{n_1^2 - n_2^2}$ $\sin\theta \angle N.A$		10
	(OR)		
8	Three modes of Vibrations diagram and explanation Explanation of energy level diagram		10

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DEPARTMENT OF Physics

SCHEME FOR VALUATION

Internal Test II

Semester & Section: II / C

Date: 09/06/2020

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part - E		
9 (a)	Laser rauge finder explanation and use in defence		6
(b)	$\tau = C\theta$ where $C = \frac{\pi n R^4}{2L}$ $\tau = \frac{\pi n R^4}{2L}\theta$ $\theta = 0.75$ rad $L = 0.3$ m $R = 0.2 \times 10^{-3}$ m $\tau = 5 \times 10^{-4}$ Nm $n = 8 \times 10^{10}$ N/m^2		4
	(OR)		
10	Torsional oscillations explanation diagram with explanation arrive up to $F = \frac{n r \theta}{L}(2\pi r\, dr)$ arrive up to $C = \left(\frac{\pi n R^4}{2L}\right)$		10

Staff

HOD

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Year : 2019 - 2020 Semester : Odd / Even ✓

Name of the Teacher : Dr. K Sujatha & Nagashree. G & Lakshmi. D-R

Designation : Prof & HOD, Asst. Prof

Department : Physics

Sem/ Branch	Subject Code	Subject
1. II/ME,CIV,EC	18PHY22	Engineering physics
2.		
3.		

	Initials at the End of the			
	1st Month	2nd Month	3rd Month	Semester
Staff	29/4/20	12/3/20		
HOD				
Principal				

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ATTENDANCE

Sl. No.	Reg.No.	Name	10/02	11/2	12/2	13/2	17/02	18/02	20/2	24/2	25/2	26/02	27/02	28/02	29/02	2/3
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1CE17CS020	Bhagyashree N	.	.	.	.	1	2	3	4	5	6	7	8	9	10
2	1CE19CS006	Amisa Rehan	.	.	1	1	1	2	3	4	5	6	7	8	9	10
3	CS007	Amit Singh M	.	1	1	2	3	3	4	5	5	6	7	8	8	9
4	CS013	B M Punedth	1	2	3	4	4	5	6	6	6	7	8	9	10	10
5	CS014	Bhanu Prakash R	1	2	3	4	5	6	6	7	8	9	10	11	12	13
6	CS015	Bhavana S	1	1	2	3	4	5	6	7	7	7	8	9	9	10
7	CS017	Bindhushree G	1	2	3.	4	5	6	7	8	9	10	11	12	13	14
8	CS019	Chandana D	.	.	.	2	3	3	4	4	5	6	7	8	9	10
9	CS028	Deepthy Rashmi R	1	2	3	3	4	5	6	7	8	8	9	10	11	11
10	CS033	Harish Babu K P	1	2	3	4	5	6	6	6	7	8	9	10	10	11
11	CS036	Imran Khan N	.	.	1	1	2	3	4	5	6	7	8	9	10	11
12	CS046	Kruthika Kirankumar	.	.	1	2	3	4	5	6	7	8	9	10	10	11
13	CS058	Nishanth Nayaka N R	.	.	1	.	.	.	.	2	3	4	5	6	6	7
14	CS065	Preethi C K	1	2	3	4	4	5	6	7	8	9	10	11	12	13
15	CS067	Rahul K R	.	.	1	2	3	4	5	5	5	5	6	7	7	8
16	CS081	Shankaralinga M Mattimani	.	.	.	.	1	2	3	3	4	5	6	7	7	8
17	CS076	Saima Sheik	.	1	2	2	3	4	5	6	7	7	8	9	10	11
18	CS078	Sambangi Sateja	.	.	.	.	.	.	1	2	3	4	5	6	7	8
19	CS092	Syed Mutaib ulla	.	1	2	3	3	4	5	6	7	7	8	9	10	11
20	CS102	Vivek B U	1	.	.	2	3	3	3	3	4	5	6	7	8	9
21	CS103	X Samatha Mogy	1	2	3	4	5	6	7	7	8	8	8	9	9	10
22	1CE19EC001	Anil K	1	2	3	3	4	5	6	7	8	9	10	11	12	13
23	EC002	Apoorva Kulkarni	.	.	1	1	1	1	2	2	3	4	5	6	7	8
24	EC003	Charan yadav	1	2	3	4	5	5	6	7	8	9	10	11	12	13
25	EC004	Faiz abbas M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	No. of Abs.															
	Initials															

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ATTENDANCE

Sl. No.	Reg.No.		10/2	11/2	12/2	13/2	17/2	18/02	20/2	24/2	25/2	26/2	27/2	28/2	29/2	2/3
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
26	EC005	Madhushree M	1	2	3	4	4	5	6	7	8	9	10	11	12	13
27	EC006	Meena J	1	2	3	4	5	6	7	8	9	9	10	11	12	12
28	EC007	praveen K	.	1	2	2	3	4	4	5	6	7	8	9	9	10
29	EC008	Rohana H	.	.	1	1	2	3	3	4	5	5	5	6	6	7
30	EC009	Supriya G	1	2	3	3	4	5	6	7	8	8	9	10	11	12
31	EC010	Vishwas D V	1	1	2	2	3	4	4	4	4	5	6	7	8	9
32	1CE17CV030	shakunthala C M	.	.	1	2	3	4	5	5	5	6	7	8	9	10
33	19CV001	Appasva C	1	1	2	3	3	4	4	5	6	6	7	8	8	9
34	19CV002	pavan T	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35	19CV003	praveja S	.	1	2	3	4	5	6	7	8	9	10	11	12	12
36	19CV004	Veena G	1	2	3	4	5	6	7	8	9	10	11	12	13	14
37	19ME001	Ajay S	1	2	3	3	4	5	6	7	8	9	10	11	12	12
38	19ME002	shaan	1	2	3	4	5	6	7	8	9	10	11	12	13	14
39	17EC	Mohd. Aquib														
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CITY
ENGINEERING COLLEGE

DEPARTMENT OF BASIC SCIENCE

ACADEMIC YEAR 19-20 ODD SEMESTER

CIRCULAR

Ref No: CEC/BS/DAC/ACY/2019-20/OR/01 Date: 25-07-2019

This is to inform the members of Department Advisory Committee that meeting is scheduled on 08-08-2019 at 10: 00 AM in Physics Laboratory.

Agenda:

- Commencement of classes for 1st semester students
- Student Induction Programme for 1st semester students
- Conduction of Talents day
- Organizing value added courses/ certificate courses, seminars & webinars in the curriculum.

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HEAD OF THE DEPT. OF PHYSICS
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CITY ENGINEERING COLLEGE

DEPARTMENT OF BASIC SCIENCE

Department Advisory Committee Meeting

Date: 08-08-2019
Time: 10:00 AM
Venue: Physics Laboratory

DAC Members present in the meeting:

Sl. No	Member Name	Designation	Role	Signature
1	Dr. Rajasekar. P	HOD & Professor	Convener	
2	Mrs.Sunitha.N	Assistant Professor	Member	
3	Mrs. Anu Radha U	Assistant Professor	Member	
4	Mrs. Sowmya P	Assistant Professor	Member	
5	Dr.Sujatha	HOD & Professor	Member	
6	Mrs.Nagashree. G	Assistant Professor	Member	
7	Mrs.Ashwini Hindiholi	Assistant Professor	Member	
8	Dr.Jyothi	Assosciate Professor	Member	
9	Vanitha G R	Assistant Professor	Member	
10	Mrs. Gayatri annasagaram	Assistant Professor	Member	
11	Mrs.Kalavathi	Assistant Professor	Member	
12	Mrs.Gana Priya	Assistant Professor	Member	
13	Mrs.Reena Patro	Assistant Professor	Member	

Agenda of the Meeting:

- Inauguration programme for 1st semester students on 25th Sep 2019.
- Commencement of orientation Programme from 26th Sep 2019.
- Conduction of Talents day on 19th Aug 2019.
- Classes for 1st semester students will be from 8th Aug 2019.
- Organizing value added courses/ certificate courses in the curriculum like Entrepreneurship and innovation.
- Organizing seminars and webinars.

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Minutes of Meeting:

The members discussed suggestions for improvement and reviewed the meeting agenda.

- The committee decided to organize Certification course on "Communication Proficiency" It was discussed to conduct of Talents day on 19th Aug 2019.
- Committee decided to conduct webinar on Introduction to Research Methodology. Committee members agreed to conduct a seminar on environmental pollution.

Convener
Dr. Rajasekhar. P

Dr P. RAJASEKHAR,
M.Sc; M.Phil; Ph.D
HEAD OF THE DEPT. OF CHEMISTRY
CITY ENGINEERING COLLEGE,
Banashankarisandra, Kanakapura Main Road
BANGALORE - 560 062.
Ph (O) 26869313 (M) 92428 92734

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Department of Physics

HEAD OF THE DEPT. OF PHYSICS
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Academic Calendar of VTU, Belagavi for ODD Semester of 2019-2020 (Jul 2019 – Jan 2020)

	I Sem B. E. / B. Tech. / B. Arch. (Tentative)	III, V & VII Sem B. E. /B. Tech. III, V,VII & IX Sem B. Arch.	III & V Sem MCA	III Sem MBA	III Sem M. Tech.	III Sem M. Arch.
Commencement of ODD Semester	01.08.2019	29.07.2019	29.07.2019	08.08.2019	26.08.2019	08.09.2019
Last Working day of ODD Semester	29.11.2019	30.11.2019	30.11.2019	05.12.2019	23.12.2019	06.01.2020
Practical Examinations	03.12.2019 To 13.12.2019	03.12.2019 To 13.12.2019	03.12.2019 To 07.12.2019	-	-	-
Theory Examinations	16.12.2019 To 04.01.2020	16.12.2019 To 07.02.2020	09.12.2019 To 28.12.2019	09.12.2019 To 04.01.2020	27.12.2019 To 10.01.2020	08.01.2020 To 22.01.2020
Internship Viva-Voce	-	-	-	-	12.01.2020 To 19.01.2020	-
Professional training / Organization study	-	-	-	-	-	-
Commencement of EVEN Semester	27.01.2020	10.02.2020	27.01.2020	27.01.2020	27.01.2020	01.02.2020

NOTE

- **VII Semester B. E / B. Tech** students shall have to undergo **Internship** for a period of four Weeks.
- **I Semester B. E/ B. Tech / B. Arch** Students shall compulsorily undergo **Induction Program** for a period of 3 Weeks (two phases) as per the schedule given by VTU First phase 11 days in first semester and second phase 10 days in second semester.

Accn / All Heads / Exam

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

29/6/19

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BANGALORE - 560 107

29/6/19

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REGISTRAR

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDER APPLIED SCIENCE AND HUMANITES 2019-2020(ODD SEM)

August-2019			September-2019		October-2019		November-2019		December-2019	
DAY	DATE	EVENT	DATE	EVENT	DATE	EVENT	DATE	EVENT	DATE	EVENT
JULY 28th MoM ON CURICULLUM STARTING OF HIGHER SEMESTERS(3rd, 5th & 7th sem 29.7.2019 mon)										
					1					
					2	GANDHI JAYANTI				
THU	1	STATRTING OF FIRST SEM			3					
FRI	2				4		1	KANAKADASA RAJYOTSVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTI	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3	FIRST INTERNAL ASSESSMENT 3rd, 5th, 7th semester	8	VIJAYA DASHAMI(DH)	5	SECOND CIE FOR 1st SEM	3	
WED	7	FIRST SEM INDUCTION	4		9		6		4	
THU	8		5		10		7		5	
FRI	9		6		11		8		6	
SAT	10	2nd Satuarday holiday	7		12	2nd satuarday holida	9	2nd satuarday h	7	
SUN	11		8		13		10		8	
MON	12	bakrid(DH)	9		14		11		9	
TUE	13		10	MOHARAM(DH)	15		12		10	THIRD CIE FOR FIRST SEM
WED	14		11		16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANT	13	
SAT	17		14	2nd Saturday	19		16		14	
SUN	18		15		20		17		15	
MON	19	TALENTS DAY	16		21	SECOND INTERNAL ASSESSMENT 3rd, 5th, & 7th semester	18	THIRD INTERNAL TEST ASSESSMENT 3rd, 5th, & 7 th semesters	16	
TUE	20		17		22		19		17	
WED	21		18		23		20		18	LAB INTERNALS FOR 1ST SEM
THU	22		19		24		21		19	
FRI	23		20		25		22		20	
SAT	24	4th satuarday	21	FIRST CIE FOR FIRST SEM.	26	4th satuarday holiday	23	4th satuarday	21	LAST WORKING DAY 1ST SEM(REVISED)
SUN	25		22		27		24		22	
MON	26		23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26		24	VTU PRACTICAL: 1sT SEMESTER: 23.12.19 To 3.01.20 THEORY EXAMS: 1st SEMESTERS: 6.01.20to28.01.2020
WED	28		25		30		27	IAB TESTS 3rd, 5th, & 7th SEMs	25	
THU	29		26		31		28		26	
FRI	30		27				29	Last working day	27	
SAT	31	5th Satuarday	28	4TH satuarday HOLIDAY			30	LAST WORKING DAY 3rd, 5th& 7th SEM	28	
SUN			29							
MON			30							
TUE										

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR: 2019-20

DEPARTMENT OF BASICSCIENCE

COURSE PREFERENCE

Name of the Faculty: Dr. Sujatha K

Designation: Professor and HOD

Sl. No	Course Code and Name	Year/Semester
1.	18PHY12 ENGINEERING PHYSICS FOR B SECTION	2019/I

Signature of Faculty

Department of Physics

HOD

Department of Physics

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ACADEMIC YEAR: 2019-20

DEPARTMENT OF BASICSCIENCE

COURSE PREFERENCE

Name of the Faculty: Mrs. Nagasree G

Designation: Assistant Professor

Sl. No	Course Code and Name	Year/Semester
1.	18PHY12 ENGINEERING PHYSICS FOR A SECTION	2019/I

Signature of Faculty

Department of Physics

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TIME TABLE –FIRST SEMESTER 2019-20
PHYSICS CYCLE

SECTION: A **ROOM NO: A006**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON	MAT	PHY	/BREAK	ELE	CIV	LUNCH	←------PHYL/EGDL/ELEL/A1/A2/A3-----→		
TUE	ELE	MAT		PHY	ELE		CIV	EGH	LIBARARY
WED	CIV	←----PHYL/		EGDL/ELEL/A2/A3/A1----→			PHY	MAT	
THU	ELE	CIV		PHY	MAT		←------PHYL/EGDL/ELEL/A3A1/A2 -----→		
FRI	EGD	EGD		MAT	PHY		EDUSAT/DEP/COLLEGE ACVIVITIES		
SAT	PHY	ELE		EGD					

MAT- Dr. Jyothi.P
CIV - Prof.Veeresh
EGH - Dr.K.Sujatha & Prof. Nagashree G
PHYL-Dr.K.Sujatha & Prof. Nagashree G

ELE - Prof. Mallikarjuna.G.S
PHY - Dr.K.Sujatha & Prof. Nagashree G
EGD - Dr. Karunakara, Prof.Avinash
ELEL - Prof. Mallikarjuna.G.S & Prof.Ravindra.S

PROCTORS - Prof. Nagashree.G & Prof. Veeresh

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TIME TABLE –FIRST SEMESTER 2019-20
PHYSICS CYCLE

SECTION: B **ROOM NO: A005**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON	CIV	ELE	BREAK	MAT	PHY	LUNCH	EGD	EGD	
TUE	ELE	PHY		CIV	MAT		←------PHYL/EGDL/ELEL/B1/B2/B3-----→		
WED	MAT	ELE		PHY	EGH		←------PHYL/EGDL/ELEL/B2/B3/B1-----→		
THU	PHY	MAT		ELE	CIV		PHY	EGH	LIBARARY
FRI	MAT	←-----PHYL		EGDL/ELEL/ B3/B1/B2-----→			EDUSAT/DEP/COLLEGE ACVIVITIES		
SAT	ELE	CIV		PHY					

MAT- Dr. Jyothi.P
CIV - Prof.Veeresh
EGH - Dr.K.Sujatha & Prof. Nagashree G
PHYL-Dr.K.Sujatha & Prof. Nagashree G

ELE – Dr. Shalini Prasad
PHY - Dr.K.Sujatha & Prof. Nagashree G
EGD – Prof. Shruthi & Prof Anil
ELEL - Prof. Mallikarjuna.G.S & Dr. Shalini Prasad

PROCTORS - Prof. Nagashree G & Prof. Shruthi

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TIME TABLE –FIRST SEMESTER 2019-20
PHYSICS CYCLE

Dr. K. Sujatha **SUBJECT CODE: 18PHY12**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON			BREAK		B	LUNCH			
TUE		B					←----------PHYL/B1 ----------→		
WED				B			←----------PHYL/B2----------→		
THU	B						B		
FRI		←PHYL/B3		PHYL/B3 ----------→					
SAT				B					

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TIME TABLE –FIRST SEMESTER 2019-20
PHYSICS CYCLE

Mrs. Nagashree. G **SUBJECT CODE: 18PHY12**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON		A	/BREAK			LUNCH	←---------- PHYL/A2----------→		
TUE				A					
WED		←PHYL/A2		PHYL/A2---------→			A		
THU				A			←---------- PHYL/A2----------→		
FRI					A				
SAT	A								

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

B.E. SYLLABUS FOR 2018-2022

ENGINEERING PHYSICS

(Common to all Branches)

(Effective from the academic year 2018-19)

Course Code : 18PHY12/22	**CIE Marks : 40**
Contact Hours/Week : 05(3L+2T)	**SEE Marks: 60**
Total Hours: 50 (8L+2T per module)	**Exams. Hours: 03**
Semester: I/II	**Credits: 04(3:2:0)**

Course Learning Objectives: This course (18PHY12/22) will enable students to

- Learn the basic concepts in Physics which are very much essential in understanding and solving engineering related challenges.
- Gain the knowledge of newer concepts in modern physics for the better appreciation of modern technology

MODULES

MODULE-I :

Oscillations and Waves

Free Oscillations: Definition of SHM, derivation of equation for SHM, Mechanical and electrical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion. Equation of motion for free oscillations, Natural frequency of oscillations.

Damped and forced oscillations: Theory of damped oscillations: over damping, critical & under damping, quality factor. Theory of forced oscillations and resonance, Sharpness of resonance. One example for mechanical resonance.

Shock waves: Mach number, Properties of Shock waves, control volume. Laws of conservation of mass, energy and momentum. Construction and working of Reddy shock tube, applications of shock waves.

Numerical problems

(RBT Levels L1, L2, L3)

MODULE-II:

Elastic properties of materials:

Elasticity: Concept of elasticity, plasticity, stress, strain, tensile stress, shear stress, compressive stress, strain hardening and strain softening, failure (fracture/fatigue), Hooke's law, different elastic moduli: Poisson's ratio, Expression for Young's modulus (Y), Bulk modulus (K) and Rigidity modulus (n) in terms of α and β. Relation between Y, n and K, Limits of Poisson's ratio.

Bending of beams: Neutral surface and neutral plane, Derivation of expression for bending moment. Bending moment of a beam with circular and rectangular cross section. Single cantilever, derivation of expression for young's' modulus

Torsion of cylinder: Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation.

Numerical problems

(RBT Levels L1, L2, L3)

MODULE- III:

Maxwell's equations, EM waves and Optical fibers

Maxwell's equations: Fundamentals of vector calculus. Divergence and curl of electric field and magnetic field (static), Gauss' divergence theorem and Stokes' theorem. Description of laws of electrostatics, magnetism and Faraday's laws of EMI. Current density & equation of Continuity; displacement current (with derivation) Maxwell's equations in vacuum

EM Waves: The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations), Plane electromagnetic waves in vacuum, their transverse nature, polarization of EM waves(Qualitative)

Optical fibers: Propagation mechanism, angle of acceptance. Numerical aperture. Modes of propagation and Types of optical fibers. Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient. Discussion of block diagram of point to point communication. Merits and demerits

Numerical problems

(RBT Levels L1, L2)

MODULE IV:

Quantum Mechanics and Lasers

Quantum mechanics: Introduction to Quantum mechanics, Wave nature of particles, Heisenberg's uncertainty principle and applications (non confinement of electron in the nucleus), Schrodinger time independent wave equation, Significance of Wave function, Normalization, Particle in a box, Energy eigen values of a particle in a box and probability densities

Lasers: Review of spontaneous and stimulated processes, Einstein's coefficients (derivation of expression for energy density). Requisites of a Laser system. Conditions for laser action. Principle, Construction and working of CO_2 and semiconductor Lasers.

Application of Lasers in Defense (Laser range finder) and Engineering (Data storage)

Numerical problems

(RBT Levels L1, L2, L3)

MODULE-V:

Material science

Quantum Free electron theory of metals: Review of classical free electron theory, mention of failures. Assumptions of Quantum Free electron theory, Mention of expression for density of states, Fermi-Dirac statistics (qualitative), Fermi factor, Fermi level, Derivation of the expression for Fermi energy, Success of QFET.

Physics of Semiconductor: Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band, Hole concentration in valance band (only mention the expression), Conductivity of semiconductors(derivation), Hall effect, Expression for Hall coefficient(derivation)

Dielectric materials: polar and non-polar dielectrics, internal fields in a solid, Clausius-Mossotti equation(Derivation), mention of solid, liquid and gaseous dielectrics with one example each. Application of dielectrics in transformers.

Numerical problems

(RBT Levels L1, L2, L3)

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Course Outcomes:

Upon completion of this course, students will be able to

1. Understand various types of oscillations and their implications, the role of Shock waves in various fields and Recognize the elastic properties of materials for engineering applications
2. Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication.
3. Compute Eigen values, Eigen functions, momentum of Atomic and subatomic particles using Time independent 1-D Schrodinger's wave equation
4. Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields
5. Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models.

Question paper pattern:

Note:- The SEE question paper will be set for 100 marks and the marks will be proportionately reduced to 60.

- The question paper will have **ten** full questions carrying equal marks.
- Each full question consisting of **20** marks.
- There will be **two** full questions (with a **maximum** of **four** sub questions) from each module.
- Each full question will have sub question covering all the topics under a module.
- The students will have to answer **five** full questions, selecting **one** full question from each module.

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DEPARTMENT OF PHYSICS

LESSON PLAN FOR ODD SEMESTER FOR ACADEMIC YEAR 2019-20

Course Title: Engineering Physics	Course Code : 18PHY21
Total contact hours: L:T:P:S :: 05 (3L+2T)	End Tenn Marks : 100
Internal Marks : 40	
Semester : IIII	Academic year 2019-20
Lesson plan Author: Dr k Sujatha & Nagashree G	Date 08/08/2021

Course Objective:

This course (18PHY12/22) will enable students to

C Learn the basic concepts in Physics which are very much essential in understanding and solving engineering related challenges.

O Gain the knowledge of newer concepts in modern physics for the better appreciation of

Course Outcomes:

On completion of this course, students will have know ledge. in:

CO I: Understand various types of oscillations and their implications, the role of Shock waves in various fields and Recognize the elastic properties of materials for engineering applications

C02: Realize the interrelation between time varying elelric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication.

C03: Compute Eigen values, Eigenfunctions, mom..:ntum of Atomic and subatomic particles using Time indepe ndent 1-D Schrodinger's wave quation

C04: Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields

COS: Understand various electrical and theimal properties of materials like conductors, semiconductors and dielectrics using difthent theoretical models.

MODULE-I

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
I	I	Definition of SHM, derivation of equation for SHM, Mechanical and electrical simple harmonic oscillators (mass suspended to spring oscillator), complex notation and phasor representation of simple harmonic motion.	R,U .	COl
	2	Equation of motion for free oscillations, Ntural frequency or oscillations.	R,U	COl

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		dampingQual ity factor.		
	4	Theory offorced oscillations and resonance, Sharpness of resonance. One example for mechanical resonance.	R,U,E,C	COl
2	1	Mach number, Properties of Shock waves, control volume.	R,U	COl
	2	Laws of conservation of mass, energy and momentum	R,U	CO l
	3	Construction and working of Reddy shock tube, applications of shock waves. Numerical problems	R,U	COl

MODULE-2

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
4	1	Concept of elasticity, plasticity, stress, strai n, tensile stress, shear stress, compressive stress, strain hardening and strain softening	R,U	C02
	2	Failure (fracture/fati gue), Hooke's law, different elastic moduli : Poisson's ratio, Expression for Young's modulus (Y)	R,U	C02
	3	Bulk modulus (K) and Rigidity modulus (n) in terms of and p. Relation between Y, n and K, Limits of Poisson's ratio	R,U	C02
5	1	Neutral surface and neutra l plane, Derivation of expression for bending moment	R,U	C02
	2	Bending moment of a beam with circular and rectan gular cross section	R,U	C02
	3	Single cantileve r, deri vation of expression for young's' modu lus	R,U	C02
	4	Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation. Numerical problems	R.U	C02

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MODULE-3

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Levei	Course Outcome (CO)
6	1	Fundamentals of vector calculus.	R.U	C03
	2	Divergence and curl of electric field and magnetic field .(static), Gauss' divergence theorem and Stokes' theorem.	R.U	C03
	3	Description of laws of electrostatics, magnetism and Faraday's ·Jaws of EMl	R,U,E	C03
	4	Current density & equation . of Continuity; displacement current (with derivation) Maxwell's equations in vacuum	R,U	C03
7	I	The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations),	R,U	C03
	2	Plane electromagnetic waves in vacu um, their transverse nature, polarization of EM waves(Qual itative)	R,U	C03
8	I	Propagation mechanism, angle of acceptance. Numerical apertu re.	R.U,C	C04
	2	Modes of propagation and Types of optical fibers.	R,U,Al	C04
	3	Attenuation: Causes of attenuation and Mention of expression for attenuation coefficient.	R,U	C04
	4	Discussion of block diagram of point to point communication. Merits and demerits	R,U	C04
	5	Numerical problems	R,U	C04

MODULE-4

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (COl
9	I	Introduction to Quantum mechanics, Wave nature of particles, Heisenberg's uncertainty principle and appl ications	R,U,	C04
	2	Schrodinger time independent wave equation, Si gnificance of Wave function	R,U	C04
	3	Normal izati on, Particle in a box, Energy eigen values of a particle in a box and proba bilit y densities .	R,U	C04 -
10	1	Review of spomtaneous and stimul ated processes, Einstein's	R,U	C04

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		_coefficients (derivation of e pr sion for energy density)		
	2	Requisites of a Laser system.	B,,U	C04
	3	Conditions for laser action. Principle Construction and working of C02 and semiconductor Lasers.	R,U	C04
	4	Application of Lasers in Defense (Laser range finder) and Engineering (Data storage) ' Numerical problems	R,U	C04

MODULE-S

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO_l
13	I	Review of classical free electron theory, mention of failures.	R,U,A2	C04
	2	Assumptions of Quantum Free electron theery	R,U	C04
	3	Mention of expression for density of states	R,U	COS
	4	Fermi-Dirac statistics (qualitative), Fermi factor	RU	COS
14	1	Fermi level, Derivation of the expression for Fermi energy, Success ofQFET.	R,U,E	COS
	.2	Fermi level in intrinsic semiconductors	R,U	COS
	3	Expression for concentration of electrons in conduction band	R,U	COS
	4	Hole concentration in valance band (only mention the expression)	R,U	COS
15	I	Conductivity of semiconductors(derivation), Hall effect, Expression for Hall coefficient(derivation)	R,U	COS
	2	polar and non-polar dielectrics	R,U.Al,C	COS
	3	interna l fields in a solid	R,U	COS
	4	Clausius-Mossotti equation(Derivation)	R,U	COS
16	1	mention of solid, liquid and gaseous	R,U	COS
	2	dielectrics with one example each.	R,U	COS
	3	Application of dielectrics in transformers	R,U	COS
	4	Numerical problems	R.U,Al,C	COS

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Bloom's Taxonomy Level

R-Remembering U-Understanding A-Applying A2-Analysing E-Evaluating C-Creating

Text Books:

1. A Text book of Engineering Physics- M.N A vadhanulu and P.G. Kshirsagar, lOth revised Ed, S. Chand & Company Ltd, New Delhi
2. Engineering Physics-Gaur and Gupta-Dhanpat Rai Publications-2017
3. Concepts of, Modem Physics-Arthur Beiser: 6th ;Tata McGraw Hill Edu Pvt Ltd- New Delhi 2006

Reference books:

1. Introduction to Mechanics —MK Verma: 2nd Ed, University Press(lndia) Pvt Ltd, Hyderabad 2009
2. Lasers and Non Linear Optics – BB laud, 3rd Ed, New Age International Publishers 2011
3. Solid State Physics-S O Pillai, 8th Ed- New Age International Publishers-2018
4. Shock waves made simple- Chintoo S Kumar, K Takayama and K.PJ Reddy: Willey India Pvt. Ltd. New Delhi2014
5. Introduction to Electrodynamics- David Griffiths: 4th Ed, Cambridge University Press 2017

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Question Bank

Course Name: Engineering Physics **Course Code: 18PHYS12**

Semester: I **Section: A, B**

Module 1-Free oscillations

1.Define Simple Harmonic Motion. Derive the equation of motion foe SHM.

2.Derive the expression for force constants for series and parallel combination of springs.

3.Explain how Complex notation Phasor representation is represented.

4.Define free oscillations with example. Mention the equation of motion of natural frequency of vibration.

5.What are Damped oscillations. Give the theory. Discuss the case of under damping, over damping and critical damping.

6.Define Quality factor with equation. Give its Physical significance.

7.What are Forced Oscillations .Derive the expressions for amplitude and Phase of Forced vibrations. Explain all the three cases.

8.Write a short notes on a)Sharpness of Resonance b)Helmoltz Resonator

Shock waves

o

1. Define Mach Number and Mach angle

2.Distinguish between Acoustic ,Ultrasonic ,subsonic, supersonic, transonicand hypersonic waves.

3.What are shock waves and mention the properties of shock waves.

4.Explain Control Volume.

5.State and explain the law of conservation of mass ,momentum and energy with expressions .

6.Describe the construction and working of Reddy Shock tube experiment.

7.What are the applications of Shock waves.

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Module 2-Eiastic properties of materials

1.Explain Elasticity and Plasticity with examples.

2.Explain the importance of elasticity in engineering materials.

3.Explain the terms Stress and Strain. Discuss the three types of Stresses.

4.Discuss briefly the effect of stress, temperature, annealing and impurities on elasticity.

5.Describe Strain hardening and Strain softening.

6.State and explain Hooke's law with stress-strain curve.

7.Discuss three different moduli of elasticity with equations.

8.Define Lateral Strain and Linear Strain and s derive the expression for Poisson's ratio.

9.Derive the relation between shear strain, longitudinal strain and compression strain.

1O. Derive the relation between Y, η and 6.

11. Derive the relation between K, Y and 6.
0

12. Derive the relation between K, and Y.

13.Discuss the limiting values of σ and limitations of Poisson's ratio.

14.Define Beam and explain different types of beams and mention their engineering applications .

15.Define neutral surface and neutral axis.

16.Define bending moment and derive the expression for bending moment in terms of moment of inertia. Mention the expression for bending moment for circular and rectangular cross section.

17.Describe a single cantilever and hence derive the expression for depression.

18.Explain Torsional oscillations. Derive the expression for Couple per unit twist for a solid cylinder.

19.Mention the expression for Time period for Torsional oscillations Briefly explain the applications of torsional pendulum.

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Module 3

Maxwell's Equations and Electromagnetic waves

1.Explain Scalar Product and Vector product.

2.Describe Vector Operator and explain the concepts of gradient, divergence and curl along with physical significance.

3.Discuss three different types of integration like linear, surface and volume integrations.

4.Explain Gauss flux theorem in electrostatics and magnetism.

5.Derive Gauss Divergence theorem. Mention Stokes theorem.

6.Discuss Maxwell- Ampere's law, Biot-Savarts law.

7.Explain briefly the Faraday's law of electromagnetic induction. Express the same in the differential form of maxwell's equation in the case of time-varying fields.

8.Discuss Continuity equation. Define Displacement current and arrive the expression for the same.

9.List the Maxwell's equations for time-varying condition and for static conditions.

1O. Derive wave equation in terms of electric field using Maxwell's equations.

11.Explain the plane electromagnetic waves in vacuum along with the equations for E, B and c.

12. Explain the transverse nature of electromagnetic waves and explain linear , elliptical and circular polarizations.

Optical Fibers

1.Describe the propagation mechanism of light through in an optical fiber.

2.What is numerical aperture? Obtain an expression for numerical aperture in an optical fiber and then arrive the condition for propagation.

3.Explain modes of propagation and V number.

4.Explain different types of optical fibers.

5. Define attenuation. Explain different types of attenuation, mention the expression for attenuation coefficient.

6.Explain point to point communication system with the help of block diagram.

7.Explain merits and demerits of optical fiber communications.

Module 4- Quantum Mechanics

1. Give a brief account of blackbody radiation and Planck's radiation law with two conditions.

2.Explain dual nature of matter waves.

3.State de Broglie's hypothesis. Show that the de-Broglie wavelength of an electron is found to be equal to 1.226N nm.

4. Explain Heisenberg's uncertainty principle and show that electrons cannot exists within the nucleus.

5.Construct one dimensional time independent Schrodinger wave equation.

6.What are the properties of wavefunction.

7.Explain the terms probability density, normalization.

8.Discuss Eigenvalues and Eigenfunctions.

9.Solve Schrodinger wave equation for the allowed energy values in the case of particle in a box.

10. Discuss Probability for a particle in a potential well of infinite height.

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Lasers

1.Explain Induced absorption, Spontaneous emission, stimulated emission.

2.Derive the expression for energy density using Einstein's coefficients.

3.Explain the requisites of a laser system.

4.Explain the condition for laser action.

5.Explain three different vibrational modes of $C0_2$ molecule. With a neat energy level diagram explain the construction and working of $C0_2$ laser .

6. Explain the construction and working of Semiconductor laser .

7.Describe how a laser range finder is made use of in defense.

8.Explain how data storage is achieved in a compact disc.

Module 5 -Material Science

1.What are the assumptions of classical free electron theory and the failures of classical free electron theory.

2.What are the assumptions of Quantum free electron theory.

3.Define density of states and mention the expression for density of states.

4.Explain Fermi level, Fermi energy, Fermi-Dirac statistics.

5.Define Fermi Factor. Discuss the variation of Fermi Factor on different conditions of temperature and energy.

6.Derive the expression for Fermi energy at zero Kelvin. Mention the expression for Fermi velocity and Fermi temperature.

7. Discuss the success of Quantum free electron theory.

8.Discuss the Fermi level in intrinsic semiconductor. Mention the expression for electron and hole concentration in intrinsic semiconductor.

9.Derive the relation between Fermi energy and energy gap for an intrinsic semiconductor.

10.Derive the expression for electrical conductivity of semiconductors.

11.What is Hall Effect? Obtain the expression for Hall voltage in terms of Hall coefficient.

12.What are dielectric materials .Explain the types of dielectric materials. Discuss solid ,liquid and gaseous dielectric with one example each.

13.Explain polarization and the types of polarization. Mention the relation between dielectric constant and polarization.

14.Define internal field in case of solids and mention its expression for one dimensional case, three- d i m e n s i o n a l case and Lorentz field.

15.Derive Clausius-Mossotti equation.

16.Mention the application of dielectric in transformers.

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Assignment Questions

Odd Semester 19-20

Course Name: Engineering Physics **Course Code: 18PHYS22**

Semester: II **Section: C**

Module 1-Free oscillations

1.Define Simple Harmonic Motion. Derive the equation of motion foe SHM.

2.Derive the expression for force constants for series and parallel combination of springs.

3.Explain how Complex notation Phasor representation is represented.

4.Define free oscillations with example. Mention the equation of motion of natural frequency of vibration.

5.What are Damped oscillations. Give the theory. Discuss the case of under damping, over damping and critical damping.

6.Define Quality factor with equation. Give its Physical significance.

7.What are Forced Oscillations .Derive the expressions for amplitude and Phase of Forced vibrations. Explain all the three cases.

8.Write a short notes on a)Sharpness of Resonance b)Helmoltz Resonator

Shock waves

o

1. Define Mach Number and Mach angle

2.Distinguish between Acoustic ,Ultrasonic ,subsonic, supersonic, transonicand hypersonic waves.

3.What are shock waves and mention the properties of shock waves.

4.Explain Control Volume.

5.State and explain the law of conservation of mass ,momentum and energy with expressions .

6.Describe the construction and working of Reddy Shock tube experiment.

7.What are the applications of Shock waves.

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Module 2-Eiastic properties of materials

1.Explain Elasticity and Plasticity with examples.

2.Explain the importance of elasticity in engineering materials.

3.Explain the terms Stress and Strain. Discuss the three types of Stresses.

4.Discuss briefly the effect of stress, temperature, annealing and impurities on elasticity.

5.Describe Strain hardening and Strain softening.

6.State and explain Hooke's law with stress-strain curve.

7.Discuss three different moduli of elasticity with equations.

8.Define Lateral Strain and Linear Strain and s derive the expression for Poisson's ratio.

9.Derive the relation between shear strain, longitudinal strain and compression strain.

1O. Derive the relation between Y, η and 6.

11. Derive the relation between K, Y and 6.

12. Derive the relation between K, and Y.

13.Discuss the limiting values of 6 and limitations of Poisson's ratio.

14.Define Beam and explain different types of beams and mention their engineering applications .

15.Define neutral surface and neutral axis.

16.Define bending moment and derive the expression for bending moment in terms of moment of inertia. Mention the expression for bending moment for circular and rectangular cross section.

17.Describe a single cantilever and hence derive the expression for depression.

18.Explain Torsional oscillations. Derive the expression for Couple per unit twist for a solid cylinder.

19.Mention the expression for Time period for Torsional oscillations .Briefly explain the applications of torsional pendulum.

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Module 3

Maxwell's Equations and Electro magnetic waves

1.Explain Scalar Product and Vector product.

2.Describe Vector Operator and explain the concepts of gradient, divergence and curl along with physical significance.

3.Discuss three different types of integration like linear ,surface and volume integrations.

4.Explain Gauss flux theorem in electrostatics and magnetism.

5.Derive Gauss Divergence theorem. Mention Stokes theorem.

6.Discuss Maxwell- Ampere's law, Biot-Savarts law.

7.Explain briefly the Faraday's law of electromagnetic induction. Express the same in the differential form of maxwell's equation in the case of time-varying fields.

8.Discuss Continuity equation. Define Dispalcement current and arrive the expression for the same.

9.List the Maxwell's equations for time-varying condition and for static conditions .

1O.Derive wave equation in terms of electric field using Maxwell's equations.

11.Explain the plane electromagnetic waves in vacuum along with the equations for E,B and c.

12. Explain the transverse nature of electromagnetic waves and explain linear ,elliptical and circular polarizations.

Optical Fibers

1.Describe the propagation mechanism of light through in an optical fiber.

2.What is numerical aperture? Obtain an expression for numerical aperture in an optical fiber and then arrive the condition for propagation .

3.Explain modes of propagation and V number.

4.Explain different types of optical fibers.

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5. Define attenuation. Explain different types of attenuation, mention the expression for attenuation coefficient.

6.Explain point to point communication system with the help of block diagram. ..

7.Explain merits and demerits of optical fiber communications.

Module 4- Quantum Mechanics

I.Give a brief account of blackbody radiation and Planck's radiation law with two conditions .

2.Explain dual nature of matter waves.

3.State de Broglie's hypothesis. Show tat the deBroglie wavelength of an electron is found to be equal to 1.226N nm.

4. Explain Heisenberg's uncertainity principle and show that electrons cannot exists within the nucleus.

5.Construct one dimensional time independent schrodinger wave equation.

6.What are the properties of wavefunction.

7.Explain the terms probability density , normalization.

8.Discuss Eigenvalues and Eigenfunctions.

9.Solve schrodinger wave equation for the allowed energy values in the case of particle in a box.

10. Discuss Probability for a particle in a potential well of infinite height.

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Lasers

1.Explain Induced absorption, Spontaneous emission, stimulated emission.

2.Derive the expression for energy density using Einstein's coefficients.

3.Explain the requisites of a laser system.

4.Explain the condition for laser action.

5.Explain three different vibrational modes of $C0_2$ molecule. With a neat energy level diagram explain the construction and working of $C0_2$ laser .

6. Explain the construction and working of Semiconductor laser .

7.Describe how a laser range finder is made use of in defense.

8.Explain how data storage is achieved in a compact disc.

Module 5 -Material Science

1.What are the assumptions of classical free electron theory and the failures of classical free electron theory.

2.What are the assumptions of Quantum free electron theory.

3.Define density of states and mention the expression for density of states.

4.Explain Fermi levei, Fermi energy, Fermi-Dirac statistics.

5.Define Fermi Factor. Discuss the variation of Fermi Factor on different conditions of temperature and energy.

6.Derive the expression for Fermi energy at zero Kelvin. Mention the expression for Fermi velocity and Fermi temperature.

7. Discuss the success of Quantum free electron theory.

8.Discuss the Fermi level in intrinsic semiconductor. Mention the expression for electron and hole concentration in intrinsic semiconductor.

9.Derive the relation between Fermi energy and energy gap for an intrinsic semiconductor.

10.Derive the expression for electrical conductivity of semiconductors.

11.What is Hall Effect? Obtain the expression for Hall voltage in terms of Hall coefficient.

12.What are dielectric materials .Explain the types of dielectric materials. Discuss solid ,liquid and gaseous dielectic with one example each.

13.Explain polarization and the types of polarization. Mention the relation between dielectric constant and polarization.

14.Define internal field in case of solids and mention its expression for one dimensional case, three dimensional caseand Lorentz field.

15.Derive Clausius-Mossotti equation.

16.Mention the application of dielectric in transformers.

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1	C	E	1	9					

Subject Code: 18PHY12

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FIRST INTERNAL TEST

Branch : CS
Sub Name : Engg. Physics
Sem & Sec : I , A/B
Duration : 1 ½ hrs

Date :19/09/2019
Time:10:30 to 12:00
Max. Mark:50

QNo.	Answer all questions	Marks	CO's	BT level
	PART A			
1	Derive the expression for energy density using Einstein's coefficients with suitable diagrams?	10	CO4	BT1
	OR			
2	Set up time-independent one-dimensional Schrodinger wave equation. What are the properties of wavefunction.	10	CO3	BT2
	PART B			
3	Explain the requisites of a laser system and the condition for laser action with suitable diagrams.	10	CO4	BT1
	OR			
4	Derive the relation between Shear strain, longitudinal strain and elongation strain.	10	CO1	BT1
	PART C			
5	a)Explain Heisenberg's uncertainity principle and show that electrons cannot exists inside the nucleus.	6	CO3	BT2
	b)An electron has a speed of 100 m/s. The inherent uncertainity in its measurement is 0.005%.Find the corresponding uncertainities that arises in the measurement of its position.	4	CO3	BT5
	OR			
6	Describe the construction and working of CO_2 laser with the help of energy level diagram. Explain the three modes of vibration.	10	CO4	BT1
	PART D			
7	State and explain Hooke's law with stress – strain curve and discuss three different elastic moduli with equations.	6	CO1	BT1
	The average output power of a laser emitting a laser beam of wavelength 6328 $A^0$is 5 mW. Find the number of photons emitted by the source.	4	CO1	BT5
	OR			
8	Solve Schrodinger wave equation for the allowed energy values in the case of particle in a box.	10	CO3	BT2

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	PART E			
9	Discuss the wave function, Probability densities and its Eigen energy values for a particle in a box with a suitable graph.	7	CO4	BT1
	Calculate the de Broglie wavelength associated with an electron having a kinetic energy of 100 eV.	3	CO4	BT5
	OR			
10	Explain the construction and working of semiconductor laser. Give three applications.	10	CO4	BT1

Course Outcomes:

CO1 : Understand various types of oscillations and their implications, the role of Shock waves in various fields and recognize the elastic properties of materials for engineering applications.

CO3 : Compute Eigen values ,Eigen functions, momentum of atomic and subatomic particles using Time independent 1-D Schrodinger wave equation.

CO4 : Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different kinds.

Blooms Taxonomy:

BT1 –Knowledge BT2 –Understand BT3 –Apply BT4 –Analyzing BT5 –Evaluate BT6 -- Creating

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DEPARTMENT OF ..... PHYSICS .....

SCHEME FOR VALUATION

Internal Test I

Semester & Section: Ist, A/B Date: 17/09/19

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part-A		
(1)	Cases of absorption & emission processes with expressions	3M	
	arrive upto		10M
	$u_\lambda d\lambda = \frac{A}{B(e^{hd/kT} - 1)}$	7M	
(2)	(a) $\psi = Ae^{i(kx-\omega t)}$	1M	
	$\lambda = \frac{h}{p}$ and arrive upto $\frac{1}{\lambda^2} = \frac{-1}{4\pi^2\psi}\frac{d^2\psi}{dx^2}$	3M	10M
	arrive upto $\frac{d^2\psi}{dx^2} + \frac{8\pi^2 m}{h^2}(E-V)\psi = 0$	3M	
	properties of wave function	3M	
	Part-B		
(3)	three requisites of a laser with diagram	5M	
	Population Inversion with diagram	5M	10M

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DEPARTMENT OF ..... PHYSICS .....

SCHEME FOR VALUATION

Internal Test ..... I .....

Semester & Section: Ist, A/B Date: 17/09/19

Question No.	Details of the answer	Marks Distribution	Total Marks
	(OR)		
(4)	Diagram and explanation	2M	
	curve upto elongation strain +	2M	10M
	compression strain = shearing	3M	
	strain, $\frac{\theta}{2} + \frac{\theta}{2} = \theta$	3M	
	Part C		
(5) (a)	statement and equations	2M	
	show that electrons cannot	2M	6M.
	exists inside the nucleus	2M	
(b)	Given speed, $V = 100$ m/s		
	uncertainity in V = 0.005 %	1M	
	uncertainity in position, Δx = ?		
	$\Delta V = 100 \times \frac{0.005}{100} = 0.005$ m/s	1M	4M
	W.K.T $\Delta x \Delta p_x \geq \frac{h}{4\pi}$	1M	
	$\Delta x \geq \frac{h}{4\pi m \Delta V} = 0.0115$ m	1M	

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SCHEME FOR VALUATION

Internal Test ..... I .....

Semester & Section: IST, A/B Date: 17/09/19

Question No.	Details of the answer	Marks Distribution	Total Marks
	(8A)		
6	3 modes of vibration	3M	
	Construction of CO_2 laser	3M	10M
	cooling and energy level diagram with explanation	4M	
	Part-D		
7 a	statement and stress strain curve & Explanation	2M	
	three elastic moduli expressions	2M	6M
		2M	
b	Given- $\lambda = 6328 \times 10^{-10}$ m		
	$P = 5 \times 10^{-3}$ W		
	No. of photons emitted/sec, N = ?	2M	
	W.K.T $\Delta E = hc/\lambda = 3.148 \times 10^{-19}$ J	2M	4M
	$N \times \Delta E = 5mW$, $N = 1.59 \times 10^{16}$		

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SCHEME FOR VALUATION

Internal Test ..... I .....

Semester & Section: I&t, A/B Date: 17/09/19

Question No.	Details of the answer	Marks Distribution	Total Marks
(8)	Diagram and explanation		
	arrive up to $\frac{d^2\psi}{dx^2} + k^2\psi = 0$	2M	
	arrive up to $E = n^2h^2/8ma^2$	2M	
	and up to $\psi_n = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi}{a}\right)x$.	3M	10M
		3M	
(9)a	wave function and	2M	
	probability densities	2M	7M
	Eigen energy values	3M	
(b)	Kinetic Energy, $E = 100$ eV	1M	
	de Broglie wavelength, $\lambda = ?$	1M	3M
	W.K.T $\lambda = \frac{h}{\sqrt{2mE}} = 1.227 \times 10^{-10}$ m	2M	
	(OR)		
(10)	Construction and working	2M+4M	
	Explanation, Applications	2M+2M	10M

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II Internal

Sub:- Engg Physics 18PHY12 **Date:-** 05/11/2019
Branch:- CS **Time:-**10:30 to-12.00 P.M
Sem&Sec:- I, A/B **Max.Marks-50**

Q.No.	ANSWER ALL QUESTIONS	MARKS	CO's	BT Level
	PART-A			
1.	What is Torsional pendulum. Derive the expression for Couple per unit twist for a solid cylinder	10	CO1	BT2
	OR			
2.a)	Derive the expression for Fermi energy at zero kelvin.	7	CO5	BT3
b)	Calculate the probability of an electron occupying an energy level 0.02 eV above the Fermi level at 200 K and 400 K in a material.	3	CO5	BT5
	PART-B			
3.a)	Explain in detail Hall Effect with a neat diagram? Obtain the expression for Hall voltage in terms of Hall coefficient .	10	CO5	BT2
	OR			
4.a)	Discuss Fermi Factor and the variation of Fermi Factor on different conditions of temperature and energy.	6	CO5	BT1
b)	The Hall co-efficient of a material is -3.68×10^{-5} m3/C. What is the type of charge carriers? Also calculate the carrier concentration.	4	CO5	BT5
	PART-C			
5.a)	Derive the relation between Y,n and σ.	6	CO1	BT6
b)	An increment in length by 1mm was observed in a gold wire of diameter 0.3mm, when it was subjected to a longitudinal force of 2 Newtons ,and a twist of 0.1 radian was observed in the same wire when its one end was subjected to a torque of 7.9×10^{-7} nm, while its other end was fixed. Calculate the value of Poisson's ratio for gold.	4	CO1	BT5
	OR			
6.a)	Discuss the success of Quantum free electron theory.	6	CO5	BT6
b)	Define Beam and explain different types of beams and mention their engineering applications.	4	CO4	BT2

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PART-D

7.a)	Construct the expression for electrical conductivity of semiconductors.	6	CO5	BT3
b)	The following data are given for intrinsic germanium at 300K ,$n_i = 2.4 \times 10^{19}/m^3$, $\mu_0 = 0.39\ m^2\ v^{-1}\ s^{-1}$, $\mu_h = 0.19\ m^2\ v^{-1}\ s^{-1}$ .Calculate the resistivity of the sample.	4	CO5	BT5

OR

8.	Define Bending moment and derive the expression for bending moment in terms of moment of inertia. Mention the expression for bending moment for rectangular and circular cross section.	10	CO1	BT

PART-E

9.a)	What is polarization in dielectrics. Explain different polarization mechanisms	7	CO5	BT5
b)	Find the polarization produced in a crystal by an electric field of strength 500 V/mm if it has a dielectric constant of 6?	3	CO5	BT2

OR

10.	Define internal fields in case of solids and liquids and mention its expressions. Derive Clasius-Mossotti equation.	4 6	CO5	BT3

Course outcomes:-

CO1--- Understand various types of oscillations and their implications,the role of shock waves in various fields and recognize the elastic properties of materials for engineering applications.

CO5---Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical methods.

Blooms Taxanomy:-

BT1—Knowledge BT2---Understand BT3--Apply BT4---Analyzing BT5----Evaluate BT6---- Creating

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Internal Test II.

Semester & Section: I & A, B. Date: 04/11/2019

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part-A		
(1)	Torsional pendulum Explanation with diagram	2M	
	up to $T = n\phi = \frac{n\eta\theta}{L}$	2M	10M
	arrive up to Twisting couple $= \pi n R^4 \theta / 2L$	3M	
	arrive upto $C = \frac{\pi n R^4}{2L}$	3M	
(2)(a)	$N(E)dE = g(E)dE \times f(E)$	1M	
	upto $g(E)dE = \frac{8\sqrt{2}\pi m^{3/2}}{h^3} E^{1/2} dE$	2M	6M
	arrive up to $E_{F_0} = B n^{2/3}$	2M	
	where $B = \left(\frac{h^2}{8m}\right)\left(\frac{3}{\pi}\right)^{2/3}$	2M	
(b)	w.k.t $f(E) = \frac{1}{e^{\frac{E-E_F}{kT}} + 1}$	1 M	
	Case(i) – $f(E) = 0.24$ at 200.1K	1 M	3M
	$f(E) = 0.36$ at 400K	1 M	

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SCHEME FOR VALUATION

Internal Test ..... II .....

Semester & Section: I / A, B Date: 4/11/2019

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part - B		
(3) (a)	Hall effect explanation with diagram	3M	
	arrive upto $F_E = E_H$	2M	
	$v = \frac{1}{\rho w d}$.		10M
	$P = \frac{BI}{V_H w}$	2M	
	Hall coefficient, $R_H = \frac{1}{\rho}$		
	$\therefore V_H = R_H \left(\frac{BI}{w}\right)$	3M	
	(a)		
(4) (a)	Fermi facts explanation & equation		
	three cases of Fermi facts	2M	6M
	when $E < E_F$	2M	
	$E > E_F$	2M	
	$E = E_F$		
(b)	W.K.T $R_H = \frac{1}{\rho} = \frac{1}{ne}$	2M	
	$n = 1.7 \times 10^{23} / m^3$	2M	4M

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DEPARTMENT OF ..... Physics .....

SCHEME FOR VALUATION

Internal Test ..... 1 .....

Semester & Section: 1st / A & B

Date: 4/11/2019

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part-C		
5 (a)	diagram & explanation	2M	
	arrive up to $P'x = \frac{x}{\sqrt{2}}$		
	up to $n = \frac{1/\alpha}{2(1+\sigma)}$	2M	6M
	up to $Y = 2n(1+\sigma)$	2M	
(b)	W.K.T $C = \frac{N}{\theta}$ & $Y = \frac{FL}{\pi R^2 x}$	1M	
	$\therefore C = \frac{\pi n R^4}{2L}$	1M	4M
	$\frac{Y}{n} = 2.848$, $\sigma = 0.424$	2M	
	(OR)		
6 (a)	Two Success of QFET		
	① Temp dependence of electrical Conductivity	3M	6M
	② dependence of σ on 'n'	3M	

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SCHEME FOR VALUATION

Internal Test ... II .....

Semester & Section: 1st / A, B Date: 4/11/2019

Question No.	Details of the answer	Marks Distribution	Total Marks
6 (b)	Definition of Beam	1M	
	four Types of beam	3M	4M
	diagram and explanation		
	Part - D		
7 (a)	Explanation of Semiconductor	2M	
	W.K.T $I = N_e e A v$		
	arrive upto $J = \sigma E$	2M	6M
	arrive upto $\sigma = e(N_e \mu_e + N_h \mu_h)$		
	$\sigma = n_i e(\mu_e + \mu_h)$	2M	
(b)	$\sigma_i = n_i e(\mu_e + \mu_h)$	1M	
	$\rho_i = \frac{1}{\sigma_i}$	1M	4M
	$\rho_i = 0.449\ \Omega m$	2M	

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SCHEME FOR VALUATION

Internal Test I

Semester & Section: I st / A, B

Date: 4/11/2019

Question No.	Details of the answer	Marks Distribution	Total Marks
	(OR)		
(8)	Bentry moment definition	2M	
	diagram & explanation		
	arrive upto $F = \frac{Yaq}{R}$	2M	
	Moment of face $= \frac{Y}{R} \Sigma aq^2$	2M	10M
	$B.M = \frac{Y}{R} I_q$	2M	
	Rectangular beam, $B.M = \frac{Y}{R}\left(\frac{bd^3}{12}\right)$ cross section	2M	
	Circular cross section, $B.M = \frac{Y}{R}\frac{r^4\pi}{4}$		
	Part - E		
(9) (a)	Explanation of polarization	1M	
	three types of polarization	3×2M	7M
(b)	W.K.T $P = \varepsilon_0(\varepsilon_r - 1)E$	1M	
	$= 2.21 \times 10^{-5}$ C/m^2	2M	3M

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DEPARTMENT OF Physics

SCHEME FOR VALUATION

Internal Test II

Semester & Section: 1st / A, B Date: 4/11/2019

Question No.	Details of the answer	Marks Distribution	Total Marks
10	(OR) Explanation & Expression for Internal fields in one dimension and three dimensions	1M 3M	4M
	Clasius - Mossotti equation arrive upto $E = \frac{P}{\varepsilon_0(\varepsilon_r - 1)}$	3M	6M
	arrive upto $\frac{(\varepsilon_r - 1)}{(\varepsilon_r + 2)} = \frac{N\alpha_e}{3\varepsilon_0}$	3M	

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III Internal

Sub:- Engg Physics 18PHY12
Branch:- CS
Sem&Sec:- I, A/B

Date:- 12/12/2019
Time:-10:30 to-12.00 P.M
Max.Marks-50

Q.No.	ANSWER ALL QUESTIONS	MARKS	CO'S	BT Level
	PART-A			
1.	What are Damped Oscillations, give the theory. Discuss the case of underdamping.	10	CO1	BT2
	OR			
2.a)	State and explain the law of conservation of mass, momentum and energy with expressions.	6	CO1	BT3
b)	The distance between two pressure sensors in a shock tube is 150 mm. The time taken by a shock wave to travel this distance is 0.3 ms. If the velocity of sound under the same condition is 340 m/s. Find the Mach number of the shock wave.	4	CO1	BT5
	PART-B			
3.a)	Expalin Gauss theorem in electrostatics. Derive Gauss Divergence theorem.	10	CO2	BT2
	OR			
4.a)	Discuss Maxwells-Ampere law and Biot Savarts law.	6	CO2	BT1
b)	Find the divergence of the vector field $\vec{A}$ given by $\vec{A} = 6x^2 \hat{a}_x + 3xy^2 \hat{a}_y + xyz^3 \hat{a}_z$ at a point p (1 3 6)	4	CO2	BT5
	PART-C			
5.a)	Define Simple Harmonic Motion. Derive the equation of motion for SHM.	7	CO1	BT6
b)	A man weighing 600 N steps on a spring scale machine. The spring in the machine is compressed by 1 cm. Find the force constant of the spring	3	CO1	BT5
	OR			
6.a)	Distinguish between Acoustic, Ultrasonic, Subsonic and Supersonic waves	6	CO1	BT6
b)	Define Mach number, Mach cone and Mach angle.	4	CO1	BT2

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PART-D

7.a)	Explain the concepts of gradient ,divergence and curl along with physical significance	6	CO2	BT3
b)	Calculate the curl of $\vec{A}$ Given $\vec{A} = (1+yz^2)\,\hat{a}_x + xy^2\,\hat{a}_y + x^2y\,\hat{a}_z$	4	CO2	BT5

OR

8.	Derive the expressions for equivalent force constants for two springs connected in series and parallel with suitable diagrams.	10	CO2	BT3

PART-E

9.	What are forced Oscillations . Derive the expressions for amplitude and phase of the forced vibrations.	10	CO1	BT2

OR

10.	What are Shock Waves . Describe the construction and working of Reddy Shock tube experiment.	10	CO1	BT3

Course outcomes:-

CO1--- Understand various types of oscillations and their implications,the role of shock waves in various fields and recognize the elastic properties of materials for engineering applications.

CO2---Realize the interrelation between time varying electric field and magnetic field,the transverse nature of the EM waves and their role in optical fibre communications.

CO5---Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical methods.

Blooms Taxanomy:-

BT1—Knowledge BT2---Understand BT3---Apply BT4---Analyzing BT5----Evaluate BT6---- Creating

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SCHEME FOR VALUATION

Internal Test ..... III .....

Semester & Section: I / A, B Section Date: 10/12/19

Question No.	Details of the answer	Marks Distribution	Total Marks
	Part-A		
(1)	Damped oscillations definition & theory	2M	
	arrive up to $m\frac{d^2x}{dt^2} + \gamma\frac{dx}{dt} + kx = 0$	2M	
	up to $x = Ce^{(-b+\sqrt{b^2-\omega^2})t} + De^{(-b-\sqrt{b^2-\omega^2})t}$	2M	10M
	upto $x = \frac{x_0}{2}\left\{\left[1 + \frac{b}{\sqrt{b^2-\omega^2}}\right]e^{(-b+\sqrt{b^2-\omega^2})t} + \left[1 - \frac{b}{\sqrt{b^2-\omega^2}}\right]e^{(-b-\sqrt{b^2-\omega^2})t}\right\}$	2M	
	Explain underdamping case with graph	2M	
	(a)		
(2) a)	statement & explanation of expression of conservation laws	3 x 2M	6M
b)	$M = \frac{v_s}{a}$, $v_s = \frac{d}{t}$ =	2M	4M
	$M = 1.47$	2M	
	Part-B		
(3)	Statement	2M	
	arrive upto $\oint \vec{D}\cdot d\vec{s} = \int_V \nabla\cdot\vec{D}\, dV$	4M	10M
	with proof	4M	

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SCHEME FOR VALUATION

Internal Test ... III ...

Semester & Section: I / A, B

Date: 10/12/19

Question No.	Details of the answer	Marks Distribution	Total Marks
4 a	Explain Maxwell- Ampere law	1M	
	arrive upto $\nabla \times \vec{H} = \vec{J} + \frac{\partial \vec{D}}{\partial t}$	2M	6M
	Explain Biot Savarts law	1M	
	arrive upto $dH = \frac{Idl \sin\theta}{4\pi r^2}$	2M	
b	$\nabla \cdot \vec{A} = \frac{\partial A_x}{\partial x} + \frac{\partial A_y}{\partial y} + \frac{\partial A_z}{\partial z}$	2M	6M
	$= 3S4$	2M	
	Part-C		
5 a	SHM definition & Explanation	2M	
	arrive up to $\frac{d^2x}{dt^2} + \omega^2 x = 0$	4M	7M
	$\omega = \sqrt{\frac{K}{m}}$	1M	
b	$K = -\frac{F_x}{x} = \frac{\omega}{x} = 6 \times 10^4$ N/m.	1M 2M	3M
	(OR)		
6 a	Distinguish all the waves	6M	6M
b	Mach no., Mach Cone, Mach cycle with expressions	4M	4M

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Internal Test ..... III .....

Semester & Section: I | A, B Date: 10/12/19

Question No.	Details of the answer	Marks Distribution	Total Marks
7 (a)	Explanation of gradient, divergence & curl with physical significance and Expressions	2M 2M 2M	6M
(b)	$\nabla \times \vec{A} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ \partial/\partial x & \partial/\partial y & \partial/\partial z \\ A_x & A_y & A_z \end{vmatrix}$	2M	4M
	$= x^2 \hat{a}_x - 2(x - yz)\hat{a}_y + (y^2 - z^2)\hat{a}_z$	2M	
	(OR)		
8	Explanations & expressions	4M	
	diagrams of series & parallel circuits	2M	10M
	arrive upto $K_s = \frac{K_1 K_2}{K_1 + K_2}$	2M	
	and $K_p = K_1 + K_2$	2M	
	(part E)		
9	Explanation, arrive upto $a = \frac{F/m}{\sqrt{4b^2p^2 + (\omega^2 - p^2)^2}}$	4M 4M	10M
	& $\alpha = \tan^{-1}\left(\frac{2bp}{\omega^2 - p^2}\right)$	2M	
10	Explanation of shock waves Reddy tube expt. Explanation with diagrams	2M 8M	10M

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Year : 2019 - 2020 ✓ Semester : Odd / Even

Name of the Teacher : Dr K. Sujatha, Nagashree. G

Designation : Prof. & HOD, Asst. Prof

Department : Physics

Sem/ Branch	Subject Code	Subject
1. 1st/ CS	18PHY12	Engineering physics
2.		
3.		

	Initials at the End of the			
	1st Month	2nd Month	3rd Month	Semester
Staff	26/10/19	30/9/19	31/10/19	6/12/19
HOD				
Principal				

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ATTENDANCE

Sl. No.	Reg.No.	Name	08/08	09/08	13/08	14/08	16/08	17/08	19/08	20/08	21/08	22/08	23/08	26/08	27/8	28/08
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	19CS001	Aakash T E	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	19CS002	Achyuth Mahesh Hegde	1	1	2	3	4	4	5	6	7	8	9	10	10	10
3	19CS003	Afsid pasha H P	1	2	2	3	4	5	6	7	8	9	10	11	12	13
4	CS004	Aishwarya B M	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	CS005	Aishwarya C	1	1	1	2	3	4	5	6	7	8	9	10	11	12
6	CS008	Ananya Bhamboge	1	2	3	4	5	6	6	7	8	9	10	11	12	13
7	CS009	Appaiva R shet	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8	CS010	Arshad Ulla Z	1	2	3	4	5	6	7	8	9	10	11	12	13	14
9	CS011	Artee Kumari R	1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	CS012	Ashwini B	1	1	2	3	4	5	6	7	8	9	10	11	12	13
11	CS016	Bhalay Nath singh	1	2	3	4	5	6	7	8	9	10	11	12	13	14
12	CS018	Chandan Kumar C	1	1	1	2	3	3	4	5	6	7	8	9	10	11
13	CS020	Chandini R P	1	1	2	3	4	4	5	6	7	8	9	10	11	12
14	CS021	Charansimha D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	CS022	Chetan S	1	2	3	4	5	5	6	7	8	9	10	11	12	13
16	CS023	Chetan R	1	1	2	3	4	5	6	7	8	9	10	11	11	12
17	CS024	Chetanraj H	1	2	2	3	4	5	6	7	8	9	10	11	12	13
18	CS025	Chiranjeevi V	1	2	3	4	5	6	7	8	9	10	11	12	13	14
19	CS026	Darshan K	1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	CS027	Deepak Jadon	1	2	3	4	5	6	7	8	9	10	10	11	12	13
21	CS029	Dharush S	1	2	3	4	5	6	7	8	9	10	11	11	11	12
22	CS030	Divya S A	1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	CS031	Fozail Ahmed	1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	CS032	Geetansh P	1	1	2	3	4	4	5	6	7	8	9	10	11	12
25	CS034	Hrishith G R	1	1	1	2	3	3	4	4	5	6	7	7	8	8
	No. of Abs.															
	Initials															

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Kanakapura Main Road, Bangalore-560061

ATTENDANCE

Sl. No.	Reg.No.		08/08	09/08	13/08	14/08	16/08	17/08	19/08	20/08	21/08	22/08	23/08	26/08	26/8	28/8
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
26	CS035	Hemanth V	1	2	3	4	5	6	7	8	9	10	11	12	13	14
27	CS037	Iqsa Fathima	1	2	3	4	5	6	7	8	9	10	11	12	13	14
28	CS038	Jagadeesha D A	1	2	3	4	5	6	7	8	9	10	11	12	13	14
29	CS039	Jeevan M	1	2	3	4	5	6	7	8	9	10	11	12	13	13
30	CS040	Jyothishree S R	1	2	3	4	5	5	5	6	7	8	9	10	11	12
31	CS041	Kavana B	1	1	2	3	4	5	5	6	7	8	9	10	11	12
32	CS043	Keerthi Kumari	1	2	3	4	5	6	7	8	9	10	11	12	13	14
33	CS044	Kishan Gowda	1	2	3	4	5	6	7	8	9	10	11	12	13	14
34	CS045	Kavithika N Kaushik	1	2	3	4	5	6	7	8	9	10	11	12	13	14
35	CS042	Keerthi chandra N L	-	-	-	-	1	1	2	3	4	5	6	7	8	9
36		M N Rachana	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37		Mahadev A C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	CS047	Manasa R	1	1	2	3	4	5	6	7	8	9	10	11	12	13
39	CS048	Manohar M	1	2	3	4	5	6	7	8	9	10	11	12	13	14
40	CS049	Manoj M K	1	1	2	3	4	5	6	7	8	9	10	11	12	13
41	CS050	Manoj R	1	1	1	2	3	3	4	5	6	7	7	8	9	10
42	CS051	Meena Monica P	1	2	2	3	4	5	6	7	8	9	10	11	12	13
43	CS085	Spoorthi H M	1	2	3	4	5	6	7	8	9	10	11	12	13	14
44																
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	Initials															

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CITY ENGINEERING COLLEGE

(Doddakallsandra, Off Kanakapura Road, Bangalore-560061)

Department of Chemistry

Faculty Academic File

NAME: Sunitha N

DESIGNATION: Asst. prof

SEMESTER: 01

SECTION: C

SUBJECT NAME & CODE: Engg. Chemistry 18CHE12

ACADEMIC YEAR: 2019-20 (odd SEM)

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CITY ENGINEERING COLLEGE
DEPARTMENT OF .....Chemistry.....

CONTENTS

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CITY ENGINEERING COLLEGE

VISION

Making Remarkable Contribution by Disseminating Knowledge on Emerging Trends in Engineering and Technology through various Programmes, Innovation and Research so as to Excel in Quality both at National and International level and to provide Career Guidance & Training for Employment.

MISSION

M1- To encourage Knowledge Acquisition and Foster Innovation & Research.

M2- To Prepare Students for Immediate Employment, leading to Technological and Socio- economical growth.

M3- To Provide Guidance for a Productive Career under various programmes.

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CITY
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PROGRAM OUTCOMES (PO)

PO1 – Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 – Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 – Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 – Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 – Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 – The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 – Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 – Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 – Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 – Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 – Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 – Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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DEPARTMENT OF CHEMISTRY

VISION

- To convey knowledge on engineering chemistry to stakeholders for engineering applications.

MISSION

- Facilitate the faculty to strengthen their knowledge and skills using ICT tools.
- Motivate and train students in theory and laboratory practices.
- Succeed to deal with societal issues like preserving green environment.

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Academic Calendar of VTU, Belagavi for ODD Semester of 2019-2020 (Jul 2019 – Jan 2020)

	I Sem B. E. / B. Tech. / B. Arch. (Tentative)	III, V & VII Sem B. E. /B. Tech. III, V,VII & IX Sem B. Arch.	III & V Sem MCA	III Sem MBA	III Sem M. Tech.	III Sem M. Arch.
Commencement of ODD Semester	01.08.2019	29.07.2019	29.07.2019	08.08.2019	26.08.2019	08.09.2019
Last Working day of ODD Semester	29.11.2019	30.11.2019	30.11.2019	05.12.2019	23.12.2019	06.01.2020
Practical Examinations	03.12.2019 To 13.12.2019	03.12.2019 To 13.12.2019	03.12.2019 To 07.12.2019	-	-	-
Theory Examinations	16.12.2019 To 04.01.2020	16.12.2019 To 07.02.2020	09.12.2019 To 28.12.2019	09.12.2019 To 04.01.2020	27.12.2019 To 10.01.2020	08.01.2020 To 22.01.2020
Internship Viva-Voce	-	-	-	-	12.01.2020 To 19.01.2020	-
Professional training / Organization study	-	-	-	-	-	-
Commencement of EVEN Semester	27.01.2020	10.02.2020	27.01.2020	27.01.2020	27.01.2020	01.02.2020

NOTE

- **VII Semester B. E / B. Tech** students shall have to undergo **Internship** for a period of four Weeks.
- **I Semester B. E/ B. Tech / B. Arch** Students shall compulsorily undergo **Induction Program** for a period of 3 Weeks (two phases) as per the schedule given by VTU First phase 11 days in first semester and second phase 10 days in second semester.

Accn / All Heads / Exam

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

29/6/19

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REGISTRAR

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDER APPLIED SCIENCE AND HUMANITES 2019-2020(ODD SEM)

August-2019			September-2019		October-2019		November-2019		December-2019	
DAY	DATE	EVENT	DATE	EVENT	DATE	EVENT	DATE	EVENT	DATE	EVENT
JULY 28th MoM ON CURICULLUM STARTING OF HIGHER SEMESTERS(3rd, 5th & 7th sem 29.7.2019 mon)										
					1					
					2	GANDHI JAYANTI				
THU	1	STATRTING OF FIRST SEM			3					
FRI	2				4		1	KANAKADASA RAJYOTSVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTI	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3	FIRST INTERNAL ASSESSMENT 3rd, 5th, 7th semester	8	VIJAYA DASHAMI(DH)	5	SECOND CIE FOR 1st SEM	3	
WED	7	FIRST SEM INDUCTION	4		9		6		4	
THU	8		5		10		7		5	
FRI	9		6		11		8		6	
SAT	10	2nd Satuarday holiday	7		12	2nd satuarday holida	9	2nd satuarday h	7	
SUN	11		8		13		10		8	
MON	12	bakrid(DH)	9		14		11		9	
TUE	13		10	MOHARAM(DH)	15		12		10	THIRD CIE FOR FIRST SEM
WED	14		11		16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANT	13	
SAT	17		14	2nd Saturday	19		16		14	
SUN	18		15		20		17		15	
MON	19	TALENTS DAY	16		21	SECOND INTERNAL ASSESSMENT 3rd, 5th, & 7th semester	18	THIRD INTERNAL TEST ASSRSSMENT 3rd, 5th, & 7 th semesters	16	
TUE	20		17		22		19		17	
WED	21		18		23		20		18	LAB INTERNALS FOR 1ST SEM
THU	22		19		24		21		19	
FRI	23		20		25		22		20	
SAT	24	4th satuarday	21	FIRST CIE FOR FIRST SEM.	26	4th satuarday holiday	23	4th satuarday	21	LAST WORKING DAY 1ST SEM(REVISED)
SUN	25		22		27		24		22	
MON	26		23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26		24	VTU PRACTICAL: 1sT SEMESTER:23.12.19 To 3.01.20 THEORY EXAMS: 1st SEMESTERS: 6.01.20to28.01.2020
WED	28		25		30		27	IAB TESTS 3rd, 5th, & 7th SEMs	25	
THU	29		26		31		28		26	
FRI	30		27				29	Last working day	27	
SAT	31	5th Satuarday	28	4TH satuarday HOLIDAY			30	LAST WORKING DAY 3rd, 5th& 7th SEM	28	
SUN			29							
MON			30							
TUE										

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CITY
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DEPARTMENT OF BASIC SCIENCE

ACADEMIC YEAR 19-20 ODD SEMESTER

CIRCULAR

Ref No: CEC/BS/DAC/ACY/2019-20/OR/01 Date: 25-07-2019

This is to inform the members of Department Advisory Committee that meeting is scheduled on 08-08-2019 at 10: 00 AM in Physics Laboratory.

Agenda:

- Commencement of classes for 1st semester students
- Student Induction Programme for 1st semester students
- Conduction of Talents day
- Organizing value added courses/ certificate courses, seminars & webinars in the curriculum.

Sujatha. K
HOD

Principal
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CITY ENGINEERING COLLEGE

DEPARTMENT OF BASIC SCIENCE

Department Advisory Committee Meeting

Date: 08-08-2019
Time: 10:00 AM
Venue: Physics Laboratory

DAC Members present in the meeting:

Sl. No	Member Name	Designation	Role	Signature
1	Dr. Rajasekar. P	HOD & Professor	Convener	
2	Mrs.Sunitha.N	Assistant Professor	Member	
3	Mrs. Anu Radha U	Assistant Professor	Member	
4	Mrs. Sowmya P	Assistant Professor	Member	Soumya.
5	Dr.Sujatha	HOD & Professor	Member	
6	Mrs.Nagashree. G	Assistant Professor	Member	
7	Mrs.Ashwini Hindiholi	Assistant Professor	Member	
8	Dr.Jyothi	Assosciate Professor	Member	
9	Vanitha G R	Assistant Professor	Member	
10	Mrs. Gayatri annasagaram	Assistant Professor	Member	
11	Mrs.Kalavathi	Assistant Professor	Member	
12	Mrs.Gana Priya	Assistant Professor	Member	
13	Mrs.Reena Patro	Assistant Professor	Member	

Agenda of the Meeting:

- Inauguration programme for 1st semester students on 25h Sep 2019.
- Commencement of orientation Programme from 26th Sep 2019.
- Conduction of Talents day on 19th Aug 2019.
- Classes for 1st semester students will be from 8th Aug 2019.
- Organizing value added courses/ certificate courses in the curriculum like Entrepreneurship and innovation.
- Organizing seminars and webinars.

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Minutes of Meeting:

The members discussed suggestions for improvement and reviewed the meeting agenda.

- The committee decided to organize Certification course on "Communication Proficiency" It was discussed to conduct of Talents day on 19th Aug 2019.
- Committee decided to conduct webinar on Introduction to Research Methodology. Committee members agreed to conduct a seminar on environmental pollution.

Convener
Dr. Rajasekhar. P

HOD
Department of Physics

Principal
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CITY ENGINEERING COLLEGE
TIME TABLE –FIRST SEMESTER AUG – 2019-20
CHEMISTRY CYCLE

SECTION:C **ROOM NO: A004**

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON	CHE	CPS	BREAK	ELN	MAT	LUNCH	←-------CHEL/CPL/EGHL/C1/C2/C3----→		
TUE	ELN	CPS		EME	CHE		MAT	EGH	LIBARARY
WED	CHE	MAT		ELN	EME		←-------CHEL/CPL/EGHL /C2/C3/C1----→		
THU	MAT	CHE		CPS	EGH		←-------CHEL/CPL/EGHL/C3/C1/C2----→		
FRI	EME	ELN		CPS	MAT		EDUSAT/DEP/COLLEGE ACVIVITIES		
SAT	EME	ELN		CHE					

MAT- Dr. Jyothi.P & Prof. Gayathri A
CPS - Prof. Deepak. N.S
EME Prof. Shruthi
CPL- Prof. Ramesh B

CHE - Dr.Rajasekhar.P & Dr.Sunitha.N
ELN-Prof. Arabindo Koti
CHEL - Dr. Rajasekhar.P & Dr. Sunitha.N
EGH- Dr.K.Sujatha & Prof. Nagashree G

PROCTORS – Prof. Sunitha. N & Prof. Gayathri A

HOD

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CITY ENGINEERING COLLEGE
TIME TABLE –FIRST SEMESTER AUG – 2019-20
CHEMISTRY CYCLE

Mrs. Sunitha. N (SN)

DAY	9:00-10:00	10:00-11:00	11:00-11:15	11:15 -12:15	12:15-1:15	1:15-2:00	2:00-3:00	3:00-4:00	4:00-5:00
MON			BREAK			LUNCH			
TUE					C				
WED	C						←----------C2 lab SN+SWM----------→		
THU							←----------C3 lab SN+ANU ----------→		
FRI									
SAT	Kannada (ME, EC, CIVIL)			∅					

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CITY ENGINEERING COLLEGE

DEPARTMENT OF CHEMISTRY

LESSON PLAN FOR ODD SEMESTER FOR ACADEMIC YEAR 2019-2020

Course Title: **Engineering Chemistry**	Course Code : 18CHE12
Total contact hours: L:T:P:S :: 05 (3L+2T)	End Term Marks : 100
Internal Marks : 40	
Semester : I	Academic year : 2019-20.
Lesson plan Author: Dr. P. Rajasekhar & Sunitha. N	Date :10/08/2019

Course Objective:

This course (**18CHE12/22**) will enable students to

- Master the basic knowledge of engineering chemistry for building technical competence in industries, research and development.
- To develop knowledge in the fields of use of free energy in chemical equilibrium, electrochemistry and energy storage systems, Corrosion and metal finishing.
- To understand the importance of energy systems, environmental pollution, waste management, water chemistry, Instrumental methods of analysis and Nanomaterials.

Course Outcomes:

On completion of this course, students will have knowledge in:

CO1: Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy systems.

CO2: Causes & effects of corrosion of metals and control of corrosion: Modification of Surface properties of metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating and electroless plating.

CO3: Production & consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cell. Utilization of solar energy for different useful forms of energy.

CO4: Environmental pollution, waste management and water chemistry.

CO5: Different techniques of instrumental methods of analysis. Fundamental principles of nanomaterials.

MODULE-1

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
1	1	Thermodynamic functions: Definitions of free energy and entropy. Cell potential, derivation of Nernst equation for single-electrode potential	L3	CO1
	2	Numerical problems on E, E_0, and E_{cell}.	R,U	CO1
	3	Reference electrodes: Introduction, construction, working and	R,U	CO1

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		electrode, and determination of pH using glass electrode.		
2	1	Electrolyte concentration cells, numerical problems.	R,U	CO1
	2	**Energy storage systems:** Introduction, classification --primary, secondary and reserve batteries.	R,U	CO1
	3	Construction, working and applications of Ni-MH and Li-ion batteries.	R,U	CO1

MODULE-2

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
4	1	**Corrosion** Introduction, Electrochemical theory of corrosion	R,U	CO2
	2	Factors affecting the rate of corrosion ratio of anodic to cathodic areas, nature of metal, nature of corrosion product, nature of medium – pH, conductivity and temperature.	R,U	CO2
	3	Types of corrosion - Differential metal and Differential aeration - pitting and water line)	R,U	CO2
	4	Corrosion control: Anodizing – Anodizing of aluminium, Cathodic protection	R,U	CO2
5	1	sacrificial anode and impressed current methods, Metal coatings - Galvanization.	R,U	CO2
	2	**Metal finishing:** Introduction, Technological importance. Electroplating: Introduction, principles governing electroplating- Polarization.	R,U	CO2
	3	decomposition potential and overvoltage	R,U	CO2
	4	Electroplating of chromium (hard and decorative).	R,U	CO2
6	1	electroless plating of copper	R,U	CO2
	2	Electroless plating: Introduction, electroless plating of nickel	R,U	CO2
	3	distinction between electroplating and electroless plating processes.	R,U	CO2
	4	**Chemical Fuels:** Introduction, classification, definitions of CV, LCV, and HCV, determination of calorific value of solid/liquid fuel using bomb calorimeter	R,U	CO3
	5	numerical problems	R,U	CO3

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MODULE-3

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
7	1	Knocking of petrol engine – Definition, mechanism, ill effects and prevention.	R,U	CO3
	2	Power alcohol, unleaded petrol and biodiesel	R,U	CO3
	3	**Solar Energy**: Photovoltaic cells- introduction, construction and working of a typical PV cell.	R,U,E	CO3
	4	**Fuel Cells:** Introduction, differences between conventional cell and fuel cell, limitations & advantages.	R,U	CO3
8	1	Construction, working & applications of methanol-oxygen fuel cell with H_2SO_4 electrolyte	R,U	CO3
	2	solid oxide fuel cell (SOFCs).	R,U	CO3
	3	**Solar Energy**: Photovoltaic cells- introduction, construction and working of a typical PV cell	R,U	CO3
	4	Preparation of solar grade silicon by Union Carbide Process/Method. Advantages & disadvantages of PV cells.	R,U	CO3
	1	**Environmental Pollution:** Air pollutants: Sources, effects and control of primary air pollutants: Carbon monoxide.	R,U,C	CO4
9	2	Oxides of nitrogen and sulphur.	R,U, A1	CO4
	3	hydrocarbons, Particulate matter	R,U	CO4
	4	Carbon monoxide, Mercury	R,U	CO4
	5	Lead, Secondary air pollutant: Ozone, Ozone depletion.	R,U	CO4

MODULE-4

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
10	1	**Waste Management:** Solid waste, e-waste & biomedical waste	R,U,	CO4
	2	Sources, characteristics & disposal methods (Scientific land filling, composting, recycling and reuse).	R,U	CO4
	3	**Water Chemistry:** Introduction, sources and impurities of water	R,U	CO4
	4	boiler feed water, boiler troubles with disadvantages	R,U,	CO4
11	1	scale and sludge formation	R,U	CO4
	2	boiler corrosion (due to dissolved O_2, CO_2 and $MgCl_2$)	R,U	CO4
	3	Sources of water pollution, Sewage	R,U	CO4

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	4	Definitions of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD	R,U	CO4
12	1	numerical problems on COD	R,U	CO4
	2	Chemical analysis of water: Sulphates (gravimetry)	R,U	CO4
	3	Fluorides (colorimetry).	R,U	CO4
	4	Sewage treatment: Primary, secondary (activated sludge) and tertiary methods	R,U	CO4

MODULE-5

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
13	1	Softening of water by ion exchange process	R,U,A2	CO4
	2	Desalination of sea water by reverse osmosis.	R,U	CO4
	3	**Instrumental methods of analysis:** Theory, Instrumentation and applications of Colorimetry.	R,U	CO5
	4	Flame Photometry	R,U	CO5
14	1	Atomic Absorption Spectroscopy	R,U,E	CO5
	2	Potentiometry	R,U	CO5
	3	Conductometry: (Strong acid with a strong base, weak acid with a strong base	R,U	CO5
	4	mixture of strong acid and a weak acid with a strong base	R,U	CO5
15	1	Introduction, size dependent properties (Surface area, Electrical, Optical, Catalytic and Thermal properties)	R,U	CO5
	2	Synthesis of nanomaterials: Top down and bottom up approaches.	R,U,A1,C	CO5
	3	Synthesis by Sol-gel	R,U	CO5
	4	precipitation	R,U	CO5
16	1	chemical vapour deposition	R,U	CO5
	2	Nanoscale materials: Fullerenes	R,U	CO5
	3	Carbon nanotubes	R,U	CO5
	4	graphenes - properties and applications	R,U,A1,C	CO5

Bloom's Taxonomy Level

R-Remembering U-Understanding A1-Applying A2-Analysing E-Evaluating C-Creating

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Text Books:

1. P.C. Jain & Monica Jain. **"Engineering Chemistry"**. Dhanpat Rai Publications, New Delhi (2015 Edition).
2. S. S. Dara. A textbook of Engineering Chemistry. 10th Edition. S Chand & Co., Ltd., New Delhi, 2014.
3. Physical Chemistry, by P. W. Atkins, Oxford Publications (Eighth edition-2006).

Reference books:

1. O.G. Palanna. **"Engineering Chemistry"**. Tata McGraw Hill Education Pvt. Ltd. New Delhi, Fourth Reprint (2015- Edition).

2. R.V. Gadag & A. Nityananda Shetty., **"Engineering Chemistry"**. I K International Publishing House Private Ltd. New Delhi (2015- Edition).

3. **"Wiley Engineering Chemistry"**. Wiley India Pvt. Ltd.:New Delhi. Second Edition-2013.

4. B. Jaiprakash, R. Venugopal, Sivakumaraiah and Pushpa Iyengar, Chemistry for Engineering Students, Subhash Publications, Bengaluru, (2015- Edition).

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Kanakapura Main Road, Bangalore-560061

B.E.SYLLABUS FOR 2018-2022

Engineering Chemistry

(Common to all branches)
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the Academic Year 2018-19)

Course Code: 18CHE12/22
Contact Hours/Week: 05 (3L+2T)
Total Hours: 50 (8L+2T per module)
Semester: I/II

CIE Marks: 40
SEE Marks: 60
Exam. Hours: 03
Credits: 04(3:2:0)

Course Learning Objectives: This course (18CHE12/22) will enable students to

- Master the basic knowledge of engineering chemistry for building technical competence in industries, research and development.
- To develop knowledge in the fields of use of free energy in chemical equilibrium, electrochemistry and energy storage systems, Corrosion and metal finishing.
- To understand the importance of energy systems, environmental pollution,waste management, water chemistry, Instrumental methods of analysis and Nanomaterials.

MODULES

MODULE- I: Electrochemistry and Energy storage systems

Use of free energy in chemical equilibria: Thermodynamic functions: Definitions of free energy and entropy. Cell potential, derivation of Nernst equation for single electrode potential, numerical problems on E, E^0, and E_{cell}.

Electrochemical Systems: Reference electrodes: Introduction, construction, working and applications of Calomel electrode. Ion-selective electrode – Definition, construction and principle of Glass electrode, and determination of pH using glass electrode. Electrolyte concentration cells, numerical problems.

Energy storage systems: Introduction, classification - primary, secondary and reserve batteries. Construction, working and applications of Ni-MH and Li-ion batteries.

(RBT Levels: L3)

MODULE-II: Corrosion and Metal finishing

Corrosion: Introduction, Electrochemical theory of corrosion, Factors affecting the rate of corrosion: ratio of anodic to cathodic areas, nature of metal, nature of corrosion product, nature of medium – pH, conductivity and temperature. Types of corrosion - Differential metal and Differential aeration - pitting and water line). Corrosion control: Anodizing – Anodizing of aluminium, Cathodic protection - sacrificial anode and impressed current methods, Metal coatings - Galvanization.

Metal finishing: Introduction, Technological importance. Electroplating: Introduction, principles governing electroplating-Polarization, decomposition potential and overvoltage. Electroplating of chromium (hard and decorative). Electroless plating: Introduction, electroless plating of nickel & copper, distinction between electroplating and electroless plating processes.

(RBT Levels: L1 & L2)

MODULE-III : Energy Systems

Chemical Fuels: Introduction, classification, definitions of CV, LCV, and HCV, determination of calorific value of solid/liquid fuel using bomb calorimeter, numerical problems. Knocking of petrol engine – Definition, mechanism, ill effects and prevention. Power alcohol, unleaded petrol and

biodiesel.

Fuel Cells: Introduction, differences between conventional cell and fuel cell, limitations & advantages. Construction, working & applications of methanol-oxygen fuel cell with H_2SO_4 electrolyte, and solid oxide fuel cell (SOFCs).

Solar Energy: Photovoltaic cells- introduction, construction and working of a typical PV cell. Preparation of solar grade silicon by Union Carbide Process/Method. Advantages & disadvantages of PV cells.

(RBT Levels: L3)

MODULE IV: Environmental Pollution and Water Chemistry

Environmental Pollution: Air pollutants: Sources, effects and control of primary air pollutants: Carbon monoxide, Oxides of nitrogen and sulphur, hydrocarbons, Particulate matter, Carbon monoxide, Mercury and Lead. Secondary air pollutant: Ozone, Ozone depletion.

Waste Management: Solid waste, e-waste & biomedical waste: Sources, characteristics & disposal methods (Scientific land filling, composting, recycling and reuse).

Water Chemistry: Introduction, sources and impurities of water: boiler feed water, boiler troubles with disadvantages -scale and sludge formation, boiler corrosion (due to dissolved O_2, CO_2 and $MgCl_2$). Sources of water pollution, Sewage, Definitions of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD, numerical problems on COD. Chemical analysis of water: Sulphates (gravimetry) and Fluorides (colorimetry). Sewage treatment: Primary, secondary (activated sludge) and tertiary methods. Softening of water by ion exchange process. Desalination of sea water by reverse osmosis.

(RBT Levels: L3)

MODULE-V: Instrumental methods of analysis and Nanomaterials

Instrumental methods of analysis: Theory, Instrumentation and applications of Colorimetry, Flame Photometry, Atomic Absorption Spectroscopy, Potentiometry, Conductometry (Strong acid with a strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base).

Nanomaterials: Introduction, size dependent properties (Surface area, Electrical, Optical, Catalytic and Thermal properties). Synthesis of nanomaterials: Top down and bottom up approaches, Synthesis by Sol-gel, precipitation and chemical vapour deposition, Nanoscale materials: Fullerenes, Carbon nanotubes and graphenes – properties and applications.

(RBT Levels: L1 & L2)

Course Outcomes: On completion of this course, students will have knowledge in:

CO1: Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy systems.

CO2: Causes & effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating and electroless plating.

CO3: Production & consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.

CO4: Environmental pollution, waste management and water chemistry.

CO5: Different techniques of instrumental methods of analysis. Fundamental principles of nanomaterials.

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Assignment -1

Module -1 Electrochemistry & Energy Storage Systems

Electrochemistry:-

1.Derive Nernst Equation for Single electrode potential?
2.Define reference electrode and Ion selective electrode?
3.Explain construction &working of calomel electrode?
3.Explain construction &working of concentration cells?
4.Explain the construction & working of Glass electrode?
5.Explain the determination of $_pH$ using Glass electrode?

ENERGY STORAGE SYSTEMS:-

1.Write a note on classification of batteries?
2. Explain the construction & working of Ni-MH battery?
3.Write a note on Li-ion batteries?

Assignment -2

Module -2 Corrosion & Metal finishing

Corrosion:-

1.Explain the electrochemical theory of corrosion taking Fe as example?
2.Write a note on factors affecting the rate of corrosion
i) Ratio of anodic to cathodic areas ii) $_pH$
3. Write a note on factors affecting the rate of corrosion
i) Nature of corrosion product ii)conductivity iii) Temperature
4.Explain about Differential metal corrosion?
5.Explain about Differential aeration corrosion ? (pitting & Water-line)
6.Write a note on Anodizing?
7. Write a note on galvanization?
8.Define cathodic protection? Explain about sacrificial anodic method?
9.Explain about impressed current method?

Metal Finishing:-

1.Write a note on
i)polarization ii) Decomposition potential iii) over-voltage
2.Write a note on Technological importance of Metal Finishing?
3. Explain the electroplating of Chromium?

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4.Mention the differences between between electroplating & electroless plating?
5. Explain the electrolessplating of Copper?
6. Explain the electrolessplating of Nickel?

Assignment -3

Module -3 **Fuels & Solar Energy**

Fuels:-

1.Explain the classification of fuels?
2.Explain the determination of calorific value of fuels using Bomb calorimeter?
3.Define octane number & cetane number?
4.Explain the mechanism of knocking?
5. Write a note on unleaded petrol?
6.Write a note on power alcohol?
7.Write a note on biodiesel?

FUEL CELLS:-

1. Explain the construction & working of $CH_3OH - O_2$ fuel cell?
2.Mention the differences between conventional cell and fuel cell?
3. Write a note on solid oxide fuel cell?

Solar Energy:-

1. Explain construction & working of photovoltaic cell?
2. Explain preparation of solar grade cell by union carbide process?
3. Write a note on advantages and disadvantages of fuel cell?

Assignment -4

Water Chemistry:-

1.Explain scale & sludge formation in boilers?
2.Define COD? Explain the determination of COD of waste water sample?
3.Explain softening of water by Ion –exchange method?
4.Explain desalination of water by Reverse Osmosis?
5.Write a note on colorimetry analysis of fluorides?
6. Write a note on gravimetric estimation of sulphates?
7.Write a note on boiler corrosion?
8.Write a note on activated sludge method?

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Environmental Pollution:-

1. Write a note on carbon dioxide?
2. Write a note on carbon mono oxide?
3. Write a note on oxides of nitrogen?
4. Write a note on oxides of sulphur?
5. Write a note on ozone depletion?
6. Write a note on e-waste management?
7. Write a note on mercury?
8. Write a note on lead?
9. Write a note on biomedical waste management?
10. Write a note on lead?

Assignment -5

Module-5

Instrumental method of analysis:-

1. Explain instrumentation and application of flame photometry?
2. Explain instrumentation and application of potentiometry?
3. Explain instrumentation and application of conductometry?
4. Explain instrumentation and application of Atomic absorption spectroscopy?

Nano Materials:-

1. Explain the sysnthesis of nanomaterials by sol-gel method?
2. Explain the sysnthesis of nanomaterials by precipitation method?
3. Explain the sysnthesis of nanomaterials by chemical vapour deposition?
5. Write a note on graphene?
6. Write a note on carbon Nano tubes?
7. Write a note on Fullerenes?

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I Internal

Sub:- Engg. Chemistry 18CHE22
Branch:- CS, ME, EC, CV
Sem & Sec:- I & C

Date:- 19/09/2019
Time:-10.30-12.00 P.M
Max.Marks-50

Q.No.	ANSWER ALL QUESTIONS	MARKS	CO'S	BT Level
	PART-A			
1.a)	What is single electrode potential? Derive Nernst equation for single electrode potential?	6	CO1	BT1
b)	Outline construction & working of calomel electrode?	4	CO1	BT2
	OR			
2.a)	Build construction & working of Ni-MH battery?	4	CO1	BT3
b)	Build construction & working Li-Ion battery?	6	CO1	BT3
	PART-B			
3.	Build construction and working of Glass electrode?	10	CO1	BT2
	OR			
4.a)	Electrochemical cell consists of Cu electrode dipped in 0.5M $CuSO_4$& Ag electrode dipped in 0.25M $AgNO_3$. Write cell scheme, half cell and net cell reactions. Also calculate emf. SRP of Cu & Ag are 0.34&0.8V	6	CO1	BT5
b)	The EMF of the cell $Ag/AgCl_{(0.1M)//}AgCl_{(XM)/}Ag$ is 0.07V. Find X at 298 K?	4	CO1	BT5
	PART-C			
5.a)	Define Concentration cell? Calculate the potential of the cell at 298K $Ag/AgCl_{(0.005M)//}AgCl_{(0.5M)/}Ag$.	6	CO1	BT5
b)	Define reference electrode and Ion selective electrode?	4	CO1	BT1
	OR			
6.a)	Write a note on factors affecting the rate of corrosion i) Ratio of anodic to cathodic areas ii) PH	6	CO2	BT2
b)	Write a note on factors affecting the rate of corrosion i) Nature of corrosion product ii)Temperature	4	CO2	BT2

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PART-D

7.a)	Explain about Differential aeration corrosion?	4	CO2	BT2
b)	Explain galvanization process of alumimium?	6	CO2	BT2

OR

8.	What is metallic corrosion? Describe the electrochemical theory of corrosion taking iron as an example	10	CO2	BT1

PART-E

9.a)	Explain sacrificial anodic method and impressed current method?	7	CO2	BT2
b)	Summarize on Anodizing of aluminium?	3	CO2	BT2

OR

10.	Explain: (i) Differential metal corrosion & (ii) Water-line corrosion	10	CO2	BT5

Course outcomes:-

CO1--- Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy systems.

CO2-- Causes and effects of corrosion of metals and control of corrosion.

Blooms Taxanomy:-

BT1—Knowledge BT2---Understand BT3---Appiy BT5----Evaluate.

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DEPARTMENT OF Chemistry

SCHEME FOR VALUATION

Internal Test I

Semester & Section: I, C

Date: 19/9/19

Question No.	Details of the answer	Marks Distribution	Total Marks
1 a.	Def.	1M	
	$\Delta G = -nFE$	2M	6M
	$\Delta G^\circ = -nFE^\circ$		
	$\Delta G = \Delta G^\circ + RT \ln k_c$ + Substitution	1+1	
	$E = E^\circ + \frac{0.0591}{n} \log [M^{n+}]$	1M	
b.	Fig + Expl. + reactions + Emf.		
	Anode :- $2Hg + 2Cl^- \longrightarrow Hg_2Cl_2 + 2e^-$	1+1+1+1	4M
	Cathode :- $Hg_2Cl_2 + 2e^- \longrightarrow 2Hg + 2Cl^-$		
	$E = E^\circ - 0.0591 \log [Cl^-]$		
2 a.	Fig + Expl + reactions		
	Anode :- $MH_2 + OH^- \rightleftharpoons M + H_2O + 2e^-$	1+1+2	4M
	Cathode :- $NiO(OH) + H_2O + 2e^- \rightleftharpoons Ni(OH)_2 + OH^-$		
b.	Fig + Expl + reaction + Appl.		
	$Li\text{-}C_6 \rightleftharpoons Li^+ + 1e^- + 6C$		
	$CoO_2 + Li^+ + 1e^- \rightleftharpoons LiCoO_2$		
3.	Fig + E_{cell} + Expl. + E_b	1+2+2	10M
	$E_{cell} = E_a$ $E_a = E_b + E_{Ag\|AgCl} + E_{asym.}$	1M	

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DEPARTMENT OF .....

SCHEME FOR VALUATION

Internal Test .....

Semester & Section:

Date:

Question No.	Details of the answer	Marks Distribution	Total Marks
	$E_c = L_1 - 0.0591\ pH$	2M	
	construction fig + Eqn	1M+1M	
4. a.	$E_{cell} = E^\circ_{cell} + \frac{0.0591}{n} \log \frac{[\text{metal ion at cath}]}{[\text{metal ion at anode}]}$	1M	
	$= 0.46 + \frac{0.0591}{2} \log \frac{(0.25)^2}{(0.5)}$		
	$= 0.46 + 0.02955\ (-0.30)$	2M	6M
	$= 0.46 - 0.00266 = 0.433V$		
	Anode: $Cu \longrightarrow Cu^{2+} + 2e^-$	1M	
	Cathode: $2Ag^+ + 2e^- \longrightarrow 2Ag$		
	cell Rep: $Cu \mid Cu^{2+}_{(0.5)} \parallel Ag^+_{(0.25)} \mid Ag$	1M	
	$E^\circ_{cell} = E^\circ_C - E^\circ_A$		
	$= 0.8 - 0.34 = 0.46V$	1M	
b.	$E_{cell} = \frac{0.0591}{n} \log \left(\frac{C_2}{C_1}\right)$	1M	
	$0.07 = \frac{0.0591}{1} \log \left(\frac{x}{0.1}\right)$	1M	
	$\frac{0.07}{0.0591} = \log x - \log 0.1$		

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Internal Test .....

Semester & Section:

Date:

Question No.	Details of the answer	Marks Distribution	Total Marks
	$1.1644 = 10^{jx} - (-1)$	1M	
	$1.1644 - 1 = 10^{jx}$		4M
	$10^{jx} = 0.1644$		
	$x = 1.5249\,M$	1M	
5. a.	Def.	2M	
	$E = \frac{0.0591}{n} \log\left(\frac{c_2}{c_1}\right)$	1M	
	$= \frac{0.0591}{1} \log\left(\frac{0.5}{0.005}\right)$	2M	6M
	$= 0.1182\,V$	1M	
b.	Def.	2x2	4M
6 a.	Expl. (ii) Expl.	3x2	6M
b.	Expl. ii) Expl.	2x2	4M

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Internal Test .....

Semester & Section:

Date:

Question No.	Details of the answer	Marks Distribution	Total Marks
7 a.	Fig. + Expl.	2+2	4m.
b.	fig. + Expl.	3+3	6m.
8.	$Fe \xrightarrow{Expl.} Fe^{2+} + 2e^-$	5M	10M
	$O_2 + 2H_2O + 4e^- \longrightarrow 4OH^-$		
	$2H_2O + 2e^- \longrightarrow H_2 + 2OH^-$	5M	
	$2H^+ + 2e^- \longrightarrow H_2$		
	$Fe(OH)_2 + O_2 + (n-2)H_2O \longrightarrow Fe_2O_3 \cdot nH_2O$		
9. a.	Fig. + Expl. + fig. + Expl.	2+2 1+2	7m.
b.	fig. + Expl.	1+3	4m.
10.	Expl. + Fig. + reaction	2+2+1	10m.
	$Fe \longrightarrow Fe^{2+} + 2e^-$		
	$O_2 + 2H_2O + 4e^- \longrightarrow OH^-$	Em.	
11)	Expl. + fig. + reaction	2+2+1	

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II Internal

Course:- Engg. Ghemistry 18CHE12
Programme:- CS, ME,CV,EC
Sem & Sec:- I, C

Date:- 05/10/2019
Time:-10.30-12.00
Max.Marks-50

Q.No.	ANSWER ALL QUESTIONS	MARKS	CO's	BT Level
	PART-A			
1.a)	Outline technological importance of metal finishing?	4	CO2	BT2
b)	Develop electroplating process of hard chromium with reactions?	6	CO2	BT6
	OR			
2.a)	Create electroless plating of nickel with suitable reactions?	6	CO2	BT6
b)	In a COD test 30.2 cm^3 and 14.5 cm^3 of 0.05N FAS solution are required for blank and sample titration respectively. The volume of test sample used was 25 cm^3. Calculate COD of sample titration?	4	CO2	BT5
	PART-B			
3.a)	Explain desalination of water by reverse osmosis?	4	CO4	BT5
b)	Explain procedure, principle & Calculation for COD estimation?	6	CO4	BT5
	OR			
4.a)	Summarize on Activated sludge method?	4	CO4	BT2
b)	Write 6 Differences between electroplating and electroless plating process?	6	CO4	BT5
	PART-C			
5.	Summarize principles governing electroplating process such as polarization, over potential and decomposition potential?	10	CO2	BT2
	OR			
6.a)	Define knocking & its mechanism with ill effects?	6	CO3	BT1
b)	Outline on biodiesel?	4	CO3	BT2
	PART-D			
7.a)	Brief power alcohol?	4	CO3	BT1
b)	When 0.935g of fuel is subjected for complete combustion in excess of oxygen the increase in temperature of water in a calorimeter containing 1240g of water was 2.35°C.Evaluate HCV, LCV of the fuel, if water equivalent of calorimeter is 130g. Given specific heat of steam=2454J./Kg, specific heat of water is 4.187 J/g?K and % of H_2 in coal sample is 5.8	6	CO3	BT2

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OR

8.	Build determination of calorific value of solid fuel using bomb calorimeter with formula and mention the terms used in the formula?	10	CO3	BT3

PART-E

9.a)	Define NCV & GCV	6	CO4	BT1
b)	Write a note on anti knocking agents?	4	CO4	BT2

OR

10.	Define Solar cell and Build construction and working of photovoltaic cell with its advantages and disadvantages?	10	CO3	BT3

Course outcomes:-

CO2-- Modification of surface properties of metals to develop resistance to corrosion, wear, Tear, impact etc. by electroplating and electrolessplating.

CO3 – Production and comsumption of energy for industrialization of country and living standards of people. Utilization of solar energy for different useful forms of energy.

CO4- Water chemistry

Blooms Taxanomy:-

BT1--Knowledge. BT2---Understand . BT3---Apply . BT4--Analyzing . BT5----Evaluate .

BT6-- creating.

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DEPARTMENT OF Chemistry

SCHEME FOR VALUATION

Internal Test II

Semester & Section: I, C.

Date: 5/10/19.

Question No.	Details of the answer	Marks Distribution	Total Marks
1. a.	Any 4 technological importance	1x4	4M.
b.	Pre treating of object.	1M.	
	composition of plating baths with reaction	4M	6M
	Application	1M	
2. a.	Catalytic activation of object	1M	
	composition of plating baths with reactions	5M	6M.
b.	1ml of 1 N FAS = 8 mg of O_2.		
	(30.2 - 14.5) ml of 0.05N FAS = ?	2M	
	8 6.28 mg of O_2		4M.
	25ml of waste water = 6.28 mg of O_2.		
	1000ml of waste water = ?		
	$\frac{1000 \times 6.28}{25} = 251.2$ mg of O_2/L	2M	
3. a.	Def. of desalination.	1M.	
	Fig. + Expl.	2+1 M	4M.
b.	Procedure, principle + cal.	2+2+2	6M.
4.	Fig. + Expl.	2+2	4M

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DEPARTMENT OF .....

SCHEME FOR VALUATION

Internal Test .....

Semester & Section:

Date:

Question No.	Details of the answer	Marks Distribution	Total Marks
b.	6 differences b/w electroplating & electroless plating	1×6	6M.
5.	Expl. Decomposition potential + over voltage + polarization.	4+3+3	10M.
6. a.	Def. + Mechanism + ill effects	2+3+1	6M
b.	Expl.	4	4M
7. a.	Expl.		4M.
b.	$HCV = \frac{(W+w) \times s \times (t_2 - t_1)}{m}$		
	$= \frac{(1240+130) \times 2.35 \times 4.187}{0.935 \times 10^{-3}}$	4M	6M
	$= 14417.16$ KJ/Kg.		
	$LCV = 14417.76 - 0.09 \times 5.8 \times 2454$	2M	
	$= 13136.174$ KJ/Kg.		

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Internal Test .....

Semester & Section:

Date:

Question No.	Details of the answer	Marks Distribution	Total Marks
8.	Fig. + Expl + formula + terms	2+4+2+2	10M.
9. a.	Definitions	3M x 2	6M.
b.	Anti knocking agents examples & its importance.	4	4M.
10.	Fig + Expl. + Advantages + disadvantages	2+4+2+2	10M

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III Internal

Course:- Engg. Chemistry 18CHE12
Programme:- CS, ME,CV,EC
Sem & Sec:- I, C

Date:- 12/12/2019
Time:-10.30-12.00 PM
Max.Marks-50

Q.No	ANSWER ALL QUESTIONS	MARKS	CO'S	BT Level
	PART-A			
1.a)	Show properties and application of fullerene?	4	CO5	BT2
b)	Explain the sources, effects and control of Hg pollution?	6	CO4	BT2
	OR			
2.a)	Relate about scale and sludge formation in boilers?	6	CO4	BT2
b)	Explain the sources, effects and control of Pb pollution?	4	CO4	BT1
	PART-B			
3.a)	Elaborate properties and application of carbon nano tubes?	4	CO5	BT6
b)	Explain synthesis of nano materials by chemical vapour deposition?	6	CO5	BT2
	OR			
4.a)	Explain the causes, effects and disposal methods of e-waste?	5	CO4	BT2
b)	Explain the sources, effects and control of CO_2 pollution?	5	CO4	BT6
	PART-C			
5.	Explain synthesis of nano materials by sol-gel method?	10	CO5	BT2
	OR			
6.a)	Build the construction & working of $CH_3OH - O_2$ fuel cell?	6	CO3	BT3
b)	Recall the differences between conventional cell and fuel cell?	4	CO3	BT1
	PART-D			
7.a)	Build the construction & working of solid oxide fuel cell?	4	CO3	BT3
b)	Outline instrumentation of potentiometry?	6	CO5	BT2
	OR			
8.	Explain the theory and instrumentation of conductometry?	10	CO5	BT2

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PART-E

9.a)	Write a note on properties of nano particles a) Electrical property b) Optical property?	5	CO5	BT2
b)	Elaborate properties and application of graphene?	5	CO5	BT6
	OR			
10.	Explain the theory and instrumentation of colorimetry?	10	CO5	BT2

Course outcomes:-

CO4-- waste management, water chemistry

CO5 – Fundamental principles of nano materials, different techniques of instrumental methods of analysis.

Blooms Taxanomy:-

BT1—Knowledge, BT2---Understand , BT3---Apply , BT4—Analyzing , BT5----Evaluate ,

BT6-- creating.

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DEPARTMENT OF ..... Chemistry .....

SCHEME FOR VALUATION

Internal Test ..... III .....

Semester & Section: I, C

Date: 12/12/19.

Question No.	Details of the answer	Marks Distribution	Total Marks
1. a.	Properties, application	2×2	4m.
b.	Sources, effect, control of Hg.	3×2	6m.
2. a.	Def. + formation + disadvantages	3×2	6m.
b.	Sources, effect, control of Pb	1+2+1	4m.
3 a.	Structure + properties + application	1+1+2	4m.
b.	Synthesis + fig.	5+1	6m.
4. a.	Causes + effects + disposal e-waste	1+1+2	4m.
b.	Source + Effect + control CO_2.	1+2+2	5m.
5.	Synthesis + fig + reactions.	2+2+4	10m.
6. a.	Fig. + Expl. + reactions	2+2+2	6m.
b.	Any 4 differences	1×4	4M
7. a.	Fig. + Expl + reactions	2+2+2	4m.
b	Instrumentation		6M

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DEPARTMENT OF .....

SCHEME FOR VALUATION

Internal Test .....

Semester & Section:

Date:

Question No.	Details of the answer	Marks Distribution	Total Marks
8.	Theory + Instrumentation.	5+5	10 M
9 a.	Electrical Property, optical property	~~5~~ $2\frac{1}{2}\times2$	5M
b.	Properties + application	$2\frac{1}{2}\times2$	5m.
10.	Theory + Instrumentation.	5x2	10 m.

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Model Question Paper-2 with effect from 2018-19
(CBCS Scheme)

USN | | | | | | | | | | |

18CHE12/22

First/Second Semester B.E.Degree Examination
Engineering Chemistry
(Common to all Branches)

Time : 3 Hrs Max.Marks:100

Note: Answer any FIVE full questions, choosing one full question from each module

Module-I

1. a. What is single electrode potential? Derive Nernst equation for single electrode potential. **(6 Marks)**

   b. Calculate the emf of a Cd-Cu cell in which Cd is in contact with 0.002 M $CdSO_4$ and Cu in contact with 0.02 M CuSO4 solution. The standard emf of the cell is 0.74 V at 298 K **(7 Marks)**

   c. Explain the construction and working of Ni-MH battery, mention its applications. **(7 Marks)**

OR

2. a. Explain the construction and working of Li-ion battery. Mention their advantages and applications. **(7 Marks)**

   b. What are primary and secondary batteries? Explain with examples. **(6 Marks)**

   c. A concentration cell was constructed by immersing two silver electrodes in 0.05 M and 1M $AgNO_3$ solutions. Give the cell representation, write the cell reactions and calculate the emf of the cell **(7 Marks)**

Module-II

3. a. Explain: (i) Water-line corrosion & (ii) Pitting corrosion. **(6 Marks)**

   b. Explain the process of (i) galvanization & (ii) Anodizing **(7 Marks)**

   c. What is electrolessplating? Explain the electrolessplating of nickel. **(7 Marks)**

OR

4. a. What is meant by metal finishing? Mention (any 6) technological importance of metal finishing. **(7 Marks)**

   b. Define the terms (i) Polarization, (ii) Decomposition potential & (iii) Over voltage. **(6 Marks)**

   c. What is cathodic protection? Explain (i) Sacrificial anodic & (ii) Impressed current methods **(7 Marks)**

Module-III

5. a. What are chemical fuels? How are they classified? (6 Marks)
   b. What are fuel cells? How does a fuel cell differ from a battery? Give their advantages & disadvantages. (7 marks)
   c. Explain the preparation of solar grade silicon by union carbide process. (7 marks)

OR

6. a. What are PV cells? Mention their advantages and limitations. (6 marks)
   b. 0.85 g of coal sample (carbon 90%, H_2 5% and ash 5%) was subjected to combustion in a Bomb calorimeter. Mass water taken in the calorimeter was 2000 g and the water equivalent of calorimeter was 600 g. The rise in temperature was found to be 3.5°C. Calculate gross and net calorific values of the sample. Latent heat of steam =2457KJ/Kg. (8 Marks)
   c. Write a note on (i) Power alcohol & (ii) Unleaded petrol (6 Marks)

Module-IV

7 a. What are the causes, effects and disposal methods of e-waste? (7 Marks)
   b. What are the sources, effects and control of mercury pollution? (7 Marks)
   c. In a COD test 30.2 cm^3 and 14.5 cm^3 of 0.05 N FAS solution are required for blank and sample titration respectively. The volume of the test sample used was 25 cm^3. Calculate the COD of the sample solution. (6 Marks)

OR

8. a. Explain the softening of water by ion exchange method. (6 Marks)
   b. Explain the activated sludge treatment of sewage of water. (7 Marks)
   c. Explain the mechanism of photochemical smog. (7 Marks)

Module-V

9. a. Explain the theory, instrumentation and applications of atomic absorption spectroscopy. (7 Marks)
   b. Explain the theory and instrumentation of potentiometry (7 Marks)
   c. Explain the synthesis of nano-material by sol-gel technique. (6 Marks)

OR

10. a. Write a note on fullerenes. Mention their applications. (7 Marks)
    b. What are nano-materials? Explain the synthesis of nano-materials by chemical vapor deposition. (7 Marks)
    c. Explain the theory and instrumentation of colorimetry. (6 Marks)

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Model Question Paper-1 with effect from 2018-19
(CBCS Scheme)

USN | | | | | | | | | | |

18CHE12/22

First/Second Semester B.E.Degree Examination
Engineering Chemistry

(Common to all Branches)

Time : 3 Hrs Max.Marks:100

Note: Answer any FIVE full questions, choosing one full question from each module

Module-1

1. a. Define the terms: (i) Free energy, (ii) Entropy & (iii) Cell potential (6 Marks)
   b. What are concentration cells? The cell potential of Cu concentration cell $Cu/CuSO_4$ (0.005M) // $CuSO_4$ (X)/ Cu is 0.0295 V at 25° C. Write the cell reaction and calculate the value of X. (7 Marks)
   c. What are batteries? Explain the construction and working of Li-ion battery, mention its applications. (7 Marks)

OR

2. a. Write short notes on primary, secondary and reserve batteries. (6 Marks)
   b. Explain the construction and working of Ni-MH battery. Mention its applications. (7 Marks)
   c. For the cell, Fe/Fe^{2+} (0.01M)//Ag^{+} (0.1M)/Ag write the cell reaction and calculate the emf of the cell at 298K, if standard electrode potentials of Fe and Ag electrodes are -0.44V and 0.8 V respectively. (7 Marks)

Module-2

3. a. What is metallic corrosion? Describe the electrochemical theory of corrosion, taking iron as an example. (7 Marks)
   b. Explain: (i) Differential metal corrosion & (ii) Water-line corrosion (6 Marks)
   c. What is electroplating? Explain the electroplating of chromium (7 Marks)

OR

4. a. What is meant by metal finishing? Mention (any five) technological importance of metal finishing. (6 Marks)
   b. What is electrolessplating? Explain the electrolessplating of copper. (8 Marks)
   c. Explain the factors affecting the rate of corrosion (i) Nature of corrosion product, (ii) Ratio of anodic to cathodic areas & (iii) pH (6 Marks)

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CBCS Scheme

USN | | | | | | | | | | |

15CHE12/22

First/Second Semester B.E. Degree Examination, Dec.2016/Jan.2017
Engineering Chemistry

Time: 3 hrs. Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1 a. Describe the construction and working of Li-MnO_2 battery. (05 Marks)

b. Define battery. Explain the following battery characteristics:
(i) Electricity storage density.
(ii) Energy efficiency.
(iii) Cycle life.
(iv) Shelf life. (05 Marks)

c. Define reference electrode. Explain the construction and working of Calomel electrode. (06 Marks)

OR

2 a. A concentration cell was constructed by immersing two silver electrodes in 0.02 M and 2 M $AgNO_3$ solution. Write the cell representation, cell reactions and calculate the EMF of the cell at 25°C. (05 Marks)

b. Derive Nernst equation for single electrode potential. (05 Marks)

c. Explain the construction and working of methanol oxygen fuel cell. Mention its application. (06 Marks)

Module-2

3 a. What is cathodic protection? Explain how a metal article is protected by sacrificial anodic method. (05 Marks)

b. Explain the following factors affecting the rate of corrosion:
(i) Nature of the metal.
(ii) Ratio of anodic to cathodic areas.
(iii) pH. (05 Marks)

c. Explain electroless plating of copper with relevant reaction. (06 Marks)

OR

4 a. What is metal finishing? Give the technological importance of metal finishing. (05 Marks)

b. Explain the influence of the following factors on the nature of electrodeposit:
(i) pH.
(ii) Temperature.
(iii) Concentration of the metal ion. (05 Marks)

c. Explain stress and differential metal corrosion with example. (06 Marks)

Module-3

5 a. Define cracking. Describe fluidized bed catalytic-cracking. (05 Marks)

b. What is biodiesel? Explain the synthesis and advantages of biodiesel. (05 Marks)

c. Explain the production of solar grade silicon by union-carbide process. (06 Marks)

OR

6 a. Define photo voltaic cell. Explain the construction and working of photo voltaic cell. (06 Marks)

b. Explain the purification of silicon by zone refining. (04 Marks)

c. A 0.6 g of coal sample (carbon 90%, H_2 3% and ash 7%) was subjected to combustion in a bomb calorimeter. Mass of water taken in the calorimeter was 2000 g and the water equivalent of calorimeter was 400 g. The rise in temperature was 3°C. Calculate the gross and net calorific value of the sample. Given, specific heat of water is 4.187 KJ/kg/°C and latent heat of steam is 2454 KJ/kg. (06 Marks)

Module-4

7 a. Explain the free radical mechanism for addition polymerization by taking vinyl chloride as an example. (06 Marks)

b. Explain the synthesis, properties and applications of epoxy resin. (04 Marks)

c. What is glass transition temperature? Explain the following factors affecting glass transition temperature.

(i) Chain flexibility and

(ii) Intermolecular forces. (06 Mar

OR

8 a. Explain structure – property relationship of polymers with respect to,

(i) Crystallinity (ii) Tensile strength (05 Marks)

b. What is polymerization? Explain addition and condensation polymerization with example. (05 Marks)

c. What are polymer composite? Explain the synthesis, properties and application of Kevlar fibre. (06 Marks)

Module-5

9 a. Write a note on fullerenes. Mention its application. (05 Marks)

b. Discuss the synthesis of nanomaterials by gas condensation method and chemical vapour condensation processes. (05 Marks)

c. Discuss the experimental determination of Dissolved Oxygen (DO) of waste water. Mention the reactions involved in it. (06 Marks)

OR

10 a. What is desalination? Discuss the desalination of sea water by ion exchange process. (05 Marks)

b. What is boiler feed water? Explain the scale and sludge formation in boilers. (05 Marks)

c. Explain any three size dependent properties of nanomaterials. (06 Marks)

* * * * *

Module-3

5. a. Define the term Calorific value of fuel. Explain the experimental determination of calorific value of solid/liquid fuel using Bomb calorimeter. (8 Marks)
   b. What are fuel cells? Describe the construction and working of CH_3OH-O_2 fuel cell. (6 marks)
   c. What are solar cells? Explain the construction and working of a typical PV cell. (6 marks)

OR

6. a. Explain the production solar grade Si by union carbide process (6 marks)
   b. 0.75 g of coal sample (carbon 90%, H_2 5% and ash 5%) was subjected to combustion in Bomb calorimeter. Mass water taken in the calorimeter was 2.5Kg and the water equivalent of calorimeter is 0.65Kg. The rise in temperature was found to be 3.2°C. Calculate gross and net calorific values of the sample. Latent heat of steam =2457KJ/Kg and specific heat of water = 4.187KJ/ Kg/°C: (8 Marks)

   c. What is knocking? Explain its mechanism. Mention its ill effects. (6 Marks)

Module-4

7 a. Explain the mechanism of photochemical smog? (7 Marks)
   b. What are the sources, effects and control of lead pollution? (7 Marks)
   c. Define COD. In COD test 27.5 cm^3 and 13.2 cm^3 of 0.05 N FAS solution ere required for blank and sample titration respectively. The volume of the test sample used is 25 cm^3. Calculate the COD of the sample solution. (6 Marks)

OR

8. a. Define the term COD. Explain the determination of COD. (6 Marks)
   b. What is potable water? Describe the process of reverse osmosis process of water. (7 Marks)
   c. What are the causes, effects and disposal methods of e-waste? (7 Marks)

Module-5

9. a. Explain the theory, instrumentation and applications of flame photometry. (7 Marks)
   b. Explain the theory and instrumentation of conductometry. (7 Marks)
   c. Explain the synthesis of nano-material by sol-gel technique. (6 Marks)

OR

10. a. Write a note on graphenes. Mention its applications. (7 Marks)
    b. What are nano-materials? Explain the synthesis of nano-materials by precipitation method (7 Marks)
    c. Explain the theory and instrumentation of potentiometry. (6 Marks)

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CIRCULAR

Ref. No: CEC/CSE/DAC/2019-2020/02 **Date: 31/01/2020**

All the members of Department Advisory Committee are informed to attend a meeting which will be held as follows

Date: 03/02/2020
Time: 11.30 AM
Venue: LAB C107

Agenda:

- AICTE Internship policy
- Lab in-charge and class teacher allotment
- Rubrics for project and technical seminar
- Activities planned for even semester
- Introducing ICT tools in teaching methodology

Mr. Vivekavardhana Reddy

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CITY ENGINEERING COLLEGE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Department Advisory Committee Meeting

Date: 03-02-2020
Time: 11:30 AM

DAC Members Present:

Sl. No	Member Name	Designation	Role
1	Mr. Vivekavardhana Reddy	HOD	Convenor
2	Dr. Nandakumar A N	Professor	Member
3	Dr. Sowmya Naik P T	Professor	Co-Convenor
4	Mr. Deepak N R	Assistant Professor	Member
5	Mr. Girish G A	Assistant Professor	Member
6	Mrs. Ambika P R	Assistant Professor	Member
7	Mrs. Laxmi M C	Assistant Professor	Member
8	Mrs. Archana Bhat	Assistant Professor	Member
9	Mr. Vinodh Kumar S	Assistant Professor	Member
10	Mr. Vivekraj G K	Technical Product Manager, Sabre India	Industry Expert
11	Mr. Devraj K	Founder & CEO, EtherScale	Alumni

The Department Advisory Committee meeting was conducted at Department of CSE, on 3rd of February 2020, at 11:30 AM.

Agenda of the Meeting:

- AICTE Internship policy
- Lab in-charge and class teacher allotment
- Rubrics for project and technical seminar
- Activities planned for even semester
- Introducing ICT tools in teaching methodology

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Minutes of Meeting:

The following points were discussed in the meeting:

- The HOD discussed about internship guidelines and procedures proposed by AICTE for 2019 batch. He suggested different activities which can be carried out by the students. The proctors were informed to mentor the students in this regard.
- Lab in-charge and class teachers were identified and their duties and responsibilities were briefed by the HOD.
- Encourage final year students to attend inter collegiate events where they can exhibit their project or present technical paper. It was decided that such participation by the students will carry 40 marks out of 100 during project evaluation.
- The activities planned for even semester such as guest lecture, industrial visit, poster presentation was discussed in the meeting.
- It was discussed to inculcate ICT tools in their teaching method. All the members were agreed to use Google class room on which syllabus, lesson plan, lecture notes, question papers, assignments and quiz shall be posted. It was informed that the faculties handling laboratories shall use flipped classrooms to explain lab programs.
- The HOD suggested to create programming aptitude tests in Moodle to increase the competency among students.

HOD

cc to Principal

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Academic Calendar of VTU, Belagavi for EVEN Semester of 2019-2020 (Jan 2020 – July 2020)

	II Sem B. E. / B. Tech. / B. Arch	IV & VI Sem B. E. /B. Tech. IV, VI&VIII Sem B. Arch.	VIII Sem B.E / B.Tech & X Sem B. Arch	IV Sem MCA	VI Sem MCA	IV Sem MBA	IV Sem M. Tech.	IV Sem M. Arch.	II Sem M. Tech.	II Sem MCA	II Sem MBA	II Sem M. Arch.
Commencement of EVEN Semester	10.02.2020	10.02.2020	10.02.2020	27.01.2020	27.01.2020	10.02.2020	27.01.2020	27.01.2020	05.03.2020	05.03.2020	14.02.2020	14.02.2020
Last Working day of EVEN Semester	01.06.2020	01.06.2020	01.06.2020	20.05.2020	20.05.2020	01.06.2020	20.05.2020	20.05.2020	22.06.2020	22.06.2020	05.06.2020	05.06.2020
Practical Examination	03.06.2020 To 13.06.2020	03.06.2020 To 13.06.2020	-	26.05.2020 To 30.05.2020	-	-	-	-	25.06.2020 To 30.06.2020	25.06.2020 To 30.06.2020	-	-
Theory Examinations	15.06.2020 To 04.07.2020	15.06.2020 To 20.07.2020	03.06.2020 To 11.06.2020	03.06.2020 To 18.06.2020	-	03.06.2020 To 28.06.2020	03.06.2020 To 10.06.2020	-	01.07.2020 To 11.07.2020	01.07.2020 To 11.07.2020	08.06.2020 To 20.06.2020	09.06.2020 To 20.06.2020
Viva Voce	-	-	15.06.2020 To 20.06.2020	-	-	-	-	-	-	-	-	-
Summer Project / Professional training	-	-	-	-	22.05.2020 To 30.05.2020 (Submission of report to VTU)	01.04.2020 To 15.04.2020 (Submission of report to VTU)	12.06.2020 To 25.06.2020 (Submission of report to VTU)	-	13.07.2020 To 31.07.2020	-	23.06.2020 To 21.07.2020	01.07.2020 To 25.08.2020
Commencement of ODD Semester	27.07.2020	27.07.2020	27.07.2020	27.07.2020	-	-	-	-	03.08.2020	27.07.2020	27.07.2020	28.08.2020

NOTE

1. College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.
2. The faculty/staff shall be available to undertake any work assigned by the university.
3. If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.
4. Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.

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10.1.2020.
REGISTRAR

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (EVEN SEM)

DAY	FEBRUARY 2020 Date	EVENT	MARCH 2020 Date	EVENT	APRIL 2020 Date	EVENT	MAY 2020 Date	EVENT	JUNE 2020 Date	EVENT
WED					1					
THU					2					
FRI					3		1	MAY DAY GH		
SAT	1				4		2			
SUN	2		1		5		3			
MON	3		2		6	MAHAVIRA JAYANTHI GH	4		1	LAST WORKING DAY OF 2nd, 4th, 6TH & 8TH SEMS
TUE	4		3		7		5		2	
WED	5		4		8		6	ETHNIC DAY	3	THEORY EXAMS 8th SEM 03.6.20 to 11.06.20
THU	6		5		9		7	SPORTS DAY	4	
FRI	7		6		10	GOOD FRIDAY-GH	8		5	
SAT	8	2ND SATURDAY HOLIDAY	7		11	2ND SATURDAY HOLIDAY	9	CHRONICLES	6	VIVA VOCE 8th SEM 15.06.20 to 20.06.20
SUN	9		8		12		10		7	
MON	10	STARTING OF 2nd, 4th, 6TH & 8TH SEMESTERS	9		13		11		8	
TUE	11	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	10		14	AMBEDKAR JAYANTI-GH	12		9	THEORY EXAMS 4th & 6th SEMs 15.06.20 to 20.07.20
WED	12		11		15		13		10	
THU	13		12		16		14		11	
FRI	14		13		17		15		12	
SAT	15		14	2ND SATURDAY HOLIDAY	18		16	OPENDAY/EXHIBITIONS (Higher Semesters)	13	THEORY EXAMS SECOND SEM 15.06.20 to 04.07.20
SUN	16		15		19		17		14	
MON	17		16		20		18		15	
TUE	18	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	17	FIRST INTERNAL ASSESSMENT 2nd, 4th, 6th & 8th Semesters	21		19		16	PRACTICAL EXAMS 2nd, 4th & 6th SEMESTERS 03.06.20 to 13.06.20 GRADUATION DAY AFTER 20.7.2020
WED	19		18		22		20		17	
THU	20		19		23		21	THIRD INTERNAL ASSESSMENT 2nd, 4th, 6th & 8th Semesters	18	
FRI	21	MAHASHIVARATHRI-GH	20		24	BATTLE OF SCIENCE EVENT (First Year)	22		19	
SAT	22	4TH SATURDAY HOLIDAY	21	Alumni Day (Tentative)	25	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	20	
SUN	23		22		26		24		21	
MON	24		23		27		25	RAMJAN GH	22	
TUE	25		24		28	SECOND INTERNAL ASSESSMENT 2nd, 4th, 6th & 8th Semester	26		23	
WED	26		25	UGADI-GH	29		27		24	
THU	27		26		30		28	LAB TESTS 2nd, 4th, 6th & 8th SEMs	25	
FRI	28	ATTESTED COPY	27				29		26	ATTESTED COPY
SAT	29		28	4TH SATURDAY HOLIDAY			30		27	
SUN			29				31		28	
MON		PRINCIPAL CITY ENGINEERING COLLEGE Kanakapura Main Road, Bangalore-560061	30						29	PRINCIPAL CITY ENGINEERING COLLEGE Kanakapura Main Road, Bangalore-560061
TUE			31						30	

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING — ACADEMIC CALENDAR 2019-20 (EVEN SEM)

DAY	FEBRUARY 2020 Date	FEBRUARY 2020 EVENT	MARCH 2020 Date	MARCH 2020 EVENT	APRIL 2020 Date	APRIL 2020 EVENT	MAY 2020 Date	MAY 2020 EVENT	JUNE 2020 Date	JUNE 2020 EVENT
WED					1					
THU					2					
FRI					3		1	**MAY DAY GH**		
SAT	1				4		2			
SUN	2		1		5		3			
MON	3		2		6	**MAHAVIRA JAYANTHI GH**	4		1	**LAST WORKING DAY OF 2nd, 4th , 6TH & 8TH SEMS**
TUE	4		3		7		5		2	THEORY EXAMS 8th SEM 03.6.20 to 11.06.20
WED	5		4		8		6	ETHNIC DAY	3	
THU	6		5		9		7	SPORTS DAY	4	
FRI	7		6	Guest Lecture	10	**GOOD FRIDAY-GH**	8		5	VIVA VOCE 8th SEM 15.06.20 to 20.06.20
SAT	8	2ND SATURDAY HOLIDAY	7		11	2ND SATURDAY HOLIDAY	9	CHRONICLES	6	
SUN	9		8		12		10		7	
MON	10	**STARTING OF 2nd, 4th , 6TH & 8TH SEMESTERS**	9		13		11		8	**THEORY EXAMS** 4th & 6th SEMs 15.06.20 to 20.07.20
TUE	11	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	10		14	**AMBEDKAR JAYANTI-GH**	12		9	
WED	12		11		15		13		10	
THU	13		12		16		14		11	
FRI	14		13		17		15		12	**THEORY EXAMS** SECOND SEM 15.06.20 to 04.07.20
SAT	15		14	2ND SATURDAY HOLIDAY	18		16	OPENDAY/EXHIBITIONS (Higher Semesters)	13	
SUN	16		15		19		17		14	
MON	17	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	16	FIRST INTERNAL ASSESSMENT 2nd, 4th ,6th & 8th Semesters	20	Workshop/ Technical Activities	18		15	**PRACTICAL EXAMS** 2nd,4th & 6th SEMESTERS 03.06.20 to 13.06.20 GRADUATION DAY AFTER 20.7.2020
TUE	18		17		21		19		16	
WED	19		18		22		20	THIRD INTERNAL ASSESSMENT 2nd, 4th ,6th & 8th Semesters	17	
THU	20		19		23		21		18	
FRI	21	**MAHASHIVARATHRI-GH**	20		24	BATTLE OF SCIENCE EVENT (First Year)	22		19	
SAT	22	4TH SATURDAY HOLIDAY	21	Alumni Day (Tentative)	25	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	20	
SUN	23		22		26		24		21	
MON	24		23		27		25	RAMJAN GH	22	
TUE	25		24		28	SECOND INTERNAL ASSESSMENT 2nd, 4th ,6th & 8th Semester	26		23	
WED	26		25	**UGADI-GH**	29		27		24	
THU	27		26		30		28	LAB TESTS 2nd,4th,6th & 8th SEMs	25	
FRI	28		27				29		26	
SAT	29		28	4TH SATURDAY HOLIDAY			30		27	
SUN			29				31		28	
MON			30						29	
TUE			31						30	

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ACADEMIC YEAR : 19-20

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PREFERNCE

Name of the Faculty: AMBIKA PR.

Designation: ASST. PROF

Year / Semester: 1

Sl.No	Course Code and Name	Year/Semester
1.	18CS42 - DAA	2nd /4th
2.	18CSL47 - DAA LAB	2nd /4th.
3.	18CS81 - IOT	4th /8th

Signature of faculty

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ACADEMIC YEAR : 19-20

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PREFERNCE

Name of the Faculty: Ms Deepika R

Designation: Asst. Prof.

Year / Semester:

Sl.No	Course Code and Name	Year/Semester
1.	18CS45 - OOC	2nd /4th
2.	18CSL47 - DAA Lab	2nd /4th
3.	18CS664 - PAP	3rd /6th
4	17CSL68 - CG Lab	3rd /6th

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR: 2019 - 2020(Even)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE ALLOCATION

Sl.No	Name of the Faculty	Course Code and Name	Year/ Semester	Signature
1	Mrs. Sowmya Naik	17CS832 – User Interface Design	4th / 8th	
2	Dr. Nandakumar A N	17CS81 – Internet of Things and Applications 15CSP85 – Project Work Phase – II 15CSS86 – Seminar	4th / 8th 4th / 8th 4th / 8th	
3	Mr. Vivekavardhana Reddy	18CS46 – Data Communication 17CS61 – Cryptography, Network Security and Cyber Law	2nd / 4th 3rd / 6th	
4	Mr. Nandish A C	18CS44 – Microcontroller and Embedded Systems 18CSL48 – Microcontroller and Embedded Systems Lab	2nd /4th	
5	Mr. Girish G A	17CS63 - System Software and Compiler Design 17CSL67 – System Software and Operating System Lab 15CSP85 – Project Work Phase II 10CS85 – Project work	3rd / 6th 3rd / 6th 4th / 8th 4th/8th (OTE)	
6	Mr. Surendranath Gowda	18CSL48 – Microcontroller and Embedded Systems Lab 17CS653 – Operation Research 15CS81 – User Interface Design	2nd / 4th 3rd / 6th 4th / 8th	

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7	Mr. Vinod Kumar	15CS82- Big Data Analytics 17CSL67 – System Software and Operating System Lab 15CSS86 – Seminar 10CS86 - Seminar	4th / 8th 3rd / 6th 4th / 8th 4th/ 8th (OTE)	
8	Mrs. Ambika P R	18CS42- Design and Analysis of Algorithms 18CSL47 – Design and analysis of algorithms Lab	2nd / 4th 2nd / 4th	
9	Mrs. Laxmi M C	18CS43 – Operating Systems 17CS664 – Python Application Programming 17CSL68 – Computer Graphics Lab 15CS84 – Internship	2nd / 4th 3rd / 6th 3rd / 6th 4th / 8th	
10	Mr. B. Ramesh	17CS62 – Computer Graphics and Visualization 17CSL68 – Computer Graphics Lab	3rd / 6th 3rd / 6th	
11	Mrs. Punitha P	15CS81 – Internet of Things and Applications	4th / 8th	
12	Mrs. Archana Bhat	18CS44 – Microcontroller and Embedded Systems 18CSL48 – Microcontroller and Embedded Systems Lab	2nd / 4th 2nd / 4th	
13	Ms. Deepika R	18CS45 – Object Oriented Concepts 18CSL47 – Design and analysis of algorithms Lab 15CS84 - Internship	2nd / 4th 2nd / 4th 4th / 8th	
14	Mrs. Sriraksha S	17CS664 – Python Application Programming 17CSL68 – Computer Graphics Lab	3rd / 6th 3rd / 6th	

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15	Ms. Pushpa	15CS81 – Internet of Things and Applications	4th / 8th	
16	Mrs. Sreevidya	17CS61 – Cryptography, Network Security and Cyber Law 17CSL67 – System Software and Operating System Lab	3rd / 6th 3rd / 6th	
17	Ms. Sowbhagya M P	18CS42- Design and Analysis of Algorithms 18CSL47 – Design and analysis of algorithms Lab	2nd / 4th 2nd / 4th	
18	Mrs. Nagashree	17CS64 – Operating Systems	3rd / 6th	
19	Ms. Sowmya L D	17CS653 – Operation Research	3rd / 6th	
20	Mr. Gangappa D	10IS81 – Software Architecture	4th / 8th (OTE)	
21	Mr. Suhas	10CS82 – System Modelling and Simulation	4th / 8th (OTE)	
22	Mr. Doreswamy	10CS834 – Network Management System	4th / 8th (OTE)	
23	Ms. Tejaswini	Software Testing	4th / 8th (OTE)	
24	Mr. Channabasappa	10IS846 – Decision Support Systems	4th / 8th (OTE)	

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Department Of CSE

Feb – May 2020

Time Table for IV Sem A Section

Room: C-203

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	DAA	OS	Short Break	MES	DC	Lunch Break	MAT41	OOC	Kannada
TUE	OS	MES		MAT41	OOC		A1 –DAA LAB / A2- MES LAB		
WED	MES	MAT41		OOC	DAA		OS	DC	Kannada
THU	DC	DAA		MAT41	OS		A2- DAA LAB / A1 MES LAB		
FRI	OOC	DC		DAA	MES		MAT41	EDUSAT/ LIBRARY	
SAT	DAA / MES LAB			MES	DAA				

Sl . No	Course Code	Course Name	Course	Faculty Name
1	18CS42	Design and Analysis of Algorithm	DAA	Prof. Ambika P R / Prof. Sowbhagya M P
2	18CS43	Operating Systems	OS	Prof. Laxmi M C
3	18CS44	Microcontroller and Embedded Systems	MES	Prof. Nandish A C / Prof. Archana Bhat
4	18CS45	Object Oriented Concepts	OOC	Prof. Deepika R
5	18CS46	Data Communication	DC	Dr. A N Nanda Kumar
6	18CSL47	Design and Analysis of Algorithm Laboratory	DAA LAB	Prof. Ambika P R/ Prof. Deepika R /Prof. Sowbhagya
7	18CSL48	Microcontroller and Embedded Systems Laboratory	MES LAB	Prof. Nandish A C/ Prof. Archana Bhat/ Prof. Surendranath
8	18MAT41	Complex Analysis, Probability and Statistical Methods	MAT41	Prof. Gayathri A

Class Teacher: Prof. Archana Bhat

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Department Of CSE

Feb – May 2020

Time Table for IV Sem B Section

Room: C-204

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	MES	OOC	Short Break	DAA	OS	Lunch Break	B1 – DAA LAB/ B2 – MES LAB		
TUE	DAA	MAT41		DC	MES		OS	OOC	Kannada
WED	OS	DAA		DC	MAT41		B2 – DAA LAB / B1 – MES LAB		
THU	OOC	OS		MES	DC		MAT41	DAA	Kannada
FRI	DC	MES		MAT41	OOC		MAT41	EDUSAT/ LIBRARY	
SAT	MES	DAA		DAA/ MES LAB					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	18CS42	Design and Analysis of Algorithm	DAA	Prof. Ambika P R / Prof. Sowbhagya M P
2	18CS43	Operating Systems	OS	Prof. Laxmi M C
3	18CS44	Microcontroller and Embedded Systems	MES	Prof. Nandish A C / Prof. Archana Bhat
4	18CS45	Object Oriented Concepts	OOC	Prof. Deepika R
5	18CS46	Data Communication	DC	Prof. Vivekavardhana Reddy
6	18CSL47	Design and Analysis of Algorithm Laboratory	DAA LAB	Prof. Ambika P R/ Prof. Deepika R /Prof. Sowbhagya
7	18CSL48	Microcontroller and Embedded Systems Laboratory	MES LAB	Prof. Nandish A C/ Prof. Archana Bhat/ Prof. Surendranath
8	18MAT41	Complex Analysis, Probability and Statistical Methods	MAT41	Prof. Nagendra Naik

Class Teacher: Prof. Ambika P R

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Feb – May 2020

Time Table for VI Sem A Section

Room: C-201

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	CGV	OS	Short Break	SSCD	CNSCL	Lunch Break	A1 - SSOS/ A2 – CG LAB		
TUE	CNSCL	CGV		SSCD	PYTHON		OR	OS	
WED	OR	CNSL		PYTHON	OS		A2 – SSOS / A1 – CG LAB		
THU	SSCD	OS		OR	CGV		CNSCL	PYTHON	
FRI	PYTHON	SSCD		CGV	OR		EDUSAT/ LIBRARY/ TECHNICAL ACTIVITIES		
SAT	MINI PROJECT			MINI PROJECT					

Sl . No	Course Code	Course Name
1	17CS61	Cryptography, Network Security and Cyber Law
2	17CS62	Computer Graphics and Visualization
3	17CS63	System Software and Compiler Design
4	17CS64	Operating Systems
5	17CS653	Operations Research
6	17CS664	Python Application Programming
7	17CSL67	System Software and Operating System Laboratory
8	17CSL68	Computer Graphics Laboratory with mini project

Course	Faculty Name
CNSCL	Prof. Vivekavardhana Reddy / Prof. Sreevidya
CGV	Prof. Ramesh B
SSCD	Prof. Girish G A
OS	Dr.Sowmya Naik / Prof. Nagashree
OR	Prof. Surendranath Gowda / Prof. Sowmya L D
Python	Prof. Laxmi M C / Prof. Sriraksha S
SSOS LAB	Prof. Girish G A/ Prof. Vinod Kumar /Prof. Sreevidya
CG LAB	Prof. Ramesh B/ Prof. Laxmi M C/ Prof. Sriraksha S

Class Teacher: Prof. Girish G A

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Feb – May 2020

Time Table for VI Sem B Section

Room: C-202

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	CNSCL	SSCD	Short Break	CGV	PYTHON	Lunch Break	OS	OR	
TUE	SSCD	PYTHON		OR	CGV		B1 – SSOS/ B2 – CG LAB		
WED	PYTHON	OS		CGV	SSCD		OR	CNSCL	
THU	CGV	CNSCL		PYTHON	OS		B2 – SSOS/ B1 – CG LAB		
FRI	OS	OR		SSCD	CNSCL		EDUSAT/ LIBRARY/ TECHNICAL ACTIVITIES		
SAT	MINI PROJECT			MINI PROJECT					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	17CS61	Cryptography, Network Security and Cyber Law	CNSCL	Prof. Vivekavardhana Reddy / Prof. Sreevidya
2	17CS62	Computer Graphics and Visualization	CGV	Prof. Ramesh B
3	17CS63	System Software and Compiler Design	SSCD	Prof. Girish G A
4	17CS64	Operating Systems	OS	Dr.Sowmya Naik / Prof. Nagashree
5	17CS653	Operations Research	OR	Prof. Surendranath Gowda / Prof. Sowmya L D
6	17CS664	Python Application Programming	Python	Prof. Deepika R / Prof. Sriraksha S
7	17CSL67	System Software and Operating System Laboratory	SSOS LAB	Prof. Girish G A/Prof. Vinodh Kumar S/ Prof. Sreevidya
8	17CSL68	Computer Graphics Laboratory with mini project	CG LAB	Prof. Ramesh B/ Prof. Laxmi M C/ Prof. Sriraksha S

Class Teacher: Prof. Ramesh B

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Feb – May 2020

Time Table for VIII Sem A Section

Room: C-303

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	IOT	BDA	Short Break	UID	BDA	Lunch Break	Project Work / Seminar		
TUE	BDA	UID		IOT	UID		Project Work / Seminar		
WED	UID	IOT		BDA	IOT		Project Work / Seminar		
THU									
FRI									
SAT									

Sl . No	Course Code	Course Name	Course	Faculty Name
1	15CS81	Internet of Things and Applications	IOT	Dr. Nanda Kumar / Prof. Pushpa
2	15CS82	Big Data Analytics	BDA	Prof. Vinodh Kumar S
3	15CS832	User Interface Design	UID	Dr.Sowmya Naik
4	15CS84	Internship / Professional Practice		Prof. Laxmi M C/ Prof. Deepika R
5	15CSP85	Project Work Phase II		Dr.A N Nanda Kumar / Prof. Girish G A
6	15CSS86	Seminar		Dr. A N Nanda Kumar / Prof. Vinodh Kumar S

Class Teacher: Prof. Vinodh Kumar S

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Feb – May 2020

Time Table for VIII Sem B Section

Room: C - 304

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	BDA	UID	Short Break	IOT	UID	Lunch Break	Project Work / Seminar		
TUE	UID	IOT		BDA	IOT		Project Work / Seminar		
WED	IOT	BDA		UID	BDA		Project Work / Seminar		
THU									
FRI									
SAT									

Sl . No	Course Code	Course Name	Course	Faculty Name
1	15CS81	Internet of Things and Applications	IOT	Dr.A N Nanda Kumar / Prof. Pushpa
2	15CS82	Big Data Analytics	BDA	Prof. Vinodh Kumar S
3	15CS832	User Interface Design	UID	Prof. Surendranath Gowda
4	15CS84	Internship / Professional Practice		Prof. Laxmi M C/ Prof. Deepika R
5	15CSP85	Project Work Phase II		Dr.A N Nanda Kumar / Prof. Girish G A
6	15CSS86	Seminar		Dr.A N Nanda Kumar / Prof. Vinodh Kumar S

Class Teacher: Prof.Surendranath Gowda

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Feb – May 2020

Time Table for OTE Batch

Room: C - 302

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	SA	SMS	Short Break	NMS	ST/DSS	Lunch Break	Project Work/ Seminar		
TUE	ST/ DSS	NMS		SMS	SA		Project Work/ Seminar		
WED	NMS	SA		ST/DSS	SMS		Project Work/ Seminar		
THU	NMS	SMS		ST/DSS	SA				
FRI									
SAT									

Sl . No	Course Code	Course Name
1	10IS81	SOFTWARE ARCHITECTURE
2	10CS82	SYSTEM MODELLING & SIMULATION
3	10CS834	NETWORK MANAGEMENT SYSTEMS
4	10CS842	SOFTWARE TESTING
	10IS846	DECISION SUPPORT SYSTEMS
5	10CS85	PROJECT WORK
6	10CS86	SEMINAR

Course	Faculty Name
SA	Prof. Gangappa
SMS	Prof. Suhas
NMS	Prof. Doreswamy
ST	Prof. Tejaswini
DSS	Prof. Channabasappa
	Prof. Girish G A
	Prof. Vinodh Kumar S

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Department Of CSE

Feb – May 2020

Faculty Name: Dr. Sowmya Naik **Sem: VI – A & B, VIII – A** **Subject: OS, UID**

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON		VI - A	Short Break	UID - A		Lunch Break			
TUE		UID - A			UID - A			VI - A	
WED	UID - A								
THU					VI - B				
FRI	VI - B								
SAT									

OS	BE [CSE] VI SEM A Section	2 Hours/ Week	2 x 2 = 4
OS	BE [CSE] VI SEM B Section	2 Hours/ Week	2 x 2 = 4
UID	BE [CSE] VIII SEM A Section	4 Hours/ Week	4 x 2 = 8
Executive Officer			10
Work load			26

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OPERATING SYSTEMS
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2017 - 2018)
SEMESTER – VI

Subject Code	17CS64	IA Marks	40
Number of Lecture Hours/Week	4	Exam Marks	60
Total Number of Lecture Hours	50	Exam Hours	03

CREDITS – 04

Module – 1	**Teaching Hours**
Introduction to operating systems, System structures: What operating systems do; Computer System organization; Computer System architecture; Operating System structure; Operating System operations; Process management; Memory management; Storage management; Protection and Security; Distributed system; Special-purpose systems; Computing environments. Operating System Services; User - Operating System interface; System calls; Types of system calls; System programs; Operating system design and implementation; Operating System structure; Virtual machines; Operating System generation; System boot. **Process Management** Process concept; Process scheduling; Operations on processes; Inter process communication	**10 Hours**
Module – 2	
Multi-threaded Programming: Overview; Multithreading models; Thread Libraries; Threading issues. Process Scheduling: Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling. **Process Synchronization:** Synchronization: The critical section problem; Peterson's solution; Synchronization hardware; Semaphores; Classical problems of synchronization; Monitors.	**10 Hours**
Module – 3	
Deadlocks : Deadlocks; System model; Deadlock characterization; Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock. **Memory Management:** Memory management strategies: Background; Swapping; Contiguous memory allocation; Paging; Structure of page table; Segmentation.	**10 Hours**
Module – 4	
Virtual Memory Management: Background; Demand paging; Copy-on-write; Page replacement; Allocation of frames; Thrashing. **File System, Implementation of File System:** File system: File concept; Access methods; Directory structure; File system mounting; File sharing; Protection: Implementing File system: File system structure; File system implementation; Directory implementation; Allocation methods; Free space management.	**10 Hours**
Module – 5	
Secondary Storage Structures, Protection: Mass storage structures; Disk structure; Disk attachment; Disk scheduling; Disk management; Swap space management. Protection: Goals of protection, Principles of protection, Domain of protection, Access matrix, Implementation of access matrix, Access control, Revocation of access rights, Capability- Based systems. **Case Study: The Linux Operating System:** Linux history; Design principles; Kernel modules; Process management; Scheduling; Memory Management; File systems, Input and output;	**10 Hours**

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Inter-process communication.
Course outcomes: The students should be able to: • Demonstrate need for OS and different types of OS • Discuss suitable techniques for management of different resources • Illustrate processor, memory, storage and file system commands • Explain the different concepts of OS in platform of usage through case studies
Question paper pattern: The question paper will have TEN questions. There will be TWO questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer FIVE full questions, selecting ONE full question from each module.
Text Books:
1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Principles 7th edition, Wiley-India, 2006.
Reference Books
1. Ann McHoes Ida M Fylnn, Understanding Operating System, Cengage Learning, 6th Edition 2. D.M Dhamdhere, Operating Systems: A Concept Based Approach 3rd Ed, McGraw-Hill, 2013. 3. P.C.P. Bhatt, An Introduction to Operating Systems: Concepts and Practice 4th Edition, PHI(EEE), 2014. 4. William Stallings Operating Systems: Internals and Design Principles, 6th Edition, Pearson.

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Faculty Name: Sowmya Naik **LESSON PLAN** ACADEMIC YEAR: 2019-20

CITY ENGINEERING COLLEGE

DEPARTMENT OF CSE

LESSON PLAN FOR EVEN SEMESTER FOR ACADEMIC YEAR 2019- 20

Course Title: **OPERATING SYSTEMS**	Course Code : 17CS64
Total contact hours: L:T:P:S :: 3:1:0:0	End Term Marks : 60
Internal Marks : 40	
Semester: VI SEM A	Academic year : 2019-20
Lesson plan Author: **SOWMYA NAIK P T**	Date :7/02/2020

Course Objective:
This course will enable students to:

- Introduce concepts and terminology used in OS
- Explain threading and multithreaded systems
- Illustrate process synchronization and concept of Deadlock
- Introduce Memory and Virtual memory management, File system and storage techniques.

Course Outcomes:
After studying this course, students will be able to:

- Demonstrate need for OS and different types of OS
- Apply suitable techniques for management of different resources
- Use processor, memory, storage and file system commands
- Realize the different concepts of OS in platform of usage through case studies

MODULE1

Week	Days	Contents of Module	RBT	Course Outcome (CO)
1	1	What operating systems do; Computer System organization	L1,L2,L3	CO1,CO2
	2	Computer System architecture; Operating System structure	L1,L2,L3	CO1,CO2
	3	Operating System operations; Process management	L1,L2,L3	CO1,CO2
	4	Memory management; Storage management	L1,L2,L3	CO1,CO2
2	1	Protection and Security; Distributed system	L1,L2,L3	CO1,CO2
	2	Special-purpose systems; Computing environments.	L1,L2,L3	CO1,CO2
	3	**Operating System Services,** User - Operating System interface; System calls	L1,L2,L3	CO1,CO2
	4	Types of system calls; System programs	L1,L2,L3	CO1,CO2

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3	1	Operating system design and implementation; Operating System structure	L1,L2,L3	CO1,CO2
	2	Virtual machines; Operating System generation; System boot	L1,L2,L3	CO1,CO2
	3	Process concept; Process scheduling	L1,L2,L3	CO1,CO2
	4	Operations on processes; Inter process communication	L1,L2,L3	CO1,CO2

MODULE 2

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
4	1	**Multi-threaded Programming**: Overview; Multithreading models	L1,L2,L3	CO1,CO2
	2	Thread Libraries; Threading issues.	L1,L2,L3	CO1,CO2
	3	Process Scheduling: Basic concepts; Scheduling Criteria	L1,L2,L3	CO1,CO2
	4	Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling	L1,L2,L3	CO1,CO2
5	1	**Process Synchronization:** Synchronization	L1,L2,L3	CO1,CO2
	2	The critical section problem; Peterson's solution	L1,L2,L3	CO1,CO2
	3	Synchronization hardware; Semaphores;	L1,L2,L3	CO1,CO2
	4	Classical problems of synchronization; Monitors	L1,L2,L3	CO1,CO2

MODULE 3

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
6	1	INTERNAL ASSISMENT 1		
	2	INTERNAL ASSISMENT 1		
	3	INTERNAL ASSISMENT 1		
	4	**Deadlocks :** Deadlocks; System model	L1,L2,L3	CO3
7	1	Deadlock characterization, Methods for handling deadlocks;	L1,L2,L3	CO3
	2	Deadlock prevention; Deadlock avoidance	L1,L2,L3	CO3
	3	Deadlock detection and recovery from deadlock.	L1,L2,L3	CO3
8	1	**Memory Management:** Memory management strategies: Background	L1,L2,L3	CO3
	2	Swapping; Contiguous memory allocation	L1,L2,L3	CO3
	3	Paging; Structure of page table	L1,L2,L3	CO3

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	4	Segmentation.	L1,L2,L3	CO3
9	1	problems	L1,L2,L3	CO3
	2	problems	L1,L2,L3	CO3
	3	problems	L1,L2,L3	CO3

MODULE4

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
10	1	**Virtual Memory Management:** Background; Demand paging	L1,L2,L3	CO4
	2	Copy-on-write; Page replacement	L1,L2,L3	CO4
	3	Allocation of frames; Thrashing, File system: File concept	L1,L2,L3	CO4
11	1	Access methods; Directory structure; File system mounting;	L1,L2,L3	CO4
	2	File sharing; Protection: Implementing File system: File system structure	L1,L2,L3	CO4
	3	File system implementation; Directory implementation	L1,L2,L3	CO4
	4	Allocation methods; Free space management.	L1,L2,L3	CO4

MODULE5

Week	Days/ Date	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
12	1	**Secondary Storage Structures, Protection:** Mass storage structures; Disk structure; Disk attachment;	L1,L2,L3	CO5
	2	INTERNAL ASSISMENT 2	L1,L2,L3	CO5
	3	INTERNAL ASSISMENT 2	L1,L2,L3	CO5
	4	INTERNAL ASSISMENT 2	L1,L2,L3	CO5
13	1	Disk scheduling	L1,L2,L3	CO5
	2	Disk management	L1,L2,L3	CO5
	3	Swap space management.	L1,L2,L3	CO5
	4	Protection: Goals of protection,	L1,L2,L3	CO5
14	1	Principles of protection, Domain of protection	L1,L2,L3	CO5
	2	Access matrix, Implementation of access matrix	L1,L2,L3	CO5

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	3	Access control, Revocation of access rights,	L1,L2,L3	CO5
	4	Capability- Based systems.		
15	1	**Case Study: The Linux Operating System:** Linux history; Design principles	L1,L2,L3	CO5
	2	Kernel modules; Process management;	L1,L2,L3	CO5
	3	INTERNAL ASSISMENT 3	L1,L2,L3	CO5
	4	INTERNAL ASSISMENT 3	L1,L2,L3	CO5
16	1	Scheduling; Memory Management; File systems.	L1,L2,L3	CO5
	2	Input and output; Inter-process communication.	L1,L2,L3	CO5
	3	Problems	L1,L2,L3	CO5

Text Books:

1.Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Principles 7th edition,Wiley-India, 2006

Reference Books:

1. Ann McHoes Ida M Fylnn, Understanding Operating System, Cengage Learning, 6th Edition
2. D.M Dhamdhere, Operating Systems: A Concept Based Approach 3rd Ed, McGraw- Hill, 2013.
3. P.C.P. Bhatt, An Introduction to Operating Systems: Concepts and Practice 4th Edition PHI (EEE), 2014.
4. William Stallings Operating Systems: Internals and Design Principles, 6th Edition, Pearson.

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Signature of HOD

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DEPARTMENT OF CSE

SUB: OPERATING SYSTEM
SEM: VI SEC: A& B

SUBCODE: 17CS64

ASSIGNMENT – 1

1. Define Operating System. Explain 2 view of Operating system. Explain abstract view of the components of the operating system.
2. What network configuration would best suite the following: i) Dormitory Floor ii) University Floor iii) A State iv) A Nation.
3. Define the essential Properties of the following types of the system: i) Batch ii) Time Sharing iii) Network iv)Real Time v) Interacting vi) Distributed vii) Parallel viii) Clustered ix) Handheld.
4. Briefly Describe the concept of Storage Management System.

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DEPARTMENT OF CSE/ISE
Assignment 2

SUBJECT: OPERATING SYSTEM **SUB CODE:17CS64**
SEMESTER: VI **SECTION: A & B**

Q.no	Questions
1.	Discuss any 4 treading issues that come with multithreaded programs.
2.	Explain the critical section problem. List and explain the requirement to be met by a solution to critical section problem.
3.	Explain Peterson's solution to critical section problem
4.	What are semaphores? Explain any three use cases of semaphores
5.	Explain how it can be used to solve the producer-consumer problem
6.	What are monitors? Explain its usage and implementation.
7.	Describe the monitor solution to the classical dining –philosopher's problem.
8.	What is busy waiting in a critical section concept? How semaphore is used to solve critical section problem? What are the advantages of semaphore?
9.	What are deadlocks? Explain the necessary conditions for its occurrence.
10.	Explain the process of recovery from deadlock.
11.	Using Banker's algorithm. Determine whether the system is in a safe state.
12.	What is Belady's anomaly? Explain with an example.
13.	Discuss paging with an example
14.	Distinguish between: i) Logical address space and physical address space. ii) Internal fragmentation and external fragmentation. iii) Paging and segmentation.
15.	Explain with the help of supporting hardware diagram how the TLB improves the performance of a demand paging system.

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DEPARTMENT OF CSE/ISE

ASSIGNMENT 3

SUBJECT: OPERATING SYSTEM
SEMESTER: VI

SUB CODE:17CS64
SECTION: A & B

Q.no	Questions
1.	What is thrashing? How does the system detect thrashing?
2.	Discuss on the performance of demand paging.
3.	Explain the various access method of files.
4.	Explain different approaches to managing free space on disk storage.
5.	Compare contiguous and linked allocation methods for disk space.
6.	Explain the various Disk scheduling algorithms with example.
7.	Describe the various directory structures.
8.	Write a note on any four different methods for managing free space.
9.	Explain various directory structures
10.	Explain the various storage mechanisms available to store files, with neat diagram.

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DEPARTMENT OF CSE/ISE
QUESTION BANK

SUBJECT: OPERATING SYSTEM
SEMESTER: VI

SUB CODE: 17CS64
SECTION: A & B

MODULE 1

Q.no	Questions
1.	Define an operating system. Explain two view points of OS role. Also explain abstract view of the components of a computer system?
2.a.	What are OS operation? Explain.
b.	Give a note on Distributed Systems?
3.	Discuss the operating system functions or services.
4.	What are the major activities of OS with regards to process and memory Managment?
5.	What are system calls? Explain different types of system calls?
6.	Explain the types of multiprocessor systems and the types of clustering.
7.	Explain different categories of system programs.
8.	Differentiate between multiprogramming and multi tasking systems.
9.	Explain the advantages of layered approach with a neat diagram.
10.	What are virtual machines? Explain its advantages with a neat diagram.
11.	Explain the just-in-time(JIT) compiler, used in java virtual machine.
12.	With a diagram of VM-WARE architecture, Explain the concept of virtual machine(VM) and main advantages of using VM architecture.
13.	What is process? With a state diagram, explain states of a process.
14.a.	Write a note on context switch.
b.	What is PCB? Enumerate and explain various fields in PCB.
15.	Explain direct and indirect communication with respect to message passing systems.
16.	Explain the difference between long term and short term and medium term schedulers .
17.	Describe implementation of IPC using shared memory and message passing.

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MODULE 2

<table>
<tr><th>Q.no</th><th>Questions</th></tr>
<tr><td>1.</td><td>What are the differences between user level and kernel level threads?</td></tr>
<tr><td>2.</td><td>Discuss common ways of establishing relationship between user and kernel thread.</td></tr>
<tr><td>3.</td><td>Differentiate between
1.process and thread
2.short term and medium term scheduler
3.user level and kernel level threads
4.waiting and turnaround time</td></tr>
<tr><td>4.</td><td>Define the five scheduling criteria considered in Process scheduling</td></tr>
<tr><td>5.</td><td>Discuss any 4 treading issues that come with multithreaded programs.</td></tr>
<tr><td>6.</td><td>Consider the following set of processes. Assume the length of the CPU burst time is given in milliseconds
<table>
<tr><th>Process</th><th>Arrival time</th><th>Burst time</th><th>priority</th></tr>
<tr><td>p1</td><td>0</td><td>10</td><td>3</td></tr>
<tr><td>p2</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>p3</td><td>3</td><td>2</td><td>3</td></tr>
<tr><td>p4</td><td>5</td><td>1</td><td>4</td></tr>
<tr><td>p5</td><td>10</td><td>5</td><td>2</td></tr>
</table>
Draw gantt charts illustrating the execution of these processes using FCFS and pre-emptive priority scheduling algorithm. assume highest priority=1 and lowest priority=4.also calculate average waiting time and average turn around time of both the algorithms.</td></tr>
<tr><td>7.</td><td>Following is the snapshot of a cpu
<table>
<tr><th>process</th><th>CPU burst</th><th>Arrival time</th></tr>
<tr><td>p1</td><td>10</td><td>0</td></tr>
<tr><td>p2</td><td>29</td><td>1</td></tr>
<tr><td>p3</td><td>03</td><td>2</td></tr>
<tr><td>p4</td><td>07</td><td>3</td></tr>
</table>
Draw gantt chart and calculate the waiting and turnaround time using FCFS,SJF and RR with time quatum 10 scheduling algorithms</td></tr>
<tr><td>8.</td><td>Consider the following set of processes with CPU burst time(in m sec)
<table>
<tr><th>process</th><th>arrival</th><th>Burst time</th></tr>
<tr><td>p0</td><td>0</td><td>6</td></tr>
<tr><td>p1</td><td>1</td><td>3</td></tr>
<tr><td>p2</td><td>2</td><td>1</td></tr>
<tr><td>p3</td><td>3</td><td>4</td></tr>
</table>
i)Draw gantt chart illustrating the executing of above processes using SRTF and non preemptive SJF
ii)Find the turn around time for each processes for SRTF and SJF. hence show that SRTF is faster than SJF</td></tr>
</table>

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MODULE 3

Q.no	Questions
1.	What are deadlocks? Explain the necessary conditions for its occurrence.
2.a.	Dead lock exists if a cycle exists. Yes or no. Justify your answer with a suitable example.
b.	What is Resource Allocation Graph(RAG)? Explain how RAG is very useful in describing deadly embrace (dead lock)by considering your own example
3.	For the following resource-allocation graph write the corresponding wait-for graph.
4.	Explain the process of recovery from deadlock.
5.	Using Banker's algorithm determine whether the system is in a safe state.
6.	Consider the following snapshot of a system: Answer the following questions using the Banker's algorithm: i) What is the content of matrix need? ii) Is the system in a safe state? iii) If a request from process P1 arrives for(0,4,2,0) can the request be granted immediately?(10) iv) Is the system in a safe state?
7.	System consists of five jobs (J1,J2,J3,J4,J5) and three resources (R1,R2,R3) . Resource type R1 has 10 instances, resource type R2 has 5 instances and R3 has 7 instances. The following snapshot of the system has been taken: Find need matrix and calculate the safe sequence by using Banker's algorithm. Mention the above system is safe or not safe.
8.	Using Banker's algorithm determine whether the system is in a safe state. If a request from process P2 arrives for (0 0 2), can the request be granted immediately?
9.	Consider the following snapshot of a system.

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	Answer the questions using Banker's algorithm. i) What is the content of the matrix need? ii) Is the system is safe state? iii) If a request P1 arrives for (1,0,2), can the request be granted immediately?
10.	For the following snapshot find the safe sequence using Banker's algorithm: The number of resource units are R1,R2,R3 which are 7,7,10 respectively.
11.	Distinguish between internal and external fragmentation.
12.	Explain with a diagram, how TLB is used to solve the problem of simple paging scheme.
13.	Discuss paging with an example.
15.a.	What is Belady's anomaly? Explain with an example.
b.	Distinguish between: i) Logical address space and physical address space. ii) Internal fragmentation and external fragmentation. iii) Paging and segmentation.
17.	With a supporting paging hardware, explain in detail concept of paging with an example for a 32-byte memory with 4-type pages with a process being 16-bytes. How many bits are reserved for page number and page offset in the logical address. Suppose the logical address is 5, calculate the corresponding physical address, after populating memory and page table.
18.	Given memory partitions of 100K,500K,200K,300K and 600K, apply first fit and best fit algorithm to place 212K,417 K,112 K and 426 K.
19.	Explain with the help of supporting hardware diagram how the TLB improves the performance of a demand paging system.
	What are the draw backs of contiguous memory allocation?
	What is swapping? Does this increase the operating systems overhead? Justify your answer.

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MODULE 4

Q.no	Questions
1.	What is thrashing? How does the system detect thrashing?
2.a.	Discuss on the performance of demand paging.
b.	
3.	. Short notes on: a. Page replacement algorithms b. Steps in handling page fault.
4.	What do you mean by a copy-on-write? Where is it used? Explain in brief.
5.	Consider the following page reference string 1,2,3,5,2,3,5,7,2,1,2,3,8,6,4,3,2,2,3,6. Assuming there are three memory frames, how many faults would occur in the case of i) LRU ii) Optimal algorithm. Note that initially all frames are empty.
6.	Consider the following sequence of memory references from a 460 word program. 10,11,104,170,73,309,185,245,246,434,458,364 i) Show the reference string assuming page size of 100 words ii) Find page fault rate for the above reference string assuming 200 words of primary memory available and FIFO and LRU replacement algorithms.
7.	Explain briefly the various operations performed on files.
8.	Explain the various access method of files.
9.	. Explain various allocation methods in implementing file systems.
10.	Explain different approaches to managing free space on disk storage.
11.	Describe the various directory structures
12.a.	With supporting diagrams distinguish between single-level and two-level directory structure.
b.	Compare contiguous and linked allocation methods for disk space.
c.	Explain bit vector free-space management technique
13.	Explain various file protection mechanisms.

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MODULE 5

Q.no	Questions
1.	Explain the various Disk scheduling algorithms with example.
2.a.	Point out and explain briefly the problems with RAID
b.	Explain Access Matrix method of system protection.
3.	What is disk scheduling? Explain the following with diagram: i) FCFS ii) SSTF iii) SCAN.
4.	What is an access matrix? Explain the following operations in access matrix with an example for each: i) Copy ii) Transfer iii) Limited copy
5.	Suppose the position of cylinder is at 53. The disk drive has cylinders numbered from 0-199. The queue of pending requests in FIFO order is: 98,183,37,122,14,124,65,67. Starting from the current head position, what is the total distance travelled (in cylinders) by the disk arm to satisfy the requests using algorithms FCFS, SSTF, SCAN and LOOK. Illustrate with figures in each case.
6.	Describe the access matrix model used for protection purpose.
7.a.	What are boot block and bad blocks? Explain.
b.	Explain the goals and principles of protection.
8.	Explain the difference between protection and security? Describe the scheme of capability lists to implement protection
9.	Write short notes on: i) Swap space management ii) Revocation of access rights.
10.	A drive has 5000 cylinders numbered 0 to 4999. The drive is currently serving a request at 143 and previously serviced a request at 125. The queue of pending requests in FIFO order is : 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130 starting from current head position, what is total distance travelled(in cylinders) by disk arm to satisfy the requests using FCFS,SSTF,SCAN and look algorithms.
11.	Explain SCAN and C-SCAN disk scheduling.
12.a.	Explain the various components of a Linux system.
b.	Explain process scheduling in a Linux system.
c.	Explain file systems implementation in Linux.
13.	Discuss how memory management is dealt with in Linux operating system.
14.	Write short note on: a) process management in Linux. b) Linux files system. c) Benefits of multi- threading. d) Inter-process communication.
15.	Write a short note on Linux virtual memory system.
16.	Write short notes on: a. Linux history b. Components of a Linux system.
17.	Explain the Linux device drive block structure.
18.	What are the design principles of Linux operating systems? Explain

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CITY ENGINEERING COLLEGE
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SUBJECT:OPERATING SYSTEMS **SUBJECT CODE:18CS43**

Quiz Questions
Module 1

1. What is operating system?
a) collection of programs that manages hardware resources
b) system service provider to the application programs
c) link to interface the hardware and application programs
d) all of the mentioned

Answer:d

2. To access the services of operating system, the interface is provided by the _____
a) System calls
b) API
c) Library
d) Assembly instructions

Answer:a

3. Which one of the following is not true?
a) kernel is the program that constitutes the central core of the operating system
b) kernel is the first part of operating system to load into memory during booting
c) kernel is made of various modules which can not be loaded in running operating system
d) kernel remains in the memory during the entire computer session

Answer:c

4. Which one of the following error will be handle by the operating system?
a) power failure
b) lack of paper in printer
c) connection failure in the network
d) all of the mentioned

Answer:d

5. What is the main function of the command interpreter?
a) to get and execute the next user-specified command
b) to provide the interface between the API and application program
c) to handle the files in operating system
d) none of the mentioned

Answer:a

6. By operating system, the resource management can be done via _____
a) time division multiplexing

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b) space division multiplexing
c) time and space division multiplexing
d) none of the mentioned

Answer:c

7. If a process fails, most operating system write the error information to a _____
a) log file
b) another running process
c) new file
d) none of the mentioned

Answer:a

8. In operating system, each process has its own _____
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
d) all of the mentioned

Answer:d

9. In Unix, Which system call creates the new process?
a) fork
b) create
c) new
d) none of the mentioned

Answer:a

10. A process can be terminated due to _____
a) normal exit
b) fatal error
c) killed by another process
d) all of the mentioned

Answer:d

11. What is the ready state of a process?
a) when process is scheduled to run after some execution
b) when process is unable to run until some task has been completed
c) when process is using the CPU
d) none of the mentioned

Answer:a

12. A set of processes is deadlock if _____
a) each process is blocked and will remain so forever
b) each process is terminated
c) all processes are trying to kill each other
d) none of the mentioned

Answer:a

13. A process stack does not contain _____
a) Function parameters
b) Local variables
c) Return addresses
d) PID of child process

Answer:d

14. Which system call returns the process identifier of a terminated child?
a) wait
b) exit
c) fork
d) get

Answer:a

15. A Process Control Block(PCB) does not contain which of the following?
a) Code
b) Stack
c) Bootstrap program
d) Data

Answer:c

16. The number of processes completed per unit time is known as _____
a) Output
b) Throughput
c) Efficiency
d) Capacity

Answer:b

17. The state of a process is defined by _____
a) the final activity of the process
b) the activity just executed by the process
c) the activity to next be executed by the process
d) the current activity of the process

Answer:d

18. Which of the following is not the state of a process?
a) New
b) Old
c) Waiting
d) Running

Answer:b

19. What is the degree of multiprogramming?
a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory

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Answer:d

20. What will happen when a process terminates?
a) It is removed from all queues
b) It is removed from all, but the job queue
c) Its process control block is de-allocated
d) Its process control block is never de-allocated

Answer:a

21. What is a long-term scheduler?
a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping
d) None of the mentioned

Answer:a

22. If all processes I/O bound, the ready queue will almost always be _____ and the Short term Scheduler will have a _____ to do.
a) full, little
b) full, lot
c) empty, little
d) empty, lot

Answer:c

23. The primary distinction between the short term scheduler and the long term scheduler is _____
a) The length of their queues
b) The type of processes they schedule
c) The frequency of their execution
d) None of the mentioned

Answer:c

24. The context of a process in the PCB of a process does not contain _____
a) the value of the CPU registers
b) the process state
c) memory-management information
d) context switch time

Answer:d

25. Round robin scheduling falls under the category of _____
a) Non-preemptive scheduling
b) Preemptive scheduling
c) All of the mentioned
d) None of the mentioned

Answer:b

26. The strategy of making processes that are logically runnable to be temporarily suspended is called _____

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a) Non preemptive scheduling
b) Preemptive scheduling
c) Shortest job first
d) First come First served

Answer:b

22. Which is the most optimal scheduling algorithm?
a) FCFS – First come First served
b) SJF – Shortest Job First
c) RR – Round Robin
d) None of the mentioned

Answer:b

27. Consider the following set of processes, the length of the CPU burst time given in milliseconds.

Process	Burst time
P1	6
P2	8
P3	7
P4	3

Assuming the above process being scheduled with the SJF scheduling algorithm.
a) The waiting time for process P1 is 3ms
b) The waiting time for process P1 is 0ms
c) The waiting time for process P1 is 16ms
d) The waiting time for process P1 is 9ms

Answer:a

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USN | 1 | C | E | | | | | | | |

COURSE CODE: 17CS64

CITY ENGINEERING COLLEGE

Kanakapura Road, Doddakallasandra, Bengaluru - 560062

FIRST INTERNAL TEST

Programme: CSE
Course Name: OPER ATING SYSTEMS
Sem:VI(A,B)
MAX MARKS: 50

Date: 17/03/2020
Time: 2:30-4:00PM
Duration: 1 ½Hrs

Note: Answer any FIVE questions choosing at least ONE from each Part.

			CO'S	BT'S
	Part – A			
1.	Explain the role of operating system from different viewpoints. Explain dual mode operation of an operating system.	10	CO1	BT1
	Or			
2.	Demonstrate the operations of process creation and process termination in UNIX.	10	CO1	BT1
	Part – B			
3.	Briefly describe the process of Storage Management in detail	10	CO1, CO3	BT2,BT3
	Or			
4.	Write short notes on : i) Single processor system ii) Multiprocessor system iii)Clustered systems	10	CO1, CO3	BT2,BT3
	Part-C			
5.	Illustrate with a neat sketch, the process states and process control block.	10	CO2	BT3
	Or			
6.	Define System Calls. With example, Explain different categories of system calls.	10	CO2	BT3
	Part-D			
7.	Describe the implementation of IPC using shared memory and message passing	10	CO1, CO2	BT3
	Or			
8.	List the different services that an operating system provides.	10	CO1, CO2	BT3
	Part-E			
9.	Discuss the threading issues that come with multithreaded program.	10	CO1, CO2	BT2,BT3
	Or			
10	Discuss the benefits of multithreaded programming. Explain different threading models with neat diagram.	10	CO2	BT2,BT3

Blooms Taxonomy Levels (BTL): BT2- Understanding BT4 – Analyzing

Course Outcomes (CO's):

- CO1: Demonstrate need for OS and different types of OS
- CO2: Apply suitable techniques for management of different resources
- CO3: Use processor, memory, storage and file system commands
- CO4: Realize the different concepts of OS in platform of usage through case studies

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SCHEME FOR VALUATION

Internal Test I

Semester & Section: VI 'A' & 'B' Date: 17-03-2020

Question No	Details of the Answer	Marks Distribution	Total Marks
8.	**Services provided by the OS** 1. User Interface 2. command line Interface (CLI) 3. Batch Interface 4. Graphical user Interface (GUI). * program Execution * I/O operation * File system manipulation * Communication * Error detection * Resource Allocation. * Accounting * Protection and Security	10M	10M
9.	**Threading Issues** 1) fork() and Exec() system call 2) Cancellation 3) Signal handling 4) Threads pool 5) Thread - Specific data 6) Scheduler activation	10M	

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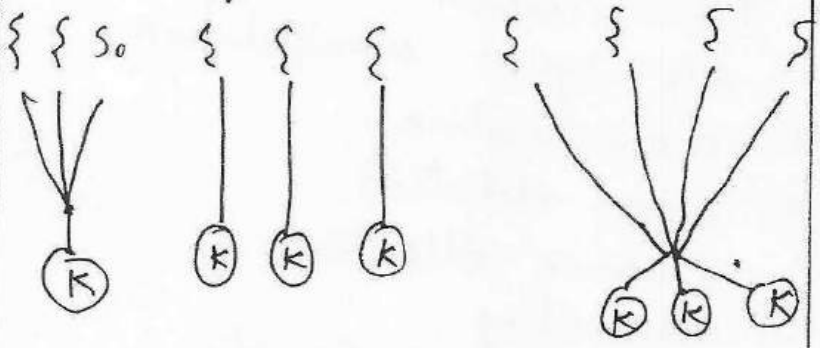
Question No.	Details of the Answer	Marks Distribution	Total Marks
10.	**Benefits of Multi Threading** 1. Responsiveness 2. Resource sharing. 3. Economy 4. Utilization of Multiprocessor Architectures **Threading Models** 1. Many-to-one 2. One-to-one 3. Many-to-Many 	5M 5M	10M

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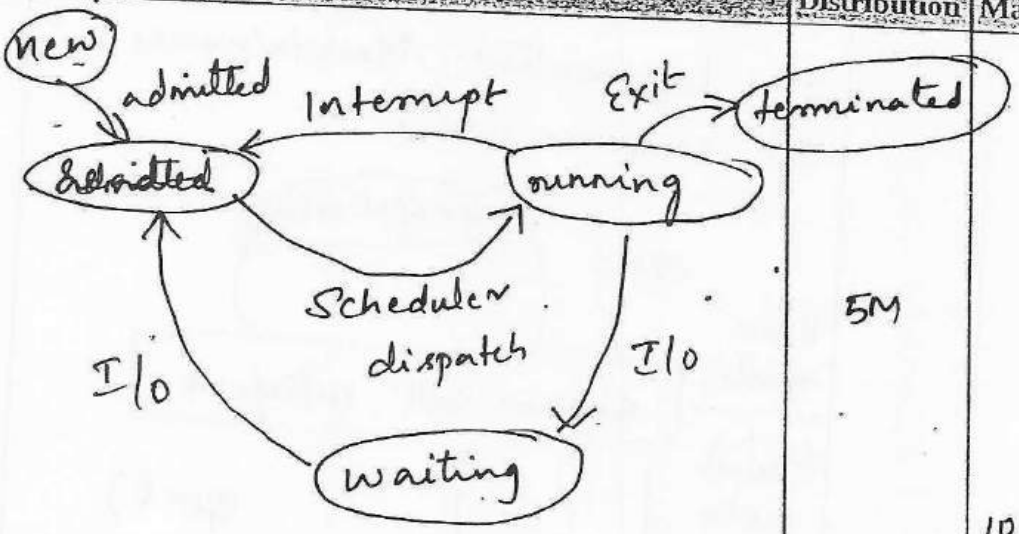
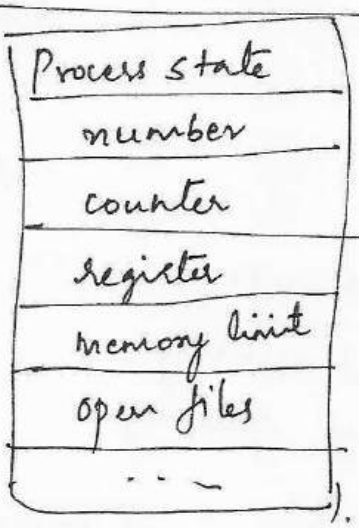
SCHEME FOR VALUATION

Semester & Section: VI 'A' & 'B' Internal Test I

Date: 17-03-2020

Question No.	Details of the Answer	Marks Distribution	Total Marks
5.		5M	10M
	Process Control Block 	5M	
6.	System calls provides Interfaces to the services made available by an OS		

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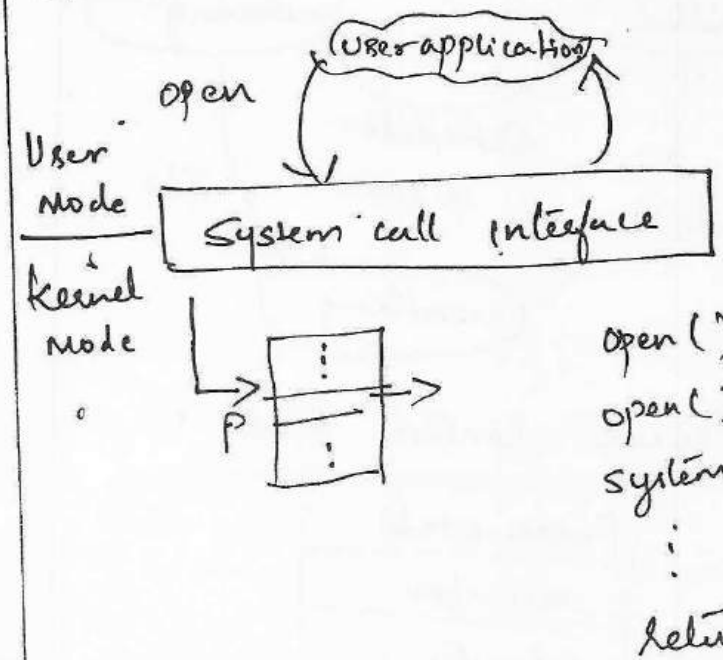
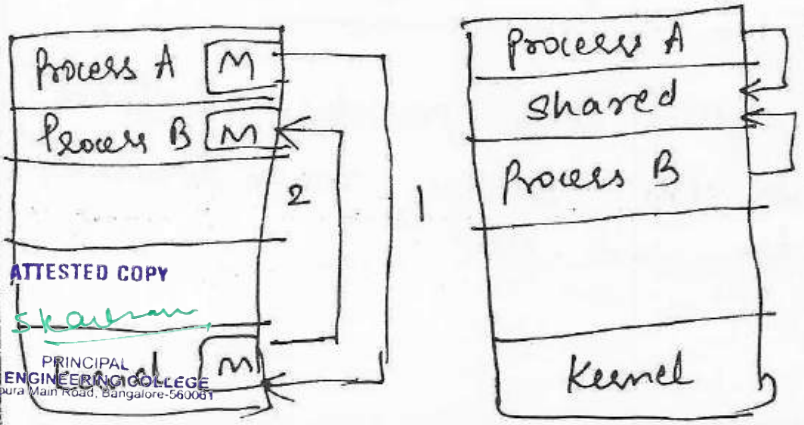
Question No.	Details of the Answer	Marks Distribution	Total Marks
	1) process control 2) File management 3) Device Management 4) Information Maintainance 5) communication	5M	
		5M	10M
7.	Ipc mechanisms 1. shared memory 2. message passing	5M	
		5M	10M

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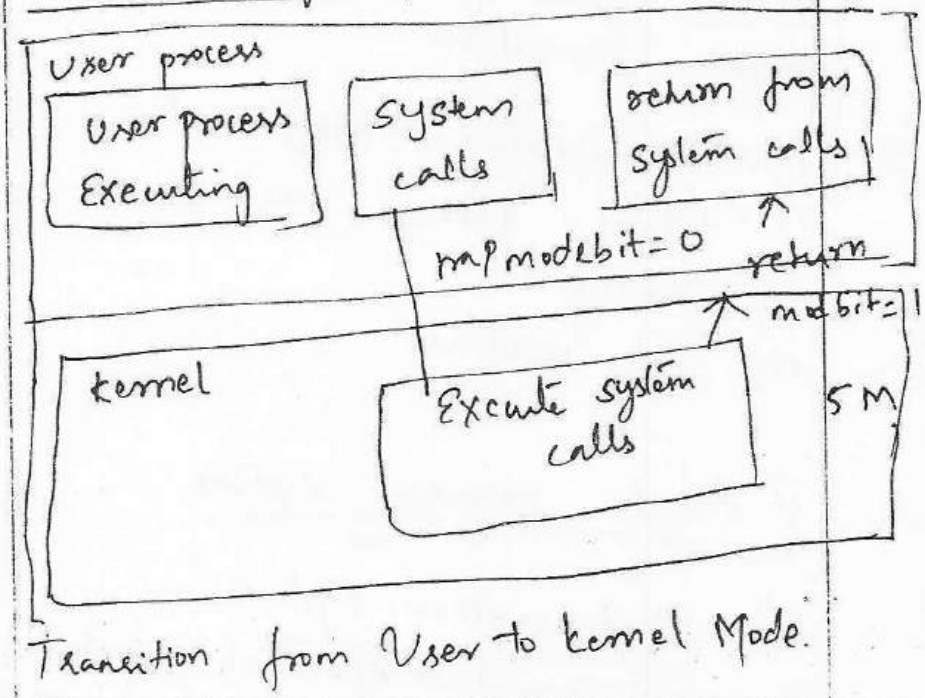
SCHEME FOR VALUATION

Internal Test I

Semester & Section: VI 'A' & 'B' Date: 17-03-2020

Question No.	Details of the Answer	Marks Distribution	Total Marks
1.	Different view of OS 1. User View * Ease of use * Resource utilization * compromise b/n individualusuability & . System View * Resource allocator * Control program Dual mode of operation	5M	10M
		5M	

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Question No.	Details of the Answer	Marks Distribution	Total Marks
2.	Operation of process creation and Process termination in UNIX Process creation → parent executes concurrently with its children → parent waits till child terminates 5M Program Process Termination → The child has exceeded its usage of resources → Task assigned to child is over 5M → If parent exists, OS does not allow other process to continue there Execution		10 M.
3.	i). File-systems management ii) Mass-Storage Management iii) Caching iv) I/O system.	10 M	
4.	i) Single processor system ii) Multiprocessor system *) Increased Throughput *) Economy of scale iii) Increased reliability iii) Clustered systems	3M 4 M 3 M	10M

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"OPERATING SYSTEM – 17CS64" A Sec

ATTENDANCE

Sl. No.	Reg.No.	Name	10/2	11/2	12/2	13/2	17/2	18/2	19/2	20/2	24/2	25/2	27/2	02/3	3/3	4/3
			II	VII	III	II	II	VII	III	II	II	IV	II	II	IV	IV
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1CE17CS003	ABHISHEK · S	1	2	3	4	5	6	7	8	9	9	10	10	10	10
2	1CE17CS004	Aditya Prasad	1	2	3	4	5	6	7	8	9	10	11	12	12	12
3	06	Aishwarya · S	0	1	2	3	4	5	6	7	8	8	9	9	9	10
4	07	Akansha Gowri	1	2	3	4	5	6	7	7	8	9	10	11	12	13
5	08	Akshay Amrut Morab	1	2	3	4	5	6	7	8	9	9	10	11	12	13
6	09	Anandeshwar · C	1	2	3	4	5	6	7	7	8	9	10	10	10	10
7	013	Anusha	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8	015	Anushree K · R	1	2	3	4	5	6	7	8	9	9	10	11	12	12
9	016	Apeksha Bharadwaj · M	1	2	3	4	5	6	7	8	9	10	11	12	13	12
10	018	Arvind Kumar · G	1	2	3	4	5	6	7	8	9	10	11	12	13	14
11	022	Bhavana · K	1	2	2	3	4	5	6	7	8	9	10	11	12	13
12	023	Bharya Aggarwal	0	1	2	3	4	5	6	7	8	9	10	11	12	13
13	024	Bhuvaneshwari · M	1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	029	Deeksha · R	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	032	Dikshita Jain	1	2	2	3	4	5	6	7	8	9	10	11	12	11
16	033	Eeranna · T	1	2	3	4	5	6	7	8	9	9	10	11	11	12
17	035	Gayathri · B	1	2	3	4	5	6	7	8	9	10	11	12	13	14
18	036	Gayathri B · M	1	2	3	4	5	6	7	8	9	10	11	12	13	14
19	037	Geetha · S	0	1	2	3	4	5	6	7	8	9	10	11	12	13
20	038	H · Pawan Kumar	1	2	3	4	5	6	7	8	9	10	11	12	12	13
21	041	Harshitha · L	1	2	3	3	4	5	6	7	8	9	10	11	12	13
22	042	Hitha · S	1	2	3	4	5	6	7	8	9	10	11	12	13	13
23	044	Jahnavi · B	1	2	3	4	5	6	7	8	9	9	10	11	12	13
24	045	Jasir Ahmad	1	2	3	4	5	6	7	8	9	10	10	11	11	12
25	046	K · Mallikarjun	1	2	3	4	5	6	7	8	9	9	10	11	11	12
	No. of Abs.															
	Initials															

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			1	2	3	4	5	6	7	8	9	10	11	12	13	14
26	ICE17CS047	K. Pavithra	1	2	3	4	5	6	7	8	9	10	11	12	13	13
27	048	Kalpana. G. J	1	2	3	3	4	5	6	7	8	9	10	11	12	13
28	049	Kavana. D	1	2	3	4	5	6	7	8	9	10	10	11	12	13
29	050	Kavyashree. S. B	0	1	2	3	4	5	6	7	8	9	10	11	12	13
30	052	Krupa. D	1	2	3	4	5	6	7	8	9	10	11	12	13	14
31	054	Madan Thasu	0	1	2	3	4	5	6	7	8	9	10	11	11	12
32	058	Manoranjini	1	2	3	4	5	6	7	7	8	8	9	10	11	12
33	059	Meghana. G	0	1	2	3	4	5	6	7	8	9	10	11	12	13
34	062	Mohammed Ali Baig	1	2	3	4	5	6	7	8	9	10	11	12	12	13
35	063	Mohammad Faizal	1	2	3	4	5	6	7	8	8	9	10	11	11	12
36	064	Mohammed Shahid ulla	1	2	3	4	5	6	7	8	9	9	10	11	12	13
37	065	Mohammed Tausif pasha	1	2	3	4	5	6	7	8	9	9	10	11	12	13
38	066	Monika. R	1	2	3	4	5	6	7	8	9	10	11	12	13	14
39	067	Muaaz Meraj	1	2	3	4	5	6	7	8	9	10	10	11	12	13
40	068	Mujataba Nayaz	0	1	2	3	4	5	6	7	8	9	10	11	12	13
41	074	Nischal kothari. M	1	2	3	4	5	6	7	8	9	10	11	12	13	14
42	075	Nitesh. S	1	2	3	4	5	6	7	8	9	10	11	12	13	13
43	080	Pavan Kumar. S	0	1	2	3	4	5	6	7	8	9	10	10	10	10
44	094	Rajath Deep Singh	1	2	3	4	5	6	7	8	8	9	10	10	10	10
45	097	Roopa. M	1	2	3	4	5	6	7	8	9	9	10	11	12	13
46	113	Shantha kumari. M. V	1	2	3	4	5	6	7	8	9	10	11	12	13	14
47	130	Sumit Saurav	1	2	3	4	4	5	6	7	8	9	10	11	12	13
48	146	Vishal Kumar	1	2	3	4	4	5	6	7	8	9	10	11	11	11
49	152	Vasavi. D. S	1	2	3	4	5	6	7	8	9	9	10	10	10	11
50	ICE16CS003	Abhishek. P. V	1	2	3	4	5	6	7	8	9	10	11	12	12	12
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	Initials															

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ATTENDANCE

Sl. No.	Reg.No.	Name	10/2	11/2	12/2	13/2	17/2	18/2	19/2	20/2	24/2	26/2	27/2	2/3	3/3	4/3
			II	VII	III	II	II	VII	III	II	II	IV	II	II	IV	IV
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
51	1CE15CS006	Allam Nagendra prasad	0	1	2	3	4	5	6	7	8	8	9	10	10	10
52	25	Chethan B.G	1	2	3	4	5	6	7	8	9	10	11	11	11	12
53	25	Chethan . B.G	1	2	3	4	5	6	7	8	9	9	10	11	11	12
54	41	Kasthik kumar. P	1	2	3	4	5	6	7	8	9	10	11	12	13	14
55	52	Mohammed Rushan	1	2	3	4	5	6	7	8	9	9	10	11	12	12
56	74	Rakshitha. R	1	2	3	4	5	6	7	8	9	10	10	11	12	13
57	79	Reena R. Khaswi	1	2	3	4	5	6	7	8	9	9	10	11	12	13
58	81	Roopitha. k	1	2	3	4	5	6	7	8	9	10	10	11	12	13
59	97	Suresh	0	1	2	3	4	5	6	7	8	8	9	10	10	10
60	1CE15CS069	Mahasudra	1	2	3	4	5	6	7	8	9	9	10	11	12	13
61	093	Pancharu. B	1	2	3	4	5	6	7	8	9	9	10	10	11	11
62	113	Roopashree . R. V	1	2	3	4	5	6	7	8	9	10	11	11	12	12
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CITY ENGINEERING COLLEGE
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
LESSON PLAN 2019 - 20

SUBJECT: OPERATING SYSTEMS
SUBJECT CODE: 17CS64

FACULTY NAME:DR.Sowmya
SEM: VI SEC : A& B

Week	Date		Topics Planned
	From	To	
I	10/02/2020	15/02/2020	**MODULE 1:** Introduction to operating systems, System structures: What operating systems do; Computer System organization; Computer System architecture; Operating System structure; Operating System operations; Process management; Memory management
II	17/02/2020	22/02/2020	Storage management; Protection and Security; Distributed system; Special-purpose systems; Computing environments. Operating System Services; User - Operating System interface; System calls; Types of system calls; System programs; Operating system design and implementation
III	24/02/2020	29/02/2020	Operating System structure; Virtual machines; Operating System generation; System boot. **Process Management** Process concept; Process scheduling; Operations on processes; Inter process communication
IV	02/03/2020	07/03/2020	**MODULE 2: Multi-threaded Programming**: Overview; Multithreading models; Thread Libraries; Threading issues. Process Scheduling
V	09/03/2020	14/03/2020	Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling.
VI	16/03/2020	21/03/2020	**FIRST INTERNAL TEST - 16,17,18/03/2020** **Process Synchronization**: Synchronization: The critical section problem; Peterson's solution;
VII	23/03/2020	28/03/2020	Synchronization hardware; Semaphores; Classical problems of synchronization; Monitors **MODULE 3: Deadlocks** : Deadlocks; System model; Deadlock characterization;
VIII	30/03/2019	04/04/2020	Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock. **Memory Management**: Memory management strategies:
IX	06/04/2020	11/04/2020	Background; Swapping; Contiguous memory allocation; Paging; Structure of page table; Segmentation. **MODULE 4: Virtual Memory Management**: Background; Demand paging;

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
LESSON PLAN 2019 - 20

SUBJECT: OPERATING SYSTEMS **FACULTY NAME: DR.Sowmya**
SUBJECT CODE: 17CS64 **SEM: VI SEC : A& B**

Week	Date		Topics Planned
	From	To	
X	13/04/2020	18/04/2020	Copy-on-write; Page replacement; Allocation of frames; Thrashing. File System, **Implementation of File System**: File system: File concept; Access methods; Directory structure; File system mounting; File sharing; Protection:
XI	20/04/2020	25/04/2020	Implementing File system: File system structure; File system implementation; Directory implementation; Allocation methods; Free space management.
XII	27/04/2020	02/05/2020	**SECOND INTERNAL TEST – 28,29,30/04/2020** **Secondary Storage Structures,** Protection: Mass storage structures;
XIII	04/05/2020	09/05/2020	Disk structure; Disk attachment; Disk scheduling; Disk management; Swap space management. Protection: Goals of protection, Principles of protection, Domain of protection, Access matrix, Implementation of access matrix,
XIV	11/05/2020	16/05/2020	Access control, Revocation of access rights, Capability-Based systems. **Case Study**: The Linux Operating System: Linux history; Design principles;
XV	18/05/2020	23/05/2020	Kernel modules; Process management; Scheduling; Memory Management; **THIRD INTERNAL TEST -20,21,22/05/2020**
XVI	25/05/2020	30/05/2020	File systems, Input and output
XVII	01/06/2020	06/06/2020	**CASE STUDY : Operating Systems**

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RECORD OF CLASS WORK

Date	Period	Topics Covered
10/2/2020	II	MODULE I : Introduction to operating system system structures : what operating systems do ;
11/2/2020	VII	Computer System Organization
12/2/2020	III	computer System architecture
13/2/2020	II	Operating System Structure,
17/2/2020	III	operating System operations
18/2/2020	VII	Process Management,
19/2/2020	III	Memory Management, Storage Management
20/2/2020	II	Protection and Security, Distributed Systems
24/2/2020	II	Special purpose systems, computing Environments, Operating System Services
26/2/2020	IV	Operating System Services
27/2/2020	II	User - operating system Interface System calls ; Types of system calls
2/3/2020	II	System programs : operating Systems design and implementation operating system structure
3/3/2020	IV	Virtual machines, operating System generation system boot, process Management
4/3/2020	IV	Process creation, process Scheduling Context Switch, PCB, Process Termination
5/3/2020	II	Pipe, message - passing systems, Buffering
	II	Sockets, Remote procedure calls

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RECORD OF CLASS WORK

Date	Period	Topics Covered
6/3/2020	I	MODULE 2 : MULTI-THREADED PROGRAMMING Overview, Multithreading Models
9/3/2020	II	Thread Libraries : Pthread, WIN, Java
11/3/2020	I	Thread Issues, process Scheduling Basic concepts, scheduling criteria Scheduling algorithms Multiple - processor scheduling. Thread scheduling Process Synchronization : The critical section problem, peterson's solution Synchronization Hardware Semaphores, Classical problems of Synchronization Monitors

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CIRCULAR

Ref. No: CEC/CSE/DAC/2019-2020/01 **Date: 17/01/2019**

All the members of Department Advisory Committee are informed to attend a meeting which will be held as follows

Date: 20/07/2019
Time: 3:00 PM
Venue: LAB C104

Agenda:

- Seventh Sem Internship and Project related
- Innovation in Teaching Methods
- Conduction of student development programme

HOD
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Department Advisory Committee Meeting

Date: 20-07-2019
Time: 03:00 PM

DAC Members Present:

Sl. No	Member Name	Designation	Role	Sign
1	Mr. Vivekavardhana Reddy	HOD	Convenor	
2	Dr. Nandakumar A N	Professor	Member	
3	Dr. Sowmya Naik P T	Professor	Co-Convenor	
4	Mr. Deepak N R	Assistant Professor	Member	
5	Mr. Girish G A	Assistant Professor	Member	
6	Mrs. Ambika P R	Assistant Professor	Member	
7	Mrs. Laxmi M C	Assistant Professor	Member	
8	Mrs. Archana Bhat	Assistant Professor	Member	
9	Mr. Vinodh Kumar S	Assistant Professor	Member	
10	Mr. Vivekraj G K	Technical Product Manager, Sabre India	Industry Expert	
11	Mr. Devraj K	Founder & CEO, EtherScale	Alumni	

The Department Advisory Committee meeting was conducted at Department of CSE, on 20th of July 2019, at 03:00 PM.

Agenda of the meeting:

- Seventh Sem Internship and Project related
- Innovation in Teaching Methods
- Conduction of student development programme

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Minutes of meeting:

The following points were discussed in the meeting:

- Mrs. Laxmi M C and Ms. Deepika R will be coordinating the internships for final-year students, with the evaluation of their work to be completed by the end of September.
- Prof. Sowmya Naik, Mr. Siddaramappa V, and Mr. Girish G A have been designated to oversee the final-year project work.
- The HOD recommended using Google Classroom for faculty members to approve students' synopses, presentations, and reports, as well as to conduct online tests and share study materials.
- Mr. Vivekaraj suggested conducting training on cloud computing and soft skills to third- and fourth-year students to keep them updated with industry advancements.

HOD

cc to Principal

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Academic Calendar of VTU, Belagavi for ODD Semester of 2019-2020 (Jul 2019 – Jan 2020)

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	I Sem B. E. / B. Tech. / B. Arch. (Tentative)	III, V & VII Sem B. E. /B. Tech. III, V,VII & IX Sem B. Arch.	III & V Sem MCA	III Sem MBA	III Sem M. Tech.	III Sem M. Arch.
Commencement of ODD Semester	01.08.2019	29.07.2019	29.07.2019	08.08.2019	26.08.2019	08.09.2019
Last Working day of ODD Semester	29.11.2019	30.11.2019	30.11.2019	05.12.2019	23.12.2019	06.01.2020
Practical Examinations	03.12.2019 To 13.12.2019	03.12.2019 To 13.12.2019	03.12.2019 To 07.12.2019	-	-	-
Theory Examinations	16.12.2019 To 04.01.2020	16.12.2019 To 07.02.2020	09.12.2019 To 28.12.2019	09.12.2019 To 04.01.2020	27.12.2019 To 10.01.2020	08.01.2020 To 22.01.2020
Internship Viva-Voce	-	-	-	-	12.01.2020 To 19.01.2020	-
Professional training / Organization study	-	-	-	-	-	-
Commencement of EVEN Semester	27.01.2020	10.02.2020	27.01.2020	27.01.2020	27.01.2020	01.02.2020

NOTE

- **VII Semester B. E / B. Tech** students shall have to undergo **Internship** for a period of four Weeks.
- **I Semester B. E/ B. Tech / B. Arch** Students shall compulsorily undergo **Induction Program** for a period of 3 Weeks (two phases) as per the schedule given by VTU. First phase 11 days in first semester and second phase 10 days in second semester.

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

28/6/19
REGISTRAR

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM)

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT
STARTING OF HIGHER SEMESTERS (3rd,5th & 7th Semesters 29.7.2019 MON)					1					
					2	GANDHI JAYANTI(DH)				
THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4	SECOND CIE FOR FIRST SEM.	2	
TUE	6		3	FIRST INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	8	VIJAYA DASHAMI(DH)	5		3	
WED	7	FIRST SEM INDUCTION	4		9		6		4	
THU	8		5		10		7		5	
FRI	9		6		11		8		6	
SAT	10	2ND SATURDAY HOLIDAY	7		12	2ND SATURDAY HOLIDAY	9	2ND SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	THIRD CIE FOR FIRST SEM
TUE	13		10	MOHARAM (DH)	15		12		10	
WED	14		11		16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANTHI(DH)	13	
SAT	17		14	2ND SATURDAY HOLIDAY	19		16		14	
SUN	18		15		20		17		15	
MON	19		16		21	SECOND INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	18	THIRD INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	16	LAB INTERNALS FIRST SEM
TUE	20		17		22		19		17	
WED	21		18		23		20		18	
THU	22		19	FIRST CIE FOR FIRST SEM.	24		21		19	
FRI	23		20		25		22		20	
SAT	24	4TH SATURDAY HOLIDAY	21		26	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	21	LAST WORKING DAY FIRST SEMESTER
SUN	25		22		27		24		22	
MON	26		23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 3rd,5th & 7th SEMESTERS	24	FIRST SEMESTER VTU PRACTICALS 23.12.19 TO 03.01.2020 THEORY EXAMS 06.01.2020 TO 28.01.2020
WED	28		25		30		27		25	
THU	29		26		31		28		26	
FRI	30		27				29		27	
SAT	31		28	4TH SATURDAY HOLIDAY			30	LAST WORKING DAY 3RD ,5TH & 7th SEM	28	
SUN			29						29	
MON			30						30	
TUE									31	

VTU PRACTICAL EXAMS: 1ST & 3RD SEMESTERS : 3.12.19 TO 13.12.19, 7TH SEMESTER 6.12.19 TO 14.12.19, VTU THEORY EXAMS: 3RD ,5TH & 7TH SEMESTERS, 16.12.19 TO 7.2.2020

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CITY ENGINEERING COLLEGE — DEPARTMENT OF COMPUTER SCIENCE ENGINEERING — ACADEMIC CALENDAR 2019-20 (ODD SEM)

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**
STARTING OF HIGHER SEMESTERS (3^{rd},5^{th} & 7^{th} Semesters **29.7.2019** MON)					1					
					2	GANDHI JAYANTI(DH)				
THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4	**SECOND CIE FOR FIRST SEM.**	2	
TUE	6		3	FIRST INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	8	VIJAYA DASHAMI(DH)	5		3	
WED	7	FIRST SEM INDUCTION	4		9		6		4	
THU	8		5		10		7	WORKSHOP	5	
FRI	9		6		11		8		6	
SAT	10	2^{ND} SATURDAY HOLIDAY	7	INDUSTRIAL VISIT	12	2^{ND} SATURDAY HOLIDAY	9	2^{ND} SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	
TUE	13		10	MOHARAM (DH)	15		12		10	**THIRD CIE FOR FIRST SEM**
WED	14		11		16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANTHI(DH)	13	
SAT	17		14	2^{ND} SATURDAY HOLIDAY	19		16		14	
SUN	18		15		20		17		15	
MON	19		16	Technical Activities	21	SECOND INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	18	THIRD INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	16	
TUE	20		17		22		19		17	LAB INTERNALS FOR 1^{st} SEMESTERS
WED	21		18		23		20		18	
THU	22		19	**FIRST CIE FOR FIRST SEM.**	24		21		19	
FRI	23		20		25		22		20	
SAT	24	4^{TH} SATURDAY HOLIDAY	21		26	4^{TH} SATURDAY HOLIDAY	23	4^{TH} SATURDAY HOLIDAY	21	**LAST WORKING DAY 1^{ST} SEM**
SUN	25		22		27		24		22	
MON	26	PTM	23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 3^{rd},5^{th} &7^{th} SEMESTERS	24	VTU PRACTICAL: 1^{ST} SEMESTER: 23.12.19 TO 3.1.20 THEORY EXAMS : 1^{ST} SEMESTERS : 6.1.20 TO 28.1.2020
WED	28		25		30		27		25	
THU	29		26		31		28		26	
FRI	30		27				29	**LAST WORKING DAY 1^{st} SEM**	27	
SAT	31		28	4^{TH} SATURDAY HOLIDAY			**30**	**LAST WORKING DAY 3^{RD} ,5^{TH} &7^{TH} SEM**	28	
SUN			29						29	
MON			30						30	
TUE									31	

VTU PRACTICAL EXAM : 3^{RD} & 5^{TH} SEMESTER: 3.12.19 TO13.12.19,7^{TH} SEMESTER: 6.12.19 TO14.12.19, THEORY EXAMS : 3^{RD} ,5^{TH} &7^{TH} SEMESTERS : 16.12.19 TO 7.2.2020

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR : 2019 - 20

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PREFERNCE

Name of the Faculty: Mrs. Mala P

Designation: A.P

Year / Semester:

Sl.No	Course Code and Name	Year/Semester
1.	18CS35 - SE	2nd / 3rd
2.	17CS52 - CN	3rd / 5th
3.	15CS71 - Web	4th / 7th

Signature of faculty

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR : 2019-20 (odd)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PREFERNCE

Name of the Faculty: Vivekavardhana Reddy

Designation: Asst. Professor

Year / Semester:

Sl.No	Course Code and Name	Year/Semester
1.	18CS32 - DS	2nd/3rd
2.	15CS71 - Web	4th/7th
3.	17CS52 - CN	3rd/5th

Signature of faculty

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ACADEMIC YEAR: 2019 - 2020(Odd)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE ALLOCATION

Sl.No	Name of the Faculty	Course Code and Name	Year/ Semester	Signature
1	Mrs. Sowmya Naik	15CS73 – Information and Network Security 17CS551 - Artificial Intelligence	4th / 7th 3rd / 5th	
2	Dr. Nandakumar A N	15CS754 – Storage Area Network	4th / 7th	
3	Mr. Vivekavardhana Reddy	18CS32 – Data Structure and Its Application 18CSL38 – Data Structure Lab	2nd / 3rd	
4	Mr. Deepak N R	18CS33 – Analog and Digital Electronics	2nd / 3rd	
5	Mr. Nandish A. C	17CS53 – Database Management System 17CSL58 – DBMS Lab	3rd / 5th	
6	Mr. Girish G A	15CS72 – Advanced Computer Architecture	4th / 7th	
7	Mr. Surendranath Gowda	15CS71 – Web Technologies 15CSL77 – Web Technologies Lab	4th / 7th 4th / 7th	
8	Mr. Vinod Kumar	17CS551 – Object Oriented Modelling and Design	3rd / 5th	
9	Mr. Siddaramappa V	18CS35 - Software Engineering 15CS73 - Machine Learning 15CSL76 – Machine Learning Lab	2nd / 3rd 4th / 7th 4th / 7th	

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10	Mrs. Ambika P R	15CS73 – Information and Network Security 18CS34 – Computer Organization	4th / 7th 2nd / 3rd	
11	Mrs. Laxmi M C	17CS54 – Automata Theory and Computation 15CS71 – Web Technologies 15CSL76 – Machine Learning Lab	3rd / 5th 4th / 7th 4th / 7th	
12	Ms. Savitri Kulkarni	18CS32 – Data Structure and Its Application 18CSL38 – Data Structure Lab	2nd / 3rd	
13	Mr. B. Ramesh	17CS51 - Management & Entrepreneurship 18CPS13 – Problem solving using C	3rd / 5th 1st / 1st	
14	Mrs. Punitha P	18CS33 – Analog and Digital Electronics	2nd / 3rd	
15	Mrs. Archana Bhat	17CS53 – Database Management System 17CSL58 – DBMS Lab 18CS35 – Software Engineering	3rd / 5th 3rd / 5th 2nd / 3rd	
16	Ms. Deepika R	17CS52 – Computer Networks 17CSL57 – Computer Networks Lab	3rd / 5th 3rd / 5th	
17	Mrs. Mala P	18CS35 – Software Engineering	2nd / 3rd	
18	Mrs. Sriraksha S	17CS551 – Object Oriented Modelling and Design	3rd / 5th	
19	Mrs. Manjula S	18CS32 – Data Structure and Its Application 18CSL38 – Data Structure Lab	2nd / 3rd	
20	Ms. Pushpa	15CS71 – Web Technologies	4th / 7th	
21	Mrs. Sreevidya	17CS52 – Computer Networks 17CSL57 – Computer	3rd / 5th 3rd / 5th	

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		Networks Lab		
22	Mrs. Kavyashree Yadav	15CS754 – Storage Area Network	4th / 7th	
23	Ms. Sowbhagya M P	15CSL77 – Web Technologies Lab	4th / 7th	

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Department Of CSE

Aug – Nov 2019

Time Table for III Sem A Section

Room No: C203

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	CO	DSA	Short Break	MATHS	ADE	Lunch Break	A1-ADE/ A2 – DS LAB		
TUE	DSA	DMS		MATHS	ADE		CO	SE	Tutorial
WED	SE	CO		ADE	DMS		A1- DS/ A2 – ADE LAB		
THU	DSA	SE		MATHS	DMS		ADE	CO	Tutorial
FRI	DMS	SE		MATHS	DSA		EDUSAT/ LIBRARY		
SAT	CPH	DSA		ADE/DS LAB					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques	MAT-3	Mrs. Gayathri
2	18CS32	Data Structures and Applications	DSA	Mr. Vivekavardhana Reddy
3	18CS33	Analog and Digital Electronics	ADE	Mr. Deepak N R
4	18CS34	Computer Organization	CO	Mrs. Ambika P R
5	18CS35	Software Engineering	SE	Mr. Siddaramappa
6	18CS36	Discrete Mathematical Structures	DMS	Mr. Narendra
7	18CSL37	Analog and Digital Electronics Laboratory	ADE LAB	Mr. Deepak/ Mrs. Punitha P
8	18CSL38	Data Structures Laboratory	DS LAB	Mr. Vivekavardhana Reddy/ Ms. Savitri K
9	18CPC29	Constitution of India, Professional Ethics and Cyber Law	CIP	Dr. Rajasekhar

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Department Of CSE

Aug – Nov 2019

Time Table for III Sem B Section

Room No: C204

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	MATHS	SE	Short Break	ADE	DMS	Lunch Break	ADE	CO	Tutorial
TUE	DMS	MATHS		CO	DSA		B1-ADE / B2 – DS LAB		
WED	SE	DSA		MATHS	ADE		CO	DSA	Tutorial
THU	ADE	DMS		SE	DSA		B1-DS / B2 – ADE LAB		
FRI	MATHS	SE		DMS	CO		EDUSAT/ LIBRARY		
SAT	ADE / DS LAB			CPH	DSA				

Sl . No	Course Code	Course Name	Course	Faculty Name
1	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques	MAT-3	Mrs. Gayathri
2	18CS32	Data Structures and Applications	DSA	Mrs. Manjula S
3	18CS33	Analog and Digital Electronics	ADE	Mrs. Punitha P
4	18CS34	Computer Organization	CO	Mrs. Ambika P R
5	18CS35	Software Engineering	SE	Mrs. Mala
6	18CS36	Discrete Mathematical Structures	DMS	Mr. Nagendra
7	18CSL37	Analog and Digital Electronics Laboratory	ADE LAB	Mrs. Punitha P/ Mr. Deepak N R
8	18CSL38	Data Structures Laboratory	DS LAB	Mrs. Manjula S/ Ms. Savitri K
9	18CPC29	Constitution of India, Professional Ethics and Cyber Law	CIP	Dr. Rajasekhar

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Department Of CSE

Aug – Nov 2019

Time Table for V Sem A Section

Room No: C201

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	CN	AI	Short Break	OOMD	ATC	Lunch Break	DBMS	ME	Tutorial
TUE	ME	ATC		DBMS	CN		A1 – CN / A2 – DBMS LAB		
WED	OOMD	CN		DBMS	AI		OOMD	ATC	Tutorial
THU	CN	ME		AI	ATC		A2 – CN / A1 – DBMS LAB		
FRI	ME	AI		DBMS	OOMD		EDUSAT/ LIBRARY		
SAT	Mini Project			Mini Project					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	17CS51	Management and Entrepreneurship	ME	Mr. B Ramesh
2	17CS52	Computer Networks and Security	CNS	Mrs. Deepika R
3	17CS53	Database Management System	DBMS	Mrs. Archana Bhat
4	17CS54	Automata Theory and Computability	ATC	Mrs. Laxmi M C
5	17CS562	Object Oriented Modeling and Design	OOMD	Mr. Vinodh Kumar S
6	17CS5	Artificial Intelligence	AI	Mrs. Sowmya Naik
7	17CSL57	Computer Network Laboratory	CN LAB	Mrs. Deepika R/ Mrs. Shrividya
8	17CSL58	DBMS Lab with Mini project	DBMS LAB	MR. Nandish A C/ Mrs. Archana Bhat

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Department Of CSE

Aug – Nov 2019

Time Table for V Sem B Section **Room No: C202**

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	OOMD	ME		DBMS	CN		B1- CN/ B2- DBMS LAB		
TUE	DBMS	AI		OOMD	ATC	Lunch Break	ME	CN	Tutorial
WED	AI	ATC		ME	DBMS		B2- CN/ B1- DBMS LAB		
THU	OOMD	DBMS		ME	CN		AI	ATC	Tutorial
FRI	ATC	OOMD		CN	AI		EDUSAT/ LIBRARY		
SAT	Mini Project			Mini Project					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	17CS51	Management and Entrepreneurship	ME	Mr. B Ramesh
2	17CS52	Computer Networks and Security	CNS	Mrs. Shrividya
3	17CS53	Database Management System	DBMS	Mr. Nandish A C
4	17CS54	Automata Theory and Computability	ATC	Mrs. Laxmi M C
5	17CS562	Object Oriented Modeling and Design	OOMD	Mrs. Shriraksha
6	17CS5	Artificial Intelligence	AI	Mrs. Sowmya Naik
7	17CSL57	Computer Network Laboratory	CN LAB	Mrs. Deepika R/ Mrs. Shrividya
8	17CSL58	DBMS Lab with Mini project	DBMS LAB	MR. Nandish A C/ Mrs. Archana Bhat

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Department Of CSE

Aug – Nov 2019

Time Table for VII Sem A Section **Room No: C303**

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	ACA	WEB	Short Break	ML	INS	Lunch Break			
TUE	A1-ML/ A2 – WEB LAB			LAB	ACA		ML	WEB	SAN
WED	SAN	ACA		INS	WEB				
THU	A2-ML/ A1 – WEB LAB			LAB	INS		ACA	SAN	ML
FRI	ML	INS		WEB	SAN				
SAT	Project Work			Project Work					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	15CS71	Web Technologies	WEB	Ms. Pushpa
2	15CS72	Advanced Computer Architectures	ACA	Mr. Girish G A
3	15CS73	Machine Learning	ML	Mr. Siddaramappa V
4	15CS743	Information and Network Security	INS	Mrs. Sowmya Naik
5	15CS754	Storage Area Network	SAN	Dr. Nandakumar A N
6	15CSL76	Machine Learning Lab	ML Lab	Mrs. Ambika P R/ Mr. Siddaramappa V
7	15CSL77	Web Technologies Laboratory with Mini Project	WEB Lab	Mrs. Sowbhagya/ Mrs. Laxmi M C
8	15CSP78	Project Work – Phase I + Seminar	Project	Mr. Siddaramappa/ Mr. Girish G A

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Department Of CSE

Aug – Nov 2019

Time Table for VII Sem B Section **Room No: C304**

DAY	9:00 – 10:00	10:00 – 11:00		11:15 – 12:15	12:15 – 1:15		2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON	B1 – ML / B2 – WEB LAB		Short Break	LAB	INS	Lunch Break	ACA	ML	SAN
TUE	ACA	WEB		INS	SAN				
WED	B2 – ML / B1 – WEB LAB			LAB	ACA		INS	WEB	ML
THU	SAN	INS		WEB	ML				
FRI	WEB	ACA		SAN	ML				
SAT	Project Work			Project Work					

Sl . No	Course Code	Course Name	Course	Faculty Name
1	15CS71	Web Technologies	WEB	Mr. Surendranath Gowda
2	15CS72	Advanced Computer Architectures	ACA	Mr. Rakesh R
3	15CS73	Machine Learning	ML	Mrs. Ambika P R
4	15CS743	Information and Network Security	INS	Mrs. Sowmya Naik
5	15CS754	Storage Area Network	SAN	Mrs. KavyaShree Yadav
6	15CSL76	Machine Learning Lab	ML Lab	Mr. Siddaramappa/ Mrs. Laxmi M C
7	15CSL77	Web Technologies Laboratory with Mini Project	WEB Lab	Mrs. Sowbhagya/ Mrs. Deepika R
8	15CSP78	Project Work – Phase I + Seminar	Project	Mr. Siddaramappa/ Mr. Girish G A

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Department Of Computer Science & Engineering

Aug – Nov 2019

W.E.F – 05/08/2019

Name: Mrs. Archana Bhat Sem: III – B, V – A, B Subject: SE, DBMS

DAY	9:00 – 10:00	10:00 – 11:00	11:00 – 11:15	11:15 – 12:15	12:15 – 1:15	1:15 – 2:00	2:00 – 3:00	3:00 – 4:00	4:00 – 5:00
MON		III- B	Short Break	V - B		Lunch Break	V - A	DBMS LAB (B2)	
TUE	V- B			V- A			DBMS LAB (A2)		
WED	III - B			V - A	V - B		DBMS LAB (B1)		
THU		V - B		III - B			DBMS LAB (A1)		
FRI		III - B		V - A					
SAT									

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DATABASE MANAGEMENT SYSTEM
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2017-2018)
SEMESTER – V

Subject Code	17CS53	IA Marks	40
Number of Lecture Hours/Week	4	Exam Marks	60
Total Number of Lecture Hours	50	Exam Hours	03

CREDITS – 04

Module – 1	**Teaching Hours**
Introduction to Databases: Introduction, Characteristics of database approach, Advantages of using the DBMS approach, History of database applications. **Overview of Database Languages and Architectures:** Data Models, Schemas, and Instances. Three schema architecture and data independence, database languages, and interfaces, The Database System environment. **Conceptual Data Modelling using Entities and Relationships:** Entity types, Entity sets, attributes, roles, and structural constraints, Weak entity types, ER diagrams, examples, Specialization and Generalization. **Textbook 1:Ch 1.1 to 1.8, 2.1 to 2.6, 3.1 to 3.10**	**10 Hours**
Module – 2	
Relational Model: Relational Model Concepts, Relational Model Constraints and relational database schemas, Update operations, transactions, and dealing with constraint violations. **Relational Algebra:** Unary and Binary relational operations, additional relational operations (aggregate, grouping, etc.) Examples of Queries in relational algebra. **Mapping Conceptual Design into a Logical Design:** Relational Database Design using ER-to-Relational mapping. **SQL:** SQL data definition and data types, specifying constraints in SQL, retrieval queries in SQL, INSERT, DELETE, and UPDATE statements in SQL, Additional features of SQL. **Textbook 1: Ch4.1 to 4.5, 5.1 to 5.3, 6.1 to 6.5, 8.1; Textbook 2: 3.5**	**10 Hours**
Module – 3	
SQL : Advances Queries: More complex SQL retrieval queries, Specifying constraints as assertions and action triggers, Views in SQL, Schema change statements in SQL. **Database Application Development:** Accessing databases from applications, An introduction to JDBC, JDBC classes and interfaces, SQLJ, Stored procedures, Case study: The internet Bookshop. **Internet Applications:** The three-Tier application architecture, The presentation layer, The Middle Tier **Textbook 1: Ch7.1 to 7.4; Textbook 2: 6.1 to 6.6, 7.5 to 7.7.**	**10 Hours**
Module – 4	
Normalization: Database Design Theory – Introduction to Normalization using Functional and Multivalued Dependencies: Informal design guidelines for relation schema, Functional Dependencies, Normal Forms based on Primary Keys, Second and Third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form. **Normalization Algorithms:** Inference Rules, Equivalence, and Minimal Cover, Properties of Relational Decompositions, Algorithms for Relational Database Schema Design, Nulls, Dangling tuples, and alternate Relational Designs, Further discussion of Multivalued dependencies and 4NF, Other dependencies and Normal Forms	**10 Hours**

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Textbook 1: Ch14.1 to 14.7, 15.1 to 15.6	
Module – 5	
Transaction Processing: Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL. **Concurrency Control in Databases:** Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking. **Introduction to Database Recovery Protocols:** Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update, Recovery techniques based on immediate update, Shadow paging, Database backup and recovery from catastrophic failures **Textbook 1: 20.1 to 20.6, 21.1 to 21.7, 22.1 to 22.4, 22.7.**	**10 Hours**
Course outcomes: The students should be able to:	
• Summarize the concepts of database objects; enforce integrity constraints on a database using RDBMS. • Use Structured Query Language (SQL) for database manipulation. • Design simple database systems • Design code for some application to interact with databases.	
Question paper pattern: The question paper will have TEN questions. There will be TWO questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer FIVE full questions, selecting ONE full question from each module.	
Text Books:	
1. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson. 2. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill	
Reference Books:	
1. Silberschatz Korth and Sudharshan, Database System Concepts, 6th Edition, Mc-GrawHill, 2013. 2. Coronel, Morris, and Rob, Database Principles Fundamentals of Design, Implementation and Management, Cengage Learning 2012.	

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Aug – Nov 2019

V SEM 'A' Section

Sl No.	USN	Student Name
1	1CE17CS003	ABHISHEK S
2	1CE17CS004	ADITYA PRASAD
3	1CE17CS006	AISHWARYA S
4	1CE17CS007	AKANKSHA GOWRI
5	1CE17CS008	AKSHAY AMRUT MORAB
6	1CE17CS009	ANANDESHWAR. C
7	1CE17CS013	ANUSHA
8	1CE17CS015	ANUSHREE K R
9	1CE17CS016	APEKSHA BHARADWAJ .M
10	1CE17CS018	ARVIND KUMAR G
11	1CE17CS019	BELLARY NITIN PRASAD
12	1CE17CS021	BHARATH KUMAR S
13	1CE17CS022	BHAVANA K
14	1CE17CS023	BHAVYA AGGARWAL
15	1CE17CS024	BHUVANESHWARI M
16	1CE17CS029	DEEKSHA R
17	1CE17CS032	DIKSHITA JAIN
18	1CE17CS033	EERANNA T
19	1CE17CS035	GAYATHRI B
20	1CE17CS036	GAYATHRI B M
21	1CE17CS037	GEETHA S
22	1CE17CS038	H PAWAN KUMAR
23	1CE17CS040	HARSHITH S
24	1CE17CS041	HARSHITHA L
25	1CE17CS042	HITHA. S
26	1CE17CS044	JAHNAVI B
27	1CE17CS045	JASIR AHMAD
28	1CE17CS046	K MALLIKARJUN
29	1CE17CS047	K PAVITHRA
30	1CE17CS048	KALPANA GJ
31	1CE17CS049	KAVANA D
32	1CE17CS050	KAVYASHREE S B
33	1CE17CS052	KRUPA D
34	1CE17CS054	MADAN THARU
35	1CE17CS058	MANORANJINI
36	1CE17CS059	MEGHANA G

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37	1CE17CS062	MOHAMMED ALI BAIG
38	1CE17CS063	MOHAMMAD FAIZAL
39	1CE17CS064	MOHAMMED SHAHID ULLA
40	1CE17CS065	MOHAMMED TAUSIF PASHA
41	1CE17CS066	MONIKA R
42	1CE17CS067	MUAAZ MERAZ
43	1CE17CS068	MUJTABA NAYAZ
44	**1CE17CS072**	**NANDIKA M J**
45	1CE17CS074	NISCHAL KOTHARI M
46	1CE17CS075	NITHESH S
47	1CE17CS080	PAVAN KUMAR S
48	1CE17CS094	RAJATH DEEP SINGH
49	1CE17CS113	SHANTHA KUMARI M V
50	**1CE17CS125**	**SOUNDARYA R**
51	1CE17CS130	SUMIT SAURAV
52	1CE17CS146	VISHAL KUMAR
53	1CE16CS003	ABHISHEK
54	1CE16CS006	NAGENDRA PRASAD
55	1CE16CS024	CHETHAN B.G
56	1CE16CS025	CHETHAN B
57	**1CE16CS029**	**BHOOMIKA D K**
58	1CE16CS041	KARTHIK KUMAR .P
59	1CE16CS052	MOHAMMED BURHAN
60	1CE16CS074	RAKSHITHA .B
61	1CE16CS079	REEMA R KHARVI
62	1CE16CS081	ROOPITHA
63	1CE16CS097	SURESH
64	1CE15CS069	MAHARUDRA
65	1CE15CS093	PANCHAMI .B
66		vasavi
67		Roopashree

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AUG-NOV 2019

V SEM ' B ' Section

Sl No.	USN	Student Name
1	1CE17CS005	AISHWARYA B R
2	1CE17CS014	ANUSHA HIREMATH
3	1CE17CS053	LATHA L
4	1CE17CS057	MANOJ KUMAR T
5	1CE17CS070	MUSKAN K
6	1CE17CS076	PALLAVI K R
7	1CE17CS077	PALLAVI M C
8	1CE17CS078	PALLAVI R
9	1CE17CS079	PARVATHI N K
10	1CE17CS081	PAVAN V
11	1CE17CS082	POKALA SESHA SAI POOJA
12	1CE17CS083	POLICE PATEL SAINATH REDDY
13	1CE17CS084	POOJA K
14	1CE17CS085	POOJASHREE A
15	1CE17CS086	PRAJWAL V
16	1CE17CS087	PRASHANTH H K
17	1CE17CS088	PRASHANTH KUMAR N
18	1CE17CS089	PRERANA P
19	1CE17CS090	PRERANA PRASAD
20	1CE17CS091	PRIYA G
21	1CE17CS092	PRIYANKA S MARELLAVAR
22	1CE17CS093	RAHUL KARMAKAR
23	1CE17CS095	RASHMIKA C P
24	1CE17CS097	ROOPA M
25	1CE17CS098	S BHAVYASRI
26	1CE17CS101	SAGAR M
27	1CE17CS102	SAHANA M R
28	1CE17CS103	SAHANA N
29	1CE17CS104	SAHANA S V
30	1CE17CS105	SAI NITHIN G
31	1CE17CS106	SANDHYA P
32	1CE17CS107	SANEETH BANIK
33	1CE17CS108	SANGEETHA N
34	1CE17CS109	SANJANA R
35	1CE17CS111	SHALINI G
36	1CE17CS112	SHANMUGA PRIYA G
37	1CE17CS114	SHASHIDHARA S

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38	1CE17CS115	SHAZIYA KOUSAR
39	1CE17CS118	SHRAVANI J
40	1CE17CS119	SHREYAS R GOWDA
41	1CE17CS120	SHUBHAM KUMAR
42	1CE17CS122	SIMRAN BANU A
43	1CE17CS123	SINCHANA B G
44	**1CE17CS124**	**SINDHU P PAI**
45	1CE17CS126	SOUNDARYA RAJ G
46	1CE17CS127	SRIDHAR D N
47	1CE17CS128	SRI LAKSHMI B A
48	1CE17CS129	SUMAIYA ARA KHANUM
49	1CE17CS132	SWATHI P
50	1CE17CS133	SYED HASNAIN RAZA
51	1CE17CS134	TARIQ MOHAMMED SARFARAZ
52	1CE17CS136	THANUSHREE B M
53	1CE17CS137	THEJAS MURTHY R
54	1CE17CS138	THEJESHWARI S
55	1CE17CS139	UMAA MAHESHWARI S V
56	1CE17CS141	VANDANA M
57	1CE17CS143	VIDHYADHAR JOSHI
58	1CE17CS144	VINDYA SHREE P
59	1CE17CS145	VINUTHA D B
60	1CE17CS150	ZAIBA BEGUM
61	**1CE16CS040**	**JAYA SHANKAR**
62	1CE16CS051	MANOHAR
63	1CE16CS056	MUJEER AHMED
64	**1CE16CS096**	**SUHAS S**
65	**1CE16CS103**	**TEJAS K S**

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"ACCREDITED BY NAAC"

DEPARTMENT OF CSE

LESSON PLAN FOR ODD SEMESTER FOR ACADEMIC YEAR 2019 - 2020

Course Title: Database Management System	Course Code : 17CS53
Total contact hours: L:T:P:S :: 4 : 0 : 0: 0	End Term Marks :60
Internal Marks : 40	
Semester : V – 'B'	Academic year : 2019-20
Lesson plan Author: Mrs. Archana Bhat	Date : 29/07/2019

Course objectives: This course will enable students to

1. Provide a strong foundation in database concepts, technology, and practice.
2. Practice SQL programming through a variety of database problems.
3. Demonstrate the use of concurrency and transactions in database
4. Design and build database applications for real world problems.

Course Outcomes: The students shall able to:

1. Summarize the concepts of database objects; enforce integrity constraints on a database using RDBMS.
2. Use Structured Query Language (SQL) for database manipulation
3. Design simple database systems
4. Design code for some application to interact with databases

Module 1

Week	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
1	**Introduction to Databases:** Introduction, Characteristics of database approach	L1,L2	CO1
	Advantages of using the DBMS approach, History of database applications.	L1,L2	CO1
	Overview of Database Languages and Architectures: Data Models, Schemas, and Instances	L1,L2	CO1
	Three schema architecture and data independence, database languages, and interfaces	L1,L2	CO1
2	The Database System environment	L1,L2	CO1
	Conceptual Data Modeling using Entities and Relationships: Entity types, Entity sets, attributes	L1,L2	CO1, CO3
	roles, and structural constraints	L1,L2	CO1, CO3
	Weak entity types	L1,L2	CO1, CO3
	ER diagrams, examples	L2,L3	CO1, CO3

Module 2

Week	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
4	**Relational Model**: Relational Model Concepts	L1,L2,L3	CO1
	Relational Model Constraints and relational database schemas	L1,L2,L3	CO1
	Update operations, transactions, and dealing with constraint violations	L1,L2,L3	CO1, CO2
	Relational Algebra: Unary and Binary relational operations	L1,L2,L3	CO1
5	Additional relational operations (aggregate, grouping, etc.) Examples of Queries in relational algebra	L1,L2,L3	CO1
	Mapping Conceptual Design into a Logical Design: Relational Database Design using ER-to-Relational mapping	L2,L3	CO1, CO3
	SQL: SQL data definition and data types	L1,L2	CO2
	Specifying constraints in SQL	L1,L2	CO2
7	Retrieval queries in SQL,	L2,L3	CO2
	INSERT, DELETE, and UPDATE statements in SQL	L1,L2	CO2
	Additional features of SQL	L1,L2	CO2
8	Additional features of SQL	L1,L2	CO2

Module 3

Week	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
8	**SQL** : Advanced Queries: More complex SQL retrieval queries	L2, L3	CO2
	Specifying constraints as assertions and action triggers	L2, L3	CO2
	Views in SQL, Schema change statements in SQL	L2, L3	CO2
9	**Database Application Development:** Accessing databases from applications	L2, L3	CO4
	An introduction to JDBC, JDBC classes and interfaces	L1, L2	CO4
	SQLJ	L1, L2	CO2, CO4
	Stored procedures	L1, L2	CO2, CO4
10	Case study: The internet Bookshop	L2, L3	CO4
	Internet Applications: The three-Tier application architecture	L1, L2	CO4
	The presentation layer, The Middle Tier	L1, L2	CO4

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Module 4

Week	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
11	**Normalization: Database Design Theory –** Introduction to Normalization using Functional and Multivalued Dependencies: Informal design guidelines for relation schema	L2, L3	CO3
	Functional Dependencies, Normal Forms based on Primary Keys	L2, L3	CO3
12	Second and Third Normal Forms, Boyce-Codd Normal Form	L2, L3	CO3
	Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form.	L2, L3	CO3
	Normalization Algorithms: Inference Rules, Equivalence, and Minimal Cover,	L2, L3	CO3
13	Properties of Relational Decompositions	L2, L3	CO3
14	Algorithms for Relational Database Schema Design, Nulls, Dangling tuples and alternate Relational Designs	L2, L3	CO3
	Further discussion of Multivalued dependencies and 4NF	L2, L3	CO3
	Alternate Relational Designs	L2, L3	CO3

Module 5

Week	Contents of Module	Bloom's Taxonomy Level	Course Outcome (CO)
14	**Transaction Processing:** Introduction to Transaction Processing, Transaction and System concepts	L1, L2	CO1, CO4
15	Desirable properties of Transactions, Characterizing schedules based on recoverability	L1, L2	CO1, CO4
	Desirable properties of Transactions, Characterizing schedules based on recoverability	L1, L2	CO1, CO4
	Transaction support in SQL	L1, L2	CO1, CO4
	Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering	L1, L2	CO1, CO4
16	Multi version Concurrency control techniques, Validation Concurrency control techniques	L1, L2	CO1, CO4
	Granularity of Data items and Multiple Granularity Locking	L1, L2	CO1, CO4
	Introduction to Database Recovery Protocols: Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update	L1, L2	CO1, CO4

16	Recovery techniques based on Immediate update, Shadow paging	L1, L2	CO1, CO4
17	Database backup and recovery from catastrophic failures	L1, L2	CO1, CO4

RBT Level

L1-Remembering L2-Understanding L3-Applying L4-Analysing L5-Evaluating L6-Creating

Text Books:

1. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson.
2. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill

Reference Books:

1. Silberschatz Korth and Sudharshan, Database System Concepts, 6th Edition, McGrawHill, 2013.
2. Coronel, Morris, and Rob, Database Principles Fundamentals of Design, Implementation and Management, Cengage Learning 2012.

Signature of Faculty

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Department of Computer Science and Engineering

Question Bank – Module 1

Subject: Database Management Systems **Sub Code: 17CS53**

1. Define DBMS. Discuss the advantages of DBMS over the traditional file system.
2. Explain the component modules of DBMS and their interaction with the help of a diagram.
3. Define the following with an example: Weak entity type, Participation constraints, Cardinality ratio, and Recursive relationship with example.
4. Draw an ER diagram of Banking System taking into account at least five entities; indicate all keys, constraints and assumptions that are made.
5. Discuss the main characteristics of the database approach and how it differs from traditional file systems.
6. Describe three schema architecture. Why do we need mappings among schema levels?
7. Define an Entity and attribute. Explain the different types of attributes that occur in ER diagram model, with an example.
8. Draw an ER diagram of an airline reservation system, taking into account at least five entities. Indicate all keys, constraints and assumptions that are made.
9. Define snapshot, metadata, intention and database.
10. Design an ER diagram for an employee database with at least four entities considering all the constraints.
11. What are the structural constraints on a relationship type? Explain with examples.
12. Explain additional implications of using database approach.
13. Write an ER diagram for hospital management considering at least four entities.
14. What are the responsibilities of the DBA and Database Designer?
15. Discuss the different types of user friendly interfaces and the types of user who typically use each.
16. Explain with block diagram the different phases of database design.
17. Draw an ER diagram of movie database. Assume your own entities attributes and relationships.

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Question Bank – Module 2

Subject: Database Management System **Sub Code: 17CS53**

1. What is NULL? What is its importance? How are these values handled in relational model?
2. Discuss in detail the operators SELECT, PROJECT, UNION with suitable example?
3. Explain about different DML operations.
4. By considering an example describe various data update operations in SQL
5. Explain in detail about various key constraints used in database system.
6. What are the basic operations that can change the states of relations in the database? Explain how the basic operations deal with constraint violation.
7. Explain briefly violation in entity integrity constraint, key and referential integrity constraints, with example.
8. In SQL which command is used for table creation? Explain how constraints are specified in SQL during table creation with suitable example.
9. Describe the steps of an algorithm for ER to Relational mapping.
10. Explain the data types available for attribute specification in SQL.
11. Give an example of mapping of generalization or specialization into relational schema.
12. Consider the following tables:
    works (Pname, Cname, Salary)
    lives (Pname, Street, City)
    located-In (Cname, City)

    Write the following queries in SQL:

    i) List the names of the people who work for the company 'Wipro' along with the cities

    they live in.

    ii) Find the names of the persons who do not work for 'Infosys'.

    iii) Find the people whose salaries are more than that of all of the 'oracle' employees.

    iv) Find the persons who work and lives in the same city

13. Define the following:

    i) Relation state ii) Relation schema iii) Arity iv) Domain

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Department of Computer Science and Engineering

Question Bank – Module 3

Subject: Database Management Systems **Sub Code: 17CS53**

1. How triggers and assertions defined in SQL? Explain.
2. How are views created and dropped? Explain how the views are implemented and updated.
3. Explain the single tier and client server architecture with a neat diagram.
4. With the program segment, explain retrieving of tuples with embedded SQL in C.
5. Discuss how each of the following constructs is used in SQL and discuss the various options for each construct:
   Nested queries ii) aggregate functions iii) Schema change statements iv) Group by and Having clause
6. Draw and explain 3-tier architecture and technology relevant to each tier. Write the advantages 3-tier architecture.
7. What is CGI? Why was CGI introduced? What are the disadvantages of an architecture using CGI scripts?
8. What is Dynamic SQL and how it is different from Embedded SQL?
9. What is SQLJ and how is it different from JDBC?
10. Define stored procedure. Explain the creating and calling of stored procedure with suitable example.
11. What is cursor? Explain with example, retrieving multiple tuples with embedded SQL.

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Question Bank – Module 4

Subject: DBMS **Sub Code: 17CS53**

1. Define normal form. Explain 1NF, 2NF and 3NF with suitable examples for each.
2. Which normal form is based on the concept of transitive functional dependency? Explain the same with an example.
3. What is the need for normalization?
4. What is Functional Dependency?
5. Define Multivalued dependency. Explain fourth normal form, with an example.
6. Define non-additive join property of decomposition and write an algorithm of testing for non-additive join property.
7. Explain the informal guidelines used as measures to determine the quality of relation schema design.
8. Define minimal cover. Write an algorithm for finding a minimal cover F for a set of functional dependencies E.
9. What is functional dependency? List the conditions for a set of functional dependencies to be minimal.
10. Which normal form specifies multivalued functional dependency? Explain it with examples.
11. Consider the relation:
    EMP_PROJ={SSN, Pnumber, Hours, Ename, Pname, Plocation}
    Assume {SSN, Pnumber} as primary key.
    The dependencies are:
    {SSN, Pnumber} -> Hours
    SSN->Ename
    Pnumber->{Pname, Plocation}
    Normalize the above relation to 3NF.
12. Find the minimal cover for the following dependency.F={AB->D, B->C, AE->B, A ->D, D->EF}
13. Consider two sets of functional dependency:
    F={A->C, AC->D, E->AD, E->H} and G={A->CD, E->AH}
    Are they equivalent?
14. Consider the universal relation R = {A, B, C, D, E, F, G, H, I, J} and the set of functional dependencies F={{A,B}->{C}, {A}->{D,E}, {B} ->{F}, {F} -> {G,H}, {D} ->{I,J}}
    a. What is key of R? Decompose R into 2NF and then 3NF relations.
    b. Determine whether the decomposition has the lossless join property with respect to F.
    D1={R1,R2,R3}; R1=(A,B,C,D,E); R2=(B,F,G,H); R3=(D,I,J)

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Question Bank – Module 5

Subject: Database Management Systems **Sub Code: 17CS53**

1. Discuss the ACID properties of a database transaction. Or Discuss the desirable properties of transaction.
2. Why concurrency control is needed? Demonstrate with an example.
3. Discuss the UNDO and REDO operations and the recovery techniques that use each.
4. Discuss the time stamp ordering protocol for concurrency control.
5. Explain how shadow paging helps to recover from transaction failure.
6. Explain the transaction support in SQL.
7. What is two-phase locking protocol? How does it guarantee serializability?
8. What is serializability? How can serializability be ensured? Do you need to restrict concurrent execution of transaction to ensure serializability? Justify your answer.
9. When deadlock and starvation problem occurs? Explain how these problems can be resolved.
10. Briefly explain the recovery process.
11. Explain transition diagram of a transaction.
12. Explain the principles used in ARIES algorithm.
13. What is a schedule? Explain conflict serializable schedule with example.

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COURSE CODE :17CS53

CITY ENGINEERING COLLEGE

FIRST INTERNAL TEST

Programme: CSE
Course Name: Database Management System
Sem & Sec: V SEM A, B

Max Marks: 50

Date: 07/09/2019
Time: 10:30AM-12:00PM
Duration: 1 ½ hrs.

Note: Answer all Questions selecting any ONE FULL question from each part.

Q No.	Sub Q No.	Questions	Marks	CO's	BT's
		PART -A			
1	a	Discuss the main characteristics of the database approach and how it differs from traditional file systems.	10	CO1	L1, L2
		Or			
2		Explain the component modules of DBMS and their interaction with the help of a diagram	10	CO1	L1, L2
		PART -B			
3	a	Describe three schema architecture. Why do we need mappings among schema levels?	5	CO1	L1, L2
	b	Discuss the different types of user friendly interfaces and the types of user who typically use each.	5	CO1	L1, L2
		Or			
4		Explain with block diagram the different phases of database design.	10	CO1	L1, L2
		PART -C			
5		Design an ER diagram for hospital management considering at least four entities	10	CO1	L3, L4
		Or			
6		Draw an ER diagram of movie database. Assume your own entities attributes and relationships	10	CO1	L3, L4
		PART - D			
7		What are the basic operations that can change the states of relations in the database? Explain how the basic operations deal with constraint violation.	10	CO1,2	L2, L3
		Or			
8	a	In SQL which command is used for table creation? Explain how constraints are specified in SQL during table creation with suitable example	4	CO2	L2, L3
	b	Explain the data types available for attribute specification in SQL	6	CO2	L1, L2
		PART -E			
9		Write SQL Queries for following set of tables: EMPLOYEE (EmpNo, Name, DoB, Address, Gender, Salary, DNumber) DEPARTMENT (DNumber, Dname, ManagerEmpNo, MnagerStartDate).	10	CO2	L3, L4

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		i) Display the DoB of "male" employees. ii) Display all employees in Department named "Marketing". iii) Display the maximum salary in each department. iv) Display Manager Name along with the department name which they manage. v) Display the name of department of the employee "SMITH".			
		Or			

10		Consider the following Schema:
		Emp(name, id, age, salary)
		Works_for(pid,eid, #hrs)
		Proj(pid, name)
		Write the relational algebra for the following.
		i. Retrieve employee name and employee id who works for all the projects.
		ii. Retrieve employee name and age whose salary > 1000
		iii. For each employee, get the number of projects and number of hours worked on projects
		iv. Retrieve the employee name who is working for "CSE" project
			10	CO2	L3, L4

Blooms Taxonomy Levels: L1: Remembering L2: Understanding L3: Applying L4: Analyze L5: Evaluate L6: Create

Course Outcomes:

CO1: Summarize the concepts of database objects; enforce integrity constraints on a database using RDBMS.

CO2: Use Structured Query Language (SQL) for database manipulation.

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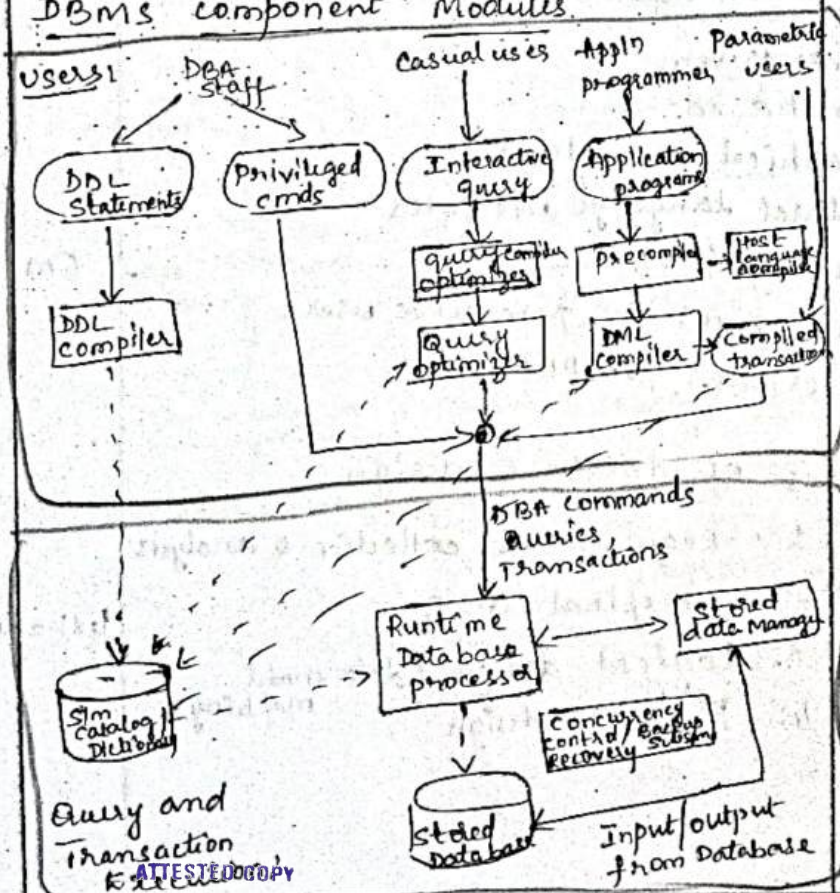
DEPARTMENT OF ...CSE.....

SCHEME FOR VALUATION

Internal Test I

Semester & Section: V A &B **Date:** 04/09/19

Question No	Details of the Answer	Marks Distribution	Total Marks
	Part A:		
1 a.	**Characteristics of database approach** - self describing nature of a database s/m - Insulation bln programs & data (data abstraction) - Support of multiple views - Sharing of data & multiuser transaction processing	2½ 2½ 2½ 2½	10M
2 b.	**DBMS component Modules** 	Diagram – 6M Explanation – 4M	10M

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Part - B

3.a Three Schema Architecture

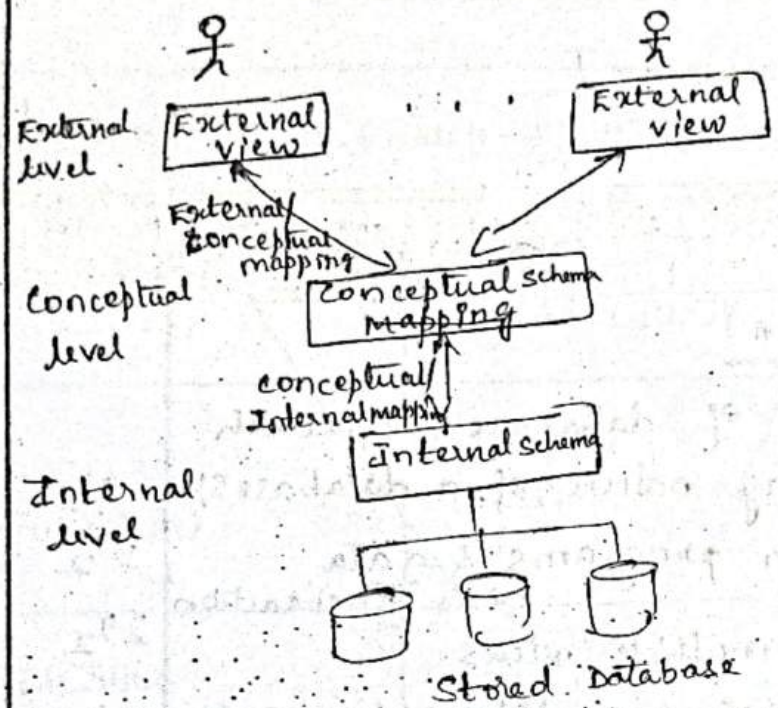

Diagram - 2M

Explanation - 3M

5M

3b. DBMS interfaces

- Menu driven
- Form based
- Graphical user interface
- Natural language Interfaces
- Speech i/p o/p
- Interfaces for parametric users
- Interfaces for DBA

5M

4. Phases of database design

phase 1 : Requirements collection & analysis
phase 2 : Conceptual design
phase 3: Logical design (data model mapping)
phase 4: Physical design

4x1 = 4M

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SCHEME FOR VALUATION

Internal Test I

Semester & Section: V A & B **Date:** 04/09/19

Question No.	Details of the Answer	Marks Distribution	Total Marks

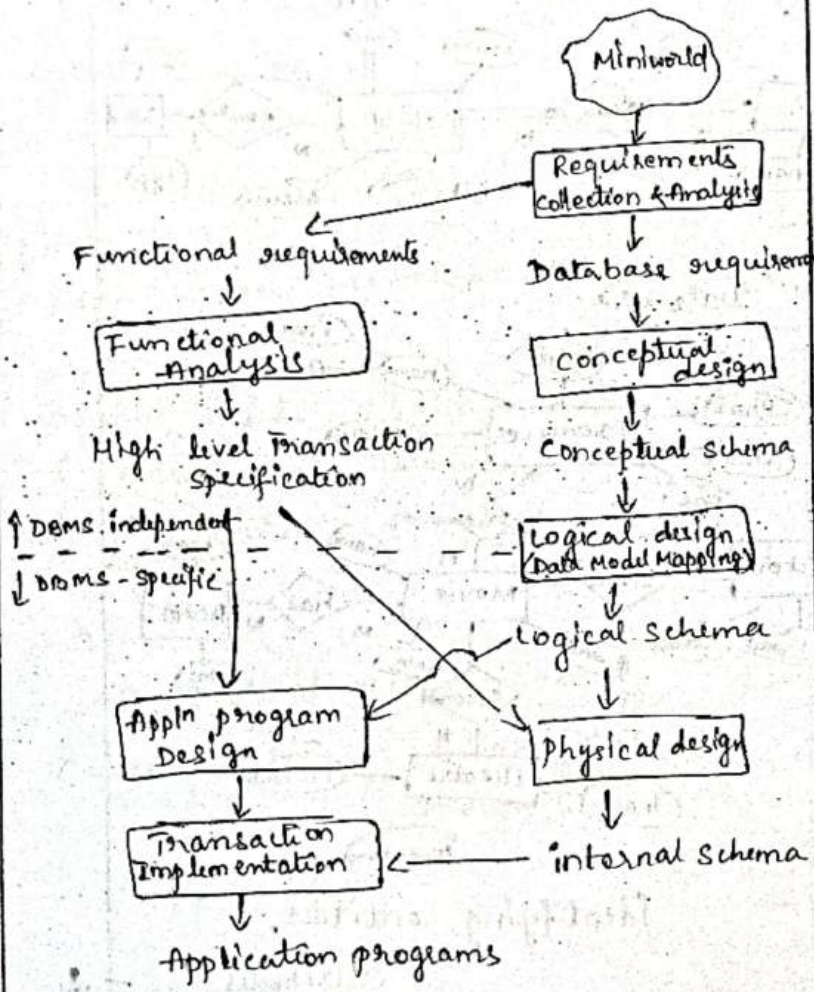

Diagram – 6M.

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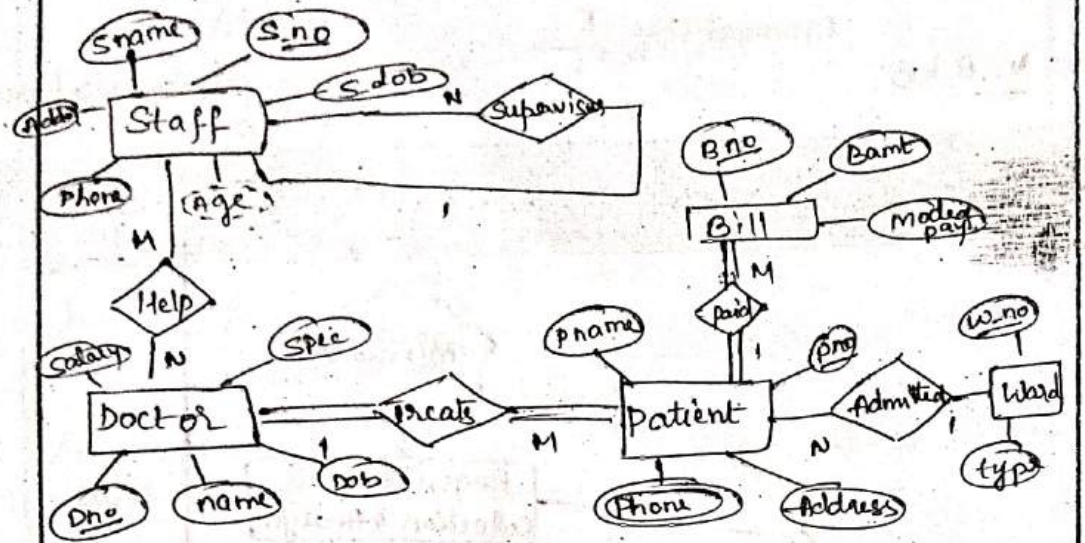
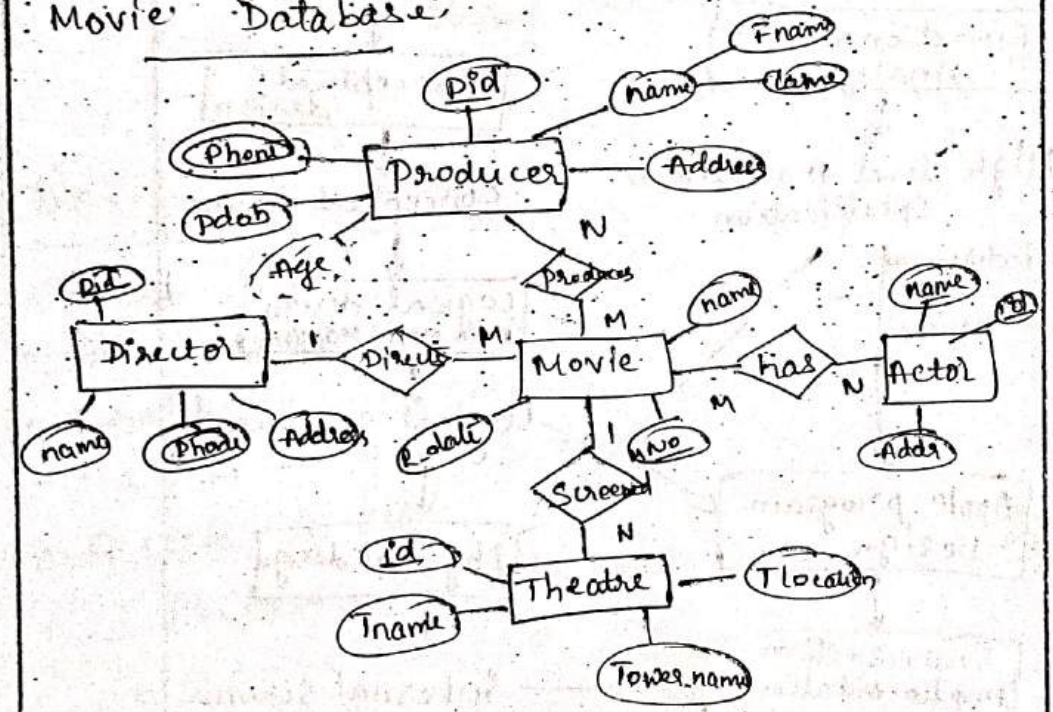
Part-C.

5. E-R diagram for Hospital management



10M

6. Movie Database



10M

identifying entities, attributes — 4

Relationships — 4

Constraints — 2

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SCHEME FOR VALUATION

Internal Test J

Semester & Section: V A & B **Date:** 04/09/19

Question No	Details of the Answer	Mark Distribution	Total Marks
	Part - B.		
7	Insert, Delete, Update		
	Insert - Domain, key, Entity Integrity and referential Integrity	- 4 M	10M
	Delete - Only referential integrity	- 2M	
	Update - All 4 constraints.	- 4 M	
8a	create table <table-name> (Attr-name datatype, Attr-name datatype,); Syntax of create table	- 1M	4M
	constraints - primary key	- 1	
	foreign key	- 1	
	not null, unique	- 1	
8b	Datatypes in SQL - Numeric - Date - Boolean - character string - Time, Timestamp - BLOB	- 6 M	6M

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Question No.	Details of the Answer	Marks Distribution	Total Marks

Part-E

9. i) Select Name, DoB
From Employees
where gender = 'male';
— 2M

ii) Select Emp No, Name
from Employee, Department
where Department.Dnumber = Employee.Dnumber
and Dname = 'Marketing';
— 2M

iii) Select DNumber, MAX(Salary)
From employee
group by Dnumber;
— 2M

iv) select e.Name, d.DNumber
from employee e, Department d
where e.DNumber = d.DNumber and
e.EmpNo = d.ManagerEmpNo;
— 2M

v) Select Dname as Dname-of-Smith
From Department natural join Employee
where Name = 'SMITH';
— 2M

10M

10. i) $R \leftarrow (\Pi_{pid, eid}(Works\_for) \div \Pi_{pid}(Proj))$
$\Pi_{name, id}(Emp \bowtie_{id=eid} R)$
— 2M

ii) $\Pi_{name, age}(\sigma_{salary > 1000}(EMP))$
— 2 M

iii) $\exists_{eid}\ count\ pid, Sum\ \#hrs\ (Works\_for)$
— 3 M

iv)

$Temp1 \leftarrow \sigma_{name='CSE'}(Works\_for * Proj)$

$Temp2 \leftarrow \Pi_{eid}(Temp1)$
— 3M

$\Pi_{name}(Emp \bowtie_{id=eid} Temp2)$

10M

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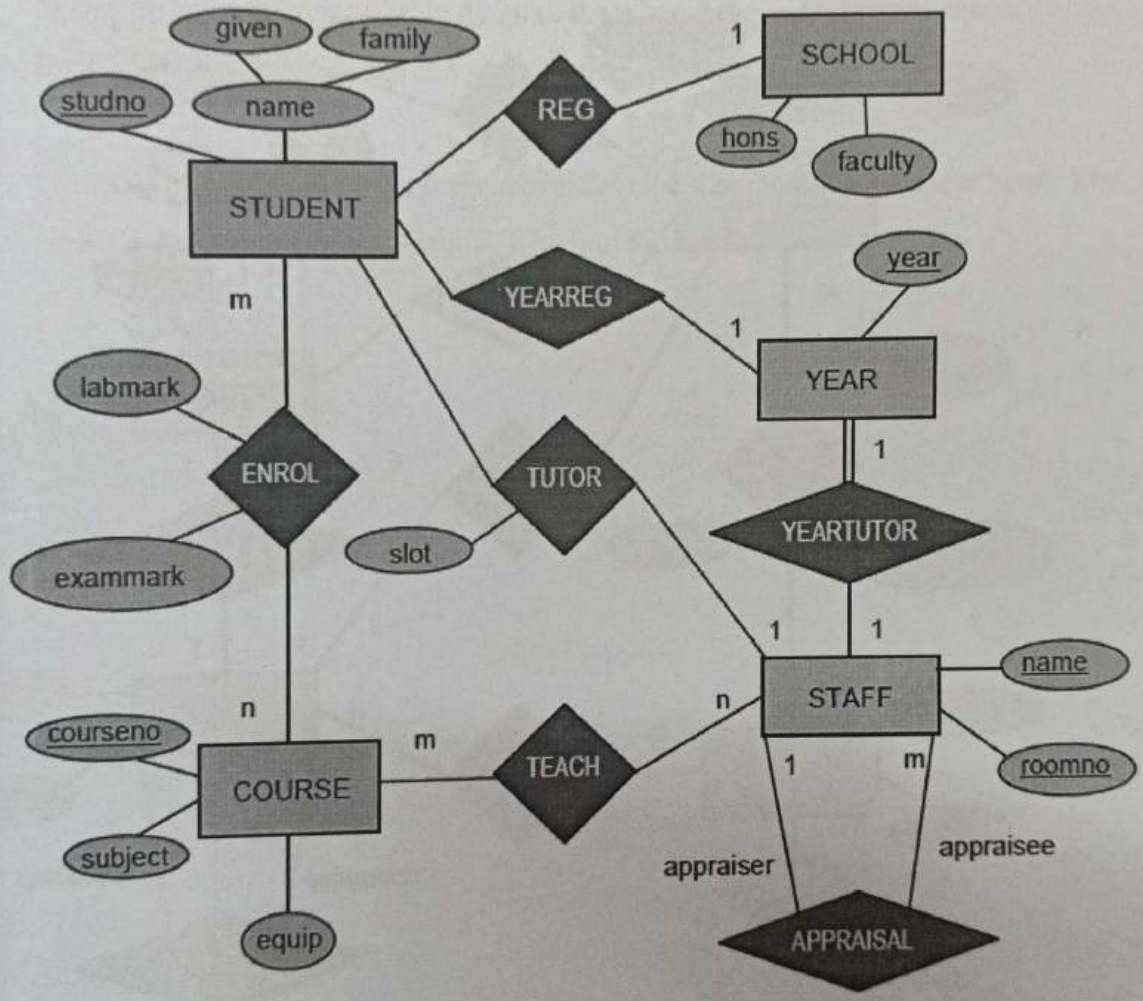
ER TO RELATIONAL SCHEMA MAPPING

Exercise Questions

1. Based on the ER-diagram given below, develop a relational database schema. Identify the missing cardinalities. List tables with their attributes. Identify keys and foreign keys.



2. A database needs to be developed that keeps track of PhD students:

- For each student store the name and matriculation number.
- Matriculation numbers are unique.
- Each student has exactly one address. An address consists of street, town and post code, and is uniquely identified by this information.

ER TO RELATIONAL SCHEMA MAPPING

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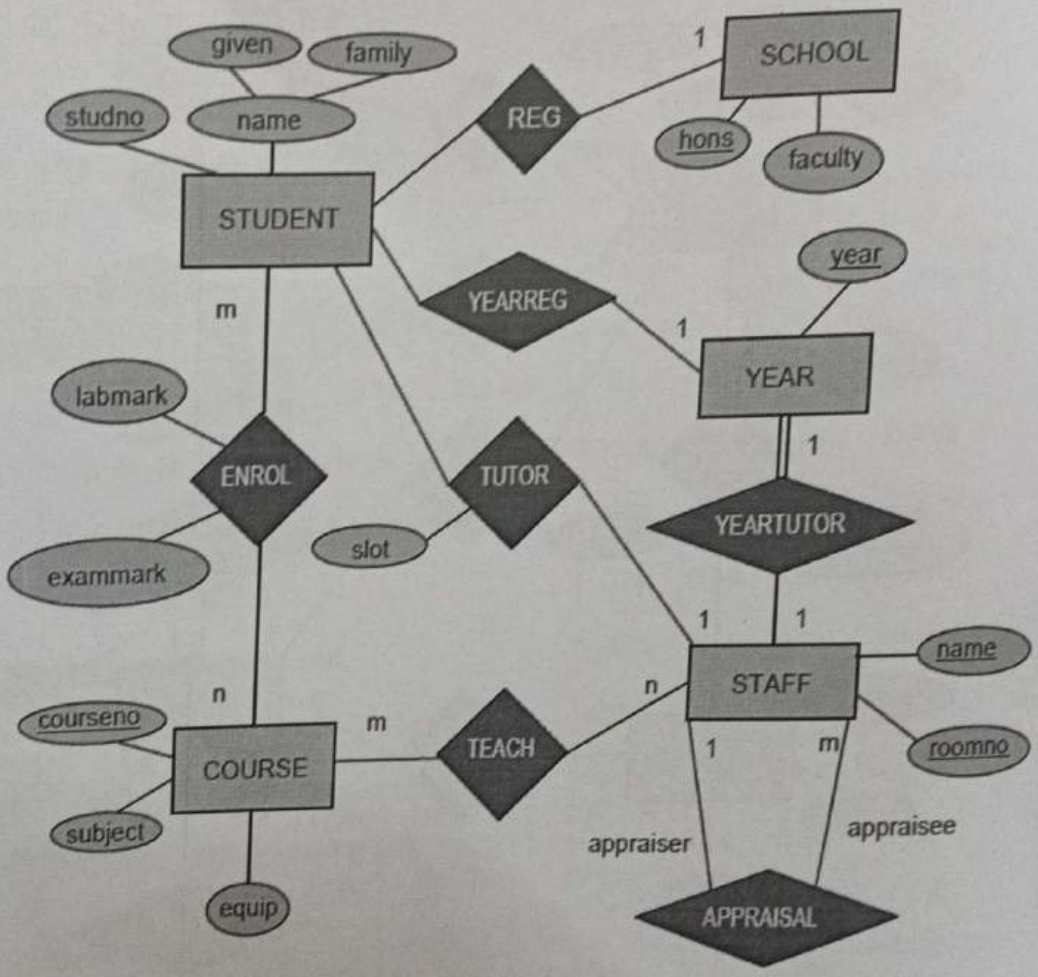

2. A database needs to be developed that keeps track of PhD students:

- For each student store the name and matriculation number.
- Matriculation numbers are unique.
- Each student has exactly one address. An address consists of street, town and post code, and is uniquely identified by this information.

- For each lecturer store the name, staff ID and office number. Staff ID's are unique.
- Each student has exactly one supervisor. A staff member may supervise a number of students.
- The date when supervision began also needs to be stored.
- For each research topic store the title and a short description. Titles are unique.
- Each student can be supervised in only one research topic, though topics that are currently not assigned also need to be stored in the database.

a) Design an entity relationship diagram that covers the requirements above. Do not forget to include cardinality and participation constraints.

b) Based on the ER-diagram from above, develop a relational database schema. List tables with their attributes. Identify keys and foreign keys.

SQL – PRACTICE QUESTIONS

Consider the following schema:

EMPLOYEE(EName, ENum, JoinDate, Job, Salary, Commission, DNum)

DEPARTMENT(Dno, DName, Location)

1. Select the employees in department 30.
2. List the names, numbers and departments of all clerks.
3. Find the department numbers and names of employees of all departments with deptno greater than 20.
4. Find employees whose commission is greater than their salaries.
5. Find employees whose commission is greater than 60 % of their salaries.
6. List name, job and salary of all employees in department 20 who earn more than 2000/-.
7. Find all salesmen in department 30 whose salary is greater than 1500/-.
8. Find all employees whose designation is either manager or president.
9. Find all managers who are not in department 30.
10. Find all the details of managers and clerks in dept 10.
11. Find the details of all the managers (in any dept) and clerks in dept 20.
12. Find the details of all the managers in dept. 10 and all clerks in dept 20 and all employees who are neither managers nor clerks but whose salary is more than or equal to 2000/-.
13. Find the names of anyone in dept. 20 who is neither manager nor clerk.
14. Find the names of employees who earn between 1200/- and 1400/-.
15. Find the employees who are clerks, analysts or salesmen.
16. Find the employees who are not clerks, analysts or salesmen.

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17. Find the employees who do not receive commission.

18. Find the different jobs of employees receiving commission.

19. Find all the employees whose total earning is greater than 2000/- .

20. Find all the employees whose name begins or ends with 'M'

21. Find all the employees whose names contain the letter 'M' in any case.

22. Find all the employees who were hired in the month of February (of any year).

23. Find the managers hired in the year 2003.

24. Display the details of all the employees sorted on their names.

25. Display the names of the employees, based on the tenure with the oldest employee coming first.

26. Display the names, jobs and salaries of employees, sorting on job and salary.

27. Display the names, jobs and salaries of employees, sorting on descending order of job and within job sorted on salary.

28. List the employee names, department names and salary for those employees who are earning 0 commission or commission is null. Sort your output in the order of department name.

29. List the employee names, department names and hiredate for those employees who have joined in 2003 . Sort your output in the order of joining date.

30. List all the department names along with the names of employees in them, irrespective of the fact whether any employee is there or not.

CITY ENGINEERING COLLEGE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CIRCULAR

Ref. No: CEC/ECE/DAC/2019-2020/02 **Date: 05-02-2020**

All the members of Department Advisory Committee are informed to attend a meeting which will be held as follows

Date: 6-02-20
Time: 03.30 PM
Venue: **LAB A206**

Agenda:

- Certification course for 3rd year
- Organizing workshop for final year
- Conduction of Project Exhibition
- Industrial Visit
- Conduction of guest lectures/ workshops

Prof. Mallikarjuna G S

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Department Advisory Committee Meeting

Date: 06-02-2020
Time: 03.30 PM
Venue: LAB A206

DAC Members Present:

Sl. No	Member Name	Designation	Role	Signature
1	Prof. Mallikarjuna G S	HOD	Convenor	
2	Dr. Shalini Prasad	Professor	Co-Convenor	
3	Prof. Shylaja K	Assistant Professor	Member	
4	Prof. Ravindra S	Assistant Professor	Member	
5	Prof. Aurobindo Koti	Assistant Professor	Member	
6	Prof. SKL Narayana	Assistant Professor	Member	

The Department Advisory Committee meeting was conducted at Department of ECE, on 06TH April 2020, at 03:30 PM.

Agenda of the Meeting:

- Conducting Certification courses
- Organizing workshop for final year
- Conduction of Project Exhibition
- Faculty development program
- Conduction of guest lectures/ workshops

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CITY ENGINEERING COLLEGE

Minutes of Meeting:

In the Department Advisory Committee meeting, an overview of the department was presented, emphasizing student achievements, result analysis, and faculty accomplishments. The members discussed various suggestions for improvement and reviewed the meeting agenda.

The Committee proposed the following items for inclusion in the agenda:

- A Value added course has been recommended by the convener.
- Second-year students are encouraged to participate in technical activities and to attend guest lectures or seminars to broaden their knowledge.
- A project exhibition has been proposed, offering final-year students a platform to showcase their work.
- To keep students and faculty updated with current technologies, the committee suggested organizing workshops, guest lectures, and hands-on sessions.

Prof. Mallikarjuna G S

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Academic Calendar of VTU, Belagavi for EVEN Semester of 2019-2020 (Jan 2020 – July 2020)

	II Sem B. E. / B. Tech. / B. Arch	IV & VI Sem B. E. /B. Tech. IV, VI&VIII Sem B. Arch.	VIII Sem B.E / B.Tech & X Sem B. Arch	IV Sem MCA	VI Sem MCA	IV Sem MBA	IV Sem M. Tech.	IV Sem M. Arch.	II Sem M. Tech.	II Sem MCA	II Sem MBA	II Sem M. Arch.
Commencement of EVEN Semester	10.02.2020	10.02.2020	10.02.2020	27.01.2020	27.01.2020	10.02.2020	27.01.2020	27.01.2020	05.03.2020	05.03.2020	14.02.2020	14.02.2020
Last Working day of EVEN Semester	01.06.2020	01.06.2020	01.06.2020	20.05.2020	20.05.2020	01.06.2020	20.05.2020	20.05.2020	22.06.2020	22.06.2020	05.06.2020	05.06.2020
Practical Examination	03.06.2020 To 13.06.2020	03.06.2020 To 13.06.2020	-	26.05.2020 To 30.05.2020	-	-	-	-	25.06.2020 To 30.06.2020	25.06.2020 To 30.06.2020	-	-
Theory Examinations	**15.06.2020 To 04.07.2020**	**15.06.2020 To 20.07.2020**	**03.06.2020 To 11.06.2020**	**03.06.2020 To 18.06.2020**	-	**03.06.2020 To 28.06.2020**	**03.06.2020 To 10.06.2020**	-	**01.07.2020 To 11.07.2020**	**01.07.2020 To 11.07.2020**	**08.06.2020 To 20.06.2020**	**09.06.2020 To 20.06.2020**
Viva Voce	-	-	15.06.2020 To 20.06.2020	-	-	-	-	-	-	-	-	-
Summer Project / Professional training	-	-	-	-	22.05.2020 To 30.05.2020 (Submission of report to VTU)	01.04.2020 To 15.04.2020 (Submission of report to VTU)	12.06.2020 To 25.06.2020 (Submission of report to VTU)	-	13.07.2020 To 31.07.2020	-	23.06.2020 To 21.07.2020	01.07.2020 To 25.08.2020
Commencement of ODD Semester	27.07.2020	27.07.2020	27.07.2020	27.07.2020	-	-	-	-	03.08.2020	27.07.2020	27.07.2020	28.08.2020

NOTE

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

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10.1.2020.

REGISTRAR

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (EVEN SEM)

FEBRUARY 2020			MARCH 2020		APRIL 2020		MAY 2020		JUNE 2020	
DAY	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT
WED					1					
THU					2					
FRI					3		1	MAY DAY GH		
SAT	1				4		2			
SUN	2		1		5		3			
MON	3		2		6	MAHAVIRA JAYANTHI GH	4		1	LAST WORKING DAY OF 2nd, 4th, 6TH & 8TH SEMS
TUE	4		3		7		5		2	THEORY EXAMS 8th SEM 03.6.20 to 11.06.20
WED	5		4		8		6	ETHNIC DAY	3	
THU	6		5		9		7	SPORTS DAY	4	
FRI	7		6		10	GOOD FRIDAY-GH	8		5	VIVA VOCE 8th SEM 15.06.20 to 20.06.20
SAT	8	2ND SATURDAY HOLIDAY	7		11	2ND SATURDAY HOLIDAY	9	CHRONICLES	6	
SUN	9		8		12		10		7	
MON	10	STARTING OF 2nd, 4th, 6TH & 8TH SEMESTERS	9		13		11		8	THEORY EXAMS 4th & 6th SEMs 15.06.20 to 20.07.20
TUE	11	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	10		14	AMBEDKAR JAYANTI-GH	12		9	
WED	12		11		15		13		10	
THU	13		12		16		14		11	
FRI	14		13		17		15		12	THEORY EXAMS SECOND SEM 15.06.20 to 04.07.20
SAT	15		14	2ND SATURDAY HOLIDAY	18		16	OPENDAY/EXHIBITIONS	13	
SUN	16		15		19		17		14	
MON	17	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	16	FIRST INTERNAL ASSESSMENT 2nd, 4th, 6th & 8th Semesters	20		18		15	PRACTICAL EXAMS 2nd, 4th & 6th SEMESTERS 03.06.20 to 13.06.20 GRADUATION DAY AFTER 20.7.2020
TUE	18		17		21		19		16	
WED	19		18		22		20	THIRD INTERNAL ASSESSMENT 2nd, 4th, 6th & 8th Semesters	17	
THU	20		19		23		21		18	
FRI	21	MAHASHIVARATHRI-GH	20		24	BATTLE OF SCIENCE EVENT (First Year)	22		19	
SAT	22	4TH SATURDAY HOLIDAY	21	Alumni Day (Tentative)	25	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	20	
SUN	23		22		26		24		21	
MON	24		23		27		25	RAMJAN GH	22	
TUE	25		24		28	SECOND INTERNAL ASSESSMENT 2nd, 4th, 6th & 8th Semester	26		23	
WED	26		25	UGADI-GH	29		27		24	
THU	27		26		30		28	LAB TESTS 2nd, 4th, 6th & 8th SEMs	25	
FRI	28		27				29		26	
SAT	29		28	4TH SATURDAY HOLIDAY			30		27	
SUN			29				31		28	
MON			30						29	
TUE			31						30	

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CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (EVEN SEM)

DEPT OF E&CE

DAY	FEBRUARY 2020		MARCH 2020		APRIL 2020		MAY 2020		JUNE 2020	
	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT
WED					1					
THU					2					
FRI					3		1	MAY DAY GH		
SAT	1				4		2			
SUN	2		1		5		3			
MON	3		2		6	**MAHAVIRA JAYANTHI GH**	4		1	**LAST WORKING DAY OF 2nd, 4th , 6TH & 8TH SEMS**
TUE	4		3		7		5		2	
WED	5		4		8		6	ETHNIC DAY	3	THEORY EXAMS 8th SEM 03.6.20 to 11.06.20
THU	6		5	*PCB WORKSHOP*	9		7	SPORTS DAY	4	
FRI	7		6		10	**GOOD FRIDAY-GH**	8		5	VIVA VOCE 8th SEM 15.06.20 to 20.06.20
SAT	8	2ND SATURDAY HOLIDAY	7		11	2ND SATURDAY HOLIDAY	9	CHRONICLES	6	
SUN	9		8		12		10		7	
MON	10	**STARTING OF 2nd, 4th , 6TH & 8TH SEMESTERS**	9		13		11		8	
TUE	11	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	10	*GUEST LECTURE 1*	14	**AMBEDKAR JAYANTI-GH**	12		9	**THEORY EXAMS** 4th & 6th SEMs 15.06.20 to 20.07.20
WED	12		11		15		13		10	
THU	13		12		16		14	*INDUSTRIAL VISIT*	11	
FRI	14		13		17		15		12	
SAT	15		14	2ND SATURDAY HOLIDAY	18		16	OPENDAY/EXHIBITIONS (Higher Semesters)	13	**THEORY EXAMS** SECOND SEM 15.06.20 to 04.07.20
SUN	16		15		19		17		14	
MON	17		16		20		18		15	
TUE	18	PHASE-2 INDUCTION PROGRAMME 10.2.2020 to 20.2.20	17	FIRST INTERNAL ASSESSMENT 2nd, 4th ,6th & 8th Semesters	21		19		16	**PRACTICAL EXAMS** 2nd,4th & 6th SEMESTERS 03.06.20 to 13.06.20 GRADUATION DAY AFTER 20.7.2020
WED	19		18		22	*GUEST LECTURE 2*	20		17	
THU	20		19		23		21	THIRD INTERNAL ASSESSMENT 2nd, 4th ,6th & 8th Semesters	18	
FRI	21	**MAHASHIVARATHRI-GH**	20		24	BATTLE OF SCIENCE EVENT (First Year)	22		19	
SAT	22	4TH SATURDAY HOLIDAY	21	Alumni Day (Tentative)	25	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	20	
SUN	23		22		26		24		21	
MON	24		23		27		25	RAMJAN GH	22	
TUE	25		24		28	SECOND INTERNAL ASSESSMENT 2nd, 4th ,6th & 8th Semester	26		23	
WED	26		25	**UGADI-GH**	29		27		24	
THU	27		26		30		28		25	
FRI	28		27				29	LAB TESTS 2nd,4th,6th & 8th SEMs	26	
SAT	29		28	4TH SATURDAY HOLIDAY			30		27	
SUN			29				31		28	
MON			30						29	
TUE			31						30	

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CITY ENGINEERING COLLEGE

Department of Electronics and Communication Engineering

COURSE ALLOCATION ACY: 2019-20 (even)

Sl No	Name of the Faculty	Course code and Name	Year& Semester	Signature
1	Prof. Mallikarjuna.G.S	17ECH5 MP 17ECL47 MP Lab	II / IV II / IV	
2	Prof. Shalini Prasad	17EC44 PCS 17CPH39 CIP 17ECL47 MP Lab	II / IV II / IV II / IV	
3	Prof. Ravindra. S	15EC82 FON	IV / VIII	
4	Prof. Shylaja. K	17EC43 CS 15ECL68 CN Lab	II / IV III / VI	
5	Prof. Madhavi. J Kulkarni	15EC651 Cellular mobile comm 15EC833 Radar Eng.	III / VI IV / VIII	
6	Prof. Gopikishan. J	17EC45 LIC 17ECL48 LIC Lab	II / IV II / IV	
7	Prof. Vishwa Kiran. RC	15EC663 DSDV 17ECL47 MP Lab	III / VI II / IV	
8	Prof. Deepa Mathew. K	17EC42 S+S 15ECL68 CN Lab	II / IV III / VI	

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Department of Electronics and Communication Engineering

COURSE ALLOCATION ACY: 2019 - 20(EVEN)

Sl No	Name of the Faculty	Course code and Name	Year& Semester	Signature
09.	Prof. Radhika. T.S	15EC64 CCN 17ECL47 AP Lab	III / VI II / IV	Radhika
10.	S.K.L. Narayan	15EC61 DC 15EC835 Network CS	III / VI IV / VIII	sklv
11.	Prof. Krishna. K.S	15EC63 VLSI design 15ECS86 Seminar 10ECS86 Seminar	III / VI IV / VIII IV / VIII	KSK
12.	Prof. Chandra Naik-G	15EC62 Arm controller 15EC84 Internship 10ECP85 Project work	IV / VI IV / VIII IV / VIII	Chandra
13.	Dr. Sridhar. S.B	15EC81 Wireless cellular	IV / VIII	SB
14.	Prof. Rangnath. S.L	10EC81 Wireless commun	IV / VIII	RSL
15	Geethanjali	10EC82 DSS	IV / VIII	Geethu
16	Prof. Nanditha-H.G	10EC832 NS	IV / VIII	Nandi
17.	Prof. Sravanthi Rao	10EC843 GSM	IV / VIII	SR

HOD, ECE

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Department of Electronics and Communication Engineering

COURSE PREFERENCE ACY: 2019-20 (EVEN)

Name of the Faculty: Shalini Prasad

Designation: Asst- Professor.

Sl No	Course code and name	Year/Semester
1	17EC44 – PCS	II / 4th
2	17EC CPH 49 – CIP	II / 4th
3	17ECL47 – MP lab	II / 4th
4	15EC82 – Fiber optic Networks	IV / 8th

S. Prasad
Faculty

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Bangalore-560 061.

CITY ENGINEERING COLLEGE

WEF: 10TH FEB 2020

4TH SEM

Dept. of E&CE

A107

	1 9:15 10:10	2 10:10 11:05	TEA BREAK 11:05 11:20	3 11:20 12:15	4 12:15 13:10	LUNCH BREAK 13:10 14:00	5 14:00 14:50	6 14:50 15:40	7 15:40 16:30
Mo	18EC44 Vanitha	18MAT41 Gayathri	TEA BREAK	18EC45 Ravi	18EC42 MJK	LUNCH BREAK	18ECL47 Batch 1 VK / GSM		
							18ECL48 Batch 2 Koti / Shylaja		
Tu	18MAT41 Gayathri	18EC45 Ravi		18EC46 VKI	18EC43 SRK		18ECL48 Batch 1 Koti / Ravi		
							18ECL47 Batch 2 VK / Deepa		
We	18EC42 MJK	18EC46 VKI		18EC44 Vanitha	18EC43 SRK		18EC46 VKI	18EC43 SRK	18EC45 Ravi
Th	18EC46 VKI	18MAT41 Gayathri		18EC43 SRK	18EC45 Ravi		18EC44 Vanitha	18EC42 MJK	18EC43 SRK
Fr	18MAT41 Gayathri	18EC42 MJK		18EC44 Vanitha	18EC45 Ravi		Dept./Club/EduSat Act		
Sa	18EC43 SRK	18EC46 VKI		18EC42 MJK	18EC44 Vanitha				

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CITY ENGINEERING COLLEGE

WEF: 10TH FEB 2020

6TH SEM

Dept. of E&CE

A106

	1 9:15 10:10	2 10:10 11:05	TEA BREAK 11:05 11:20	3 11:20 12:15	4 12:15 13:10	LUNCH BREAK 13:10 14:00	5 14:00 14:50	6 14:50 15:40	7 15:40 16:30
Mo	17EC64 Ranga	17EC654 GK	TEA BREAK	17EC62 Shalini	17EC663 VK	LUNCH BREAK	17EC63 SKLN	17EC61 Radhika	17EC64 Ranga
Tu	17EC663 VK	17EC64 Ranga		17EC62 Shalini	17EC61 Radhika		17EC63 SKLN	17EC64 Ranga	17EC654 GK
We	17EC61 Radhika	17EC654 GK		17EC663 VK	17EC64 Ranga		17ECL67 **Batch 1** Shalini / VK		
							17ECL68 **Batch 2** Deepa / Shylaja		
Th	17EC63 SKLN	17EC61 Radhika		17EC663 VK	17EC62 Shalini		17ECL68 **Batch 1** Deepa / Shylaja		
							17ECL67 **Batch 2** Shalini / Ravi		
Fr	17EC654 GK	17EC61 Radhika		17EC62 Shalini	17EC63 SKLN		Dept./Club/EduSat Act		
Sa	17EC62 Shalini	17EC63 SKLN		17EC663 VK	17EC654 GK				

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WEF: 10TH FEB 2020

8TH SEM

Dept. of E&CE

A105

	1 9:15 10:10	2 10:10 11:05	TEA BREAK 11:05 11:20	3 11:20 12:15	4 12:15 13:10	LUNCH BREAK 13:10 14:00	5 14:00 14:50	6 14:50 15:40	7 15:40 16:30
Mo	15EC81 Geetha	15EC835 Shylaja	TEA BREAK	15EC82 Krishna	15EC835 Shylaja	LUNCH BREAK	Seminar		
Tu	15EC82 Krishna	15EC81 Geetha		15EC835 Shylaja	15EC82 Krishna		Seminar		
We	15EC835 Shylaja	15EC81 Geetha		15EC82 Krishna	15EC81 Geetha		Internship		
Th	Project Work			Project Work			Project Work		
Fr	Project Work			Project Work			Project Work		
Sa	Project Work			Project Work			Project Work		

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WEF: 10TH FEB 2020

Prof. Vishvakiran

Dept. of E&CE

	1 9:15 - 10:10	2 10:10 - 11:05	TEA BREAK 11:05 - 11:20	3 11:20 - 12:15	4 12:15 - 13:10	LUNCH BREAK 13:10 - 14:00	5 14:00 - 14:50	6 14:50 - 15:40	7 15:40 - 16:30
Mo			TEA BREAK			LUNCH BREAK			
Tu				18EC46 4EC					
We		18EC46 4EC					18EC46 4EC		
Th	18EC46 4EC								
Fr									
Sa		18EC46 4EC							

Timetable generated:05-02-2020

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B. E. (EC / TC)
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
SEMESTER – IV

MICROCONTROLLER

Course Code	**18EC46**	**CIE Marks**	**40**
Number of Lecture Hours/Week	**03**	**SEE Marks**	**60**
Total Number of Lecture Hours	**40 (8 Hours per Module)**	**Exam Hours**	**03**

CREDITS – 03

Course Learning Objectives: This course will enable students to:

- Understand the difference between a Microprocessor and a Microcontroller and embedded microcontrollers.
- Familiarize the basic architecture of 8051 microcontroller.
- Program 8051microprocessor using Assembly Level Language and C.
- Understand the interrupt system of 8051 and the use of interrupts.
- Understand the operation and use of inbuilt Timers/Counters and Serial port of 8051.
- Interface 8051 to external memory and I/O devices using its I/O ports.

Module-1	RBT Level
8051 Microcontroller: Microprocessor Vs Microcontroller, Embedded Systems, Embedded Microcontrollers, 8051 Architecture- Registers, Pin diagram, I/O ports functions, Internal Memory organization. External Memory (ROM & RAM) interfacing.	**L1, L2**
Module -2	
8051 Instruction Set: Addressing Modes, Data Transfer instructions, Arithmetic instructions, Logical instructions, Branch instructions, Bit manipulation instructions. Simple Assembly language program examples (without loops) to use these instructions.	**L1, L2**
Module-3	
8051 Stack, I/O Port Interfacing and Programming: 8051 Stack, Stack and Subroutine instructions. Assembly language program examples on subroutine and involving loops. Interfacing simple switch and LED to I/O ports to switch on/off LED with respect to switch status.	**L1, L2, L3**
Module -4	
8051 Timers and Serial Port: 8051 Timers and Counters – Operation and Assembly language programming to generate a pulse using Mode-1 and a square wave using Mode-2 on a port pin. 8051 Serial Communication- Basics of Serial Data Communication, RS-232 standard, 9 pin RS232 signals, Simple Serial Port programming in Assembly and C to transmit a message and to receive data serially.	**L1, L2, L3**
Module -5	
8051 Interrupts and Interfacing Applications: 8051 Interrupts. 8051 Assembly language programming to generate an external interrupt using a switch, 8051 C programming to generate a square waveform on a port pin using a Timer interrupt. Interfacing 8051 to ADC-0804, DAC, LCD and Stepper motor and their 8051 Assembly language interfacing programming.	**L1, L2, L3**

Course outcomes: At the end of the course, students will be able to:

- Explain the difference between Microprocessors & Microcontrollers, Architecture of 8051 Microcontroller, Interfacing of 8051 to external memory and Instruction set of 8051.
- Write 8051 Assembly level programs using 8051 instruction set.
- Explain the Interrupt system, operation of Timers/Counters and Serial port of 8051.
- Write 8051 Assembly language program to generate timings and waveforms using 8051 timers, to send & receive serial data using 8051 serial port and to generate an external interrupt using a switch.

- Write 8051 Assembly language programs to generate square wave on 8051 I/O port pin using interrupt and C Programme to send & receive serial data using 8051 serial port.
- Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to 8051 using 8051 I/O ports.

Question paper pattern:

- Examination will be conducted for 100 marks with question paper containing 10 full questions, each of 20 marks.
- Each full question can have a maximum of 4 sub questions.
- There will be 2 full questions from each module covering all the topics of the module.
- Students will have to answer 5 full questions, selecting one full question from each module.
- The total marks will be proportionally reduced to 60 marks as SEE marks is 60.

Text Books:

1. "The 8051 Microcontroller and Embedded Systems – using assembly and C", Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; PHI, 2006 / Pearson, 2006.
2. "The 8051 Microcontroller", Kenneth J. Ayala, 3rd Edition, Thomson/Cengage Learning.

Reference Books:

1. "The 8051 Microcontroller Based Embedded Systems", Manish K Patel, McGraw Hill, 2014, ISBN: 978-93-329-0125-4.
2. "Microcontrollers: Architecture, Programming, Interfacing and System Design", Raj Kamal, Pearson Education, 2005.

DEPARTMENT OF ELECTRONICS & COMMUNICATION

LESSON PLAN FOR EVEN SEMESTER FOR ACADEMIC YEAR 2019-20

Course Title: Microcontroller	Course Code : 18EC46
Total contact hours: L:T:P:S :: 5:1:0:1	End Term Marks : 60
Internal Marks : 40	
Semester : IV	Academic year : 2019-20
Lesson plan Author: Vishva Kiran RC	Date :06/02/2020

PREREQUISITES:

Logic gates, Memory module, Hexa decimal number system, ALP programming concepts, C programming, and serial communication.

COURSE OBJECTIVE:

Introduction to microprocessor and micro controller, learning basic features, architecture, addressing modes, instruction sets of 8051, programming concepts ALP, interfacing with memory and peripheral

COURSE OUTCOMES:

At the end of the course students will be able to:

1. Understand features and architecture of 8051
2. Explain various addressing modes and instruction sets of 8051
3. Write ALP and C programs for 8051 based systems
4. Interface various peripherals to 8051
5. Design and implement microcontroller-based embedded system
6. Know different versions of 8051 microcontroller

MODULE-1 : 8051 MICROCONTROLLER

Week	Days/ Date	Contents of Unit	Bloom's Taxonomy Level	Course Outcome (CO)
1	1	Introduction to Subject	U, R	CO1
	2	Historical background	U, R	CO1
	3	Microprocessor Vs Microcontroller	U, R	CO1
	4	Embedded System	U, R	CO1
	5	Embedded Microcontrollers	U, R	CO1
2	1	Salient features	U, R	CO1
	2	Pin diagram	U, R	CO1
	3	8051 Architecture block diagram1	U, R	CO1
	4	8051 Architecture block diagram2	U, R	CO1
	5	Registers	U, R	CO1
3	1	SFR Registers	U, R	CO1
	2	I/O ports functions	U, R	CO1
	3	Internal Memory organization- reg banks	U, R	CO1
	4	Internal Memory organization - BAR	U, R	CO1
	5	External Memory (ROM & RAM) interfacing	U, R	CO1

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MODULE-2 : 8051 INSTRUCTION SET

Week	Days/ Date	Contents of Unit	Bloom's Taxonomy Level	Course Outcome (CO)
4	1	Addressing Modes	U, R, A1, A2	CO1
	2	Addressing Modes	U, R, A1, A2	CO1
	3	Data Transfer instructions	U, R, A1, A2	CO1
	4	Data Transfer instructions	U, A1, A2	CO1
	5	Data Transfer instructions	U, A1, A2	CO1
5	1	Arithmetic instructions	U, A1, A2	CO1
	2	Arithmetic instructions	U, A1, A2	CO1
	3	Arithmetic instructions	U, A1, A2	CO1
	4	Logical instructions	U, A1, A2	CO1
	5	Logical instructions	U, A1, A2	CO1
6	1	Branch instructions	U, A1, A2	CO1
	2	Branch instructions	U, A1, A2	CO1,CO4
	3	Bit manipulation instructions	U, A1, A2	CO1,CO4
	4	Simple ALP examples	U, A1, A2	CO1,CO4
	5	Simple ALP examples	U, A1, A2	CO1,CO4

MODULE-3 : 8051 STACK, I/O PORT INTERFACING AND PROGRAMMING

Week	Days/ Date	Contents of Unit	Bloom's Taxonomy Level	Course Outcome (CO)
7	1	8051 Stack	U,R,A1,A2,E	CO2
	2	Stack and Subroutine instructions	U,R,A1,A2,E	CO2
	3	Assembly language program examples on subroutine	U,R,A1,A2,E	CO2
	4	and involving loops - Delay subroutine	U,R,A1,A2,E	CO2
	5	Factorial of an 8 bit number (result max 8 bit)	U,R,A1,A2,E	CO1,CO2
8	1	Block move without overlap	U,R,A1,A2,E	CO1,CO2
	2	Addition of N 8 bit numbers	U,R,A1,A2,E	CO1,CO2
	3	Picking smallest/largest of N 8 bit numbers	U,R,A1,A2,E	CO1,CO4
	4	Interfacing simple switch to I/O ports	U,R,A1,A2,E	CO1,CO4
9	1	Interfacing simple LED to I/O ports	U,R,A1,A2,E	CO1,CO4
	2	to switch on/off LED with respect to switch status	U,R,A1,A2,E	CO1,CO2
	3	Example programs	U,R,A1,A2,E	CO1,CO2
	4	Example programs	U,R,A1,A2,E	CO1,CO2

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MODULE-4: 8051 TIMERS AND SERIAL PORT

Week	Days/ Date	Contents of Unit	Bloom's Taxonomy Level	Course Outcome (CO)
10	1	8051 Timers and Counters Operation	U, A1, A2	CO1,CO3
	2	8051 Timers and Counters Operation CNTD…	U, A1, A2	CO1,CO3
	3	ALP to generate a pulse using Mode-1	U, A1, A2	CO1,CO3
	4	square wave using Mode-2 on a port pin	U, A1, A2	CO1,CO3
	5	8051 Serial Communication- Basics of Serial Data Communication,	U, A1, A2	CO1,CO3
11	1	RS-232 standard	U, A1, A2	CO1,CO3
	2	9 pin RS232 signals	U, A1, A2	CO2
	3	Simple Serial Port programming in Assembly	U, A1, A2	CO2
	4	Simple Serial Port programming in C	U, A1, A2	CO1,CO3
	5	Transmit a message and to receive data serially	U, A1, A2	CO1,CO3

MODULE-5: 8051 INTERRUPTS AND INTERFACING APPLICATIONS

Week	Days/ Date	Contents of Unit	Bloom's Taxonomy Level	Course Outcome (CO)
12	1	8051 Interrupts	U,R, A1	CO5
	2	Types of interrupts	U,R, A1	CO5
	3	8051 Assembly language programming to generate an external interrupt using a switch	U,R, A1	CO5
	4	8051 C programming to generate a square waveform on a port pin using a Timer interrupt	U,R, A1	CO1,CO5
	5	Interfacing 8051 to ADC-0804	U,R, A1	CO1,CO5
13	1	LCD 8051 Assembly language interfacing programming	U,R, A1	CO1,CO5
	2	Stepper motor and their 8051 Assembly language interfacing programming	U,R, A1	CO6
	3	Example programs	U,R, A1	CO6
	4	Example programs	U,R, A1	CO6
	5	Example programs	U,R, A1	CO6

Bloom's Taxonomy Level

R-Remembering U-Understanding A1-Applying A2-Analysing E-Evaluating C-Creating

TEXT BOOKS:

1. "*The 8051 Microcontroller and Embedded Systems – using assembly and C* "-, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; PHI, 2006 / Pearson, 2006.
2. "*The 8051 Microcontroller*", Kenneth J. Ayala, 3rd Edition, Thomson/Cengage Learning.

REFERENCE BOOKS:

1. "*The 8051 Microcontroller Based Embedded Systems*", Manish K Patel, McGraw Hill, 2014,
2. "*Microcontrollers: Architecture, Programming, Interfacing and System Design*", Raj Kamal, Pearson, 2005.

List of URLs-Text Books, Notes, Multimedia Content, etc

http://nptel.ac.in/courses/Webcourse-contents/IIT-KANPUR/microcontrollers/micro/ui/Course_home2_5.htm

https://www.youtube.com/watch?v=pA6K5NgWTow

http://nptel.vtu.ac.in/VTU-NMEICT/MC/weblinks.pdf

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	Module Wise Assignment Questions – 18EC46 MICROCONTROLLER
Module 1	**1. What is an embedded system and embedded microcontroller? List its applications.** **2. Differentiate between microprocessor and microcontroller with respect to their architecture and instructions.** **3. Describe the hardware features of 8051 microcontrollers, with a neat architecture block diagram.** **4. Show how to interface external PROM and external RAM to 8051. Explain how 8051 access them.** **5. Explain how 4K×8 bit RAM and 8K×8 bit EPROM can be interfaced to 8051 with necessary control signal consider external memory such that the starting address of ROM is 1000H and RAM is C000H.** **6. Briefly discuss the uses of A, B and PSW registers. Write bit pattern of PSW register and explain the conditional flags present in PSW.** **7. How many SFR's present in 8051 and write the bit addressable SFR's present in 8051 with its address?** **8. Explain the organization of internal RAM memory of 8051.** **9. Explain the oscillator circuit and a machine cycle of 8051 microcontroller.** **10. Sketch the neat diagram of 8051 PIN-OUT and explain its pins: ALE, RST, $\overline{\text{PSEN}}$, $\overline{\text{EA}}$, $\overline{\text{RD}}$, $\overline{\text{WR}}$, TXD & RXD**
Module 2	**1. Explain the different addressing mode of 8051. Give an example for each one of them.** **2. Discuss the address ranges that are utilized by jump and call instructions.** **3. Explain byte and bit level logical OR operation with examples.** **4. Explain how MUL and DIV instruction works with an example in 8051 microcontroller.** **5. Explain all the format of XOR and AND operations in 8051.** **6. Explain how the following instructions works with an example** **a. MOVC A, @A+DPTR** **b. DA A** **c. SJMP rel** **d. DJNZ Rn, rel.** **e. JNC rel** **f. ANL A, Rn** **g. XCHD A, @R0** **h. SWAP A** **i. CJNE A, 10H LOOP** **j. MOVX A, @DPTR** **k. MOVC A, @A+PC** **7. Which of the following 8051 instructions are wrong and why?** **a. MOV A,@R3** **b. MOV R1,R2** **c. ADD 10H, 11H** **d. INC DPTR.**

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Module 3	1. **With a neat diagram, explain the sequence of events of PUSH, POP, ACALL and RET instructions stack area of internal RAM with an example.** 2. **What are the benefits of subroutines? Mention the advantages of subroutine.** 3. **Discuss two instructions used to call subroutines with their ranges and write the significance of stack with respect to all instructions.** 4. **Find the time required to execute the following instructions if AT89C51 microcontroller is used:** a. **ADDC A,#54 if XTAL frequency is 12 MHz** b. **XRL 35, #47h if XTAL frequency is 11.0592** c. **MUL AB if XTAL frequency is 12 MHz** d. **NOP if XTAL frequency is 11.0592MHz** 5. **Calculate the delay produced in the program shown and XTAL used is of value 11.0592 MHz.** **MOV R2, #250** **LOOP: NOP** **NOP** **NOP** **NOP** **DJNZ R2, LOOP** **RET** 6. **For an 8051 system of 11.0592 MHz. Find the time delay for the following subroutine Delay :** **MOV R3, #250** **BACK: NOP** **NOP** **DJNZ R3, BACK** **RET**

Module 4	1. **Describe the various modes of operation of 8051 Timers. Explain TMOD register format of 8051.** 2. **List the advantages of serial data communication over parallel and explain briefly details of SCON register. Explain the procedure 8051 follows to transmit and receive characters serially.** 3. **Distinguish between counter and timers of 8051. Explain the mode 1 and mode 2 operation of timer/counter of 8051. How to start/stop timers of 8051.** 4. **Explain the functions of RS232 pins of DB-9 connector.**

Module 5	1. **Briefly explain the software interrupts of 8051. Discuss the role of TCON register in handling interrupts giving its bit details.** 2. **Explain 8051 interrupts (both external & internal) and the procedure to enable/disable/mask them.** 3. **Bring out the difference between interrupts and polling. Explain interrupt priority register of 8051 microcontroller.** 4. **Explain the bit pattern of IE register and how (i) to enable the serial interrupt, time R0 interrupt and external hardware interrupt in 8051.**

Assembly Language Programs (ALP) and C Programs from Last Three Modules

Module 3, Module 4, Module 5

- *ALP or C Programs*
- *All the Non-Interfacing Lab Experiments are *Important. Additionally Some ALP which occurred in the Previous Papers.*

1. *Write a program to copy the value 55H into RAM location 40H to 45H using*
   - *Direct addressing, without using loop.*
   - *Register indirect addressing, without using loop.*
2. *Assume that register A has packed BCD, Write an 8051 ALP program to convert packed BCD to two ASCII numbers and place them in address 60H and 61H.*
3. *Write a program to add the BCD numbers 99 and 85 present in RAM address 32 and 33. Store the BCD result in memory location 34 and 35. Also show how the BCD instruction works.*
4. *Write an ALP to find the value of an expression S= [(M/N)+30H] of M and N are stored in the internal memory locations 22H and 23H respectively. Store the result in 24H.*
5. *Write an 8051 subroutine program to initialize 8051 serial port to operate in the mode 0 transmission.*
6. *Write a C program using interrupts to do following.*
   - *Receive data serially and send it to P0.*
   - *Read Port P1, transmit data serially and give a copy to P2.*
   - *Make timer 0, to generate a square wave of 5 KHz frequency on P0.1.*

   Assume XTAL = 11.0592 MHz with baud rate at 4800.
7. *A switch is connected to pin P2.7 and a stepper motor to port 1. Write a program to monitor the status as of switching and*
   - *If SW = 0, Stepper motor should rotate clock wise, continuously.*
   - *If SW = 1, Stepper motor should rotate anti clock wise, continuously.*
8. *Interface 8051 to a stepper motor and write an ALP to rotate it 64º in clockwise direction. Step Angle = 2º.*
9. *Show an interface of 8051 microcontroller with a stepper motor drive circuit and write an ALP to rotate it 5 steps counter clockwise.*
10. *Interface ADC 0804 to 8051 and write an ALP to convert the analog input to digital value. Display the converted data at Port 2.*
11. *Write an ALP to switch on LED connected on P1.3 for 500µSec when INT 1 is activated. XTAL used 12MHz.*
12. *Name the 14 pins present in LCD and show how it can be interfaced to microcontroller 8051 with P1 connected to data lines.*
13. *Write an 8051 C program the send letters 'M', 'D' and 'E' to the LCD using delays.*

- ---

1. *Ten 8-bit numbers are stored in RAM locations 40H onwards. Write an ALP to find the Largest number and store it in memory location 50H.*

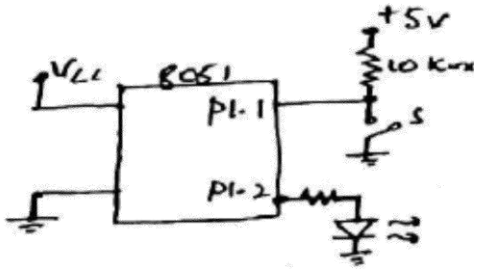
   Or

   Write an ALP to find largest of five 8 bit numbers (without sorting) stored from location 20_H.
2. *Write a program to find the smallest number of an array of N-8 bit unsigned numbers. The starting address is at 2000H and store the result in 2500H.*

Assembly Language Programs (ALP) and C Programs from Last Three Modules

Module 3, Module 4, Module 5

3. *Write an ALP to read the number from P1 if it is odd find the compliment of the number send it through P2 otherwise send it through P3.*
4. *Write and ALP to verify whether the data present in location 1000H is odd/even. If odd store 00H in location 2000H. Otherwise store EEH in 2000H.*
5. *Write a program to arrange the numbers in ascending order.*
6. *Write an ALP to read switch given in figure. If switch is closed turn ON the LED else turn OFF the LED.*



Or

Write an ALP to read the status of witch S connected to P1.2 if it is in the on condition switch on the LED connected P2.2 otherwise off LED connected P2.2.

7. *Write an ALP to find factorial of an 8-bit number N. Assume value of N! does not exceed 8-bit.*

   Or

   Use subroutine to find the factorial of a number stored in memory location 45H. Assume that the number stored in memory location is ≤ 05.

   Or

   Write a program to find the factorial of a number.
8. *Write an ALP to find sum of ten 8-bit numbers, stored in the internal memory block starting with 30H. Store the 16 bit sum at locations 40H and 41H.*
9. *Write an ALP to find average of 10 numbers stored in external memory from 1000_H. Store result at 2000_H. Assume sum of those 10 numbers does not exceed 8 bits.*
10. *Write an ALP to move block of 10 data from internal data memory 30_H to external data memory 9000_H.*
11. *Write an ALP to transfer 10 bytes of data from location starting with 8030H to location starting with 8041H without overlap.*

    Or

    Write a program to move a block of data stored in external memory location 9000H to a location staring from F000H (without overlapping).
12. *Write a program to count the numbers of 1's and 0's in 8 bit data stored.*

- ---

1. *Write the steps to be followed for using timer 1 in mode 2 and also find the value to be stored in reg. TH1 and get a delay of 100 µS when XTAL frequency is 11.0592MHz.*
2. *Write a program to create a delay of 1 sec. assume that the oscillator frequency is 1.2MHz.*
3. *Write an ALP to create a pulse width of 50ms on P2.3 using Timer '0' operating in Mode 1. Assume crystal frequency = 11.0592MHz.*
4. *Write and ALP to generate square wave a frequency of 100 KHz on Pin P1.1. Assume crystal frequency, XTAL = 12 MHz. Use Timer 1 in Mode 1.*
5. *Using time 0 write a program to generate a square wave on P1.4 of frequency of 2KHz in model. Assume XTAL frequency is 11.0592MHz.*
6. *Write an ALP to generate a square of frequency 1KHz on P1.3 using Mode 2. Timer 0. Assume crystal frequency = 22 MHz.*

Assembly Language Programs (ALP) and C Programs from Last Three Modules

Module 3, Module 4, Module 5

7. *Write a program using interrupts to get data from P1.0 and send it to P2.0, while timer 0 is generating a square wave of 4 KHz, on P2.4. Assume XTAL frequency as 11.0592 MHz.*
8. *Write a C-program that continuously gets a single bit of data from P1.7 and sends it to P1.0, while simultaneously creating a square wave of 200µs period on pin P2.5. Use timer 0 to create the square wave. Assume XTAL = 11.0592 MHz*
9. *Write an ALP to generate a rectangular wave with an ON time of 3ms and an OFF time of 10ms on all pins of port 0. Assume XTAL of 22MHz. Use timer 0 in mode 1.*
10. *Write a C Program for 8051 to transfer the letter 'V' serially at 9600 baud continuously use 8-bit data and 1 stop bit.*
11. *Write an 8051 'C' program to receive data bytes serially and put them in P1. Set the baud rate at 4800, 8 bit data and 1 stop bit. Assume XTAL frequency as 11.0592 MHz.*
12. *Write an ALP to transfer a 'M' serially at 9600 baud rate continuous by through P3.1. Assume XTAL frequency as 11.0592 MHz.*
13. *Write a program to transfer the message 'HELLO' serially at 4800 baudrate with 1 stop bit.*
14. *Write a program for 8051 to transfer the message "GOOD LUCK" serially at baud rate of 9600, 8 bit data with 1 stop bit. Do this continuously, use assembly language?*
15. *Write an 8051 C program to transfer the message 'GOD' serially at 9600 baud rate with XTAL = 11.0592 MHz.*

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		Module – 1 Questions Bank MICROCONTROLLER – 18EC46	
2015 SCHEME – 15EC563 8051 - MICROCONTROLLER	Jan 2018	1a. Compare and contrast microprocessors and microcontrollers. 1b. What does the term Embedded system mean? 1c. Describe the hardware features of 8051 microcontrollers, with a neat internal block diagram.	04 02 10
		2a. Briefly discuss the uses of A, B and PSW registers. 2b. Show how to interface external PROM and external RAM to 8051. Explain how 8051 access them.	06 10
	Jun 2018	1a. Differentiate between microprocessor and microcontroller with respect to their architecture and instructions. 1b. With a diagram, explain the architecture and features of 8051 microcontroller.	06 10
		2a. What is an embedded system and embedded microcontroller? 2b. Explain the oscillator circuit and a machine cycle of 8051 microcontroller. 2c. Explain the internal memory organization in 8051.	02 06 08
	Jan 2019	1a. What is a micro controller? Mention its applications. 1b. With a neat block diagram explain the features of 8052 microcontroller. 1c. Mention the internal RAM organization in 8051	04 06 06
		2a. With a neat functional block diagram explain the architecture of 8051. 2b. Design a microcontroller system using 8051 microcontroller, 4kbytes of ROM and 8k bytes of RAM interface the external memory such that the starting address of ROM is 1000H and RAM is C000H	08 08
	Jun 2019	1a. i) Differentiate between microprocessor and microcontroller. ii) What is an Embedded Microcontroller and What is an Embedded System? 1b. Sketch the neat diagram of 8051 PIN-OUT and explain its pins: ALE, RST, $\overline{\text{PSEN}}$, $\overline{\text{EA}}$, $\overline{\text{RD}}$, $\overline{\text{WR}}$, TXD & RXD	04 02 10
		2a. Explain the organization of internal RAM memory of 8051. 2b. show the interfacing connections of external EPROM and RAM to the 8051 Microcontroller and explain how 8051 access them.	08 08
	Jan 2020	1a. Compare microprocessor and microcontroller. 1b. Explain the internal organization of 8051 microcontroller RAM. 1c. Write the block diagram of 8051 and explain its features.	04 04 08
		2a. Write bit pattern of PSW register and explain the conditional flags present in PSW. 2b. How many SFR's present in 8051 and write the bit addressable SFR's present in 8051 with its address. 2c. Explain how 4K×8 bit RAM and 8K×8 bit EPROM can be interfaced to 8051 with necessary control signal.	04 04 08

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		Module – 2 Questions Bank MICROCONTROLLER – 18EC46	
2015 SCHEME – 15EC563 8051 - MICROCONTROLLER	Jan 2018	**3a. Explain any 4 data addressing modes of 8051 with an example for each mode.** **3b. Show the status of CY, AC and P flags after execution of following instructions.** **i) MOV A, #9CH** **ii) ADD A, #64H** **3c. Write a program to copy the value 55H into RAM location 40H to 45H using** **i) Direct addressing, without using loop.** **ii) Register indirect addressing, without using loop.**	**06** **04** **06**
		4a. Discuss the three address ranges that are utilized by jump and call instructions. **4b. Explain byte and bit level logical OR operation with examples.** **4c. Write and ALP to verify whether the data present in location 1000H is odd/even. If odd store 00H in location 2000H. Otherwise store EEH in 2000H.**	**06** **04** **06**
	Jun 2018	**3a. Explain the different addressing mode of 8051. Give an example for each one of them.** **3b. Mention the function of the following instructions of 8051 CPU :** **i) MOVC A, @A+DPTR** **ii) DA A** **iii) SJMP rel** **iv) DJNZ Rn, rel.** **3c. Explain the functions of following pins of 8051 :** **i) ALE** **ii) $\overline{EA}$** **iii) RST**	**08** **05** **03**
		4a. Explain all the format of XOR and AND operations in 8051. **4b. Which of the following 8051 instructions are wrong and why?** **i) MOV A,@R3** **ii) MOV R1,R2** **iii) ADD 10H, 11H** **iv) INC DPTR.** **4c. Assume that register A has packed BCD, Write an 8051 ALP program to convert packed BCD to two ASCII numbers and place them in address 60H and 61H.**	**06** **04** **06**
	Jan 2019	**3a. Explain any 4 different addressing modes used in 8051 microcontroller with suitable illustrations.** **3b. Explain the following instructions with examples.** **i) DJNZ Rn, rel** **ii) JNC rel** **iii) ANL A, Rn** **iv) DA A**	**08** **08**
		4a. Write 8051 instruction to rotate the contents of A left by two positions. **4b. Write 8051 instructions to add two BCD numbers and store the result in BCD in register R1.**	**08** **08**
	Jun 2019	**3a. Explain the four data addressing modes of an 8051 microcontroller with an example for each.** **3b. Explain the following instructions:** **i) XCHD A, @R0** **ii) SWAP A** **iii) MOVC A, @A+DPTR** **iv) CJNE A, 10H LOOP** **v) DA A**	**06** **10**

		4a. Explain Jump instructions of 8051 with their ranges of Jump. **4b. Write an ALP to find the value of an expression S= [(M/N)+30H] of M and N are stored in the internal memory locations 22H and 23H respectively. Store the result in 24H.** **4c. Explain the Logical OR instruction with all possible addressing modes.**	**06** **06** **04**
	Jan 2020	**3a. Write the any four addressing modes present in 8051 and explain each one of them with an example.** **3b. Write a program to add the BCD numbers 99 and 85 present in RAM address 32 and 33. Store the BCD result in memory location 34 and 35. Also show how the BCD instruction works.**	**08** **08**
		4a. Explain how MUL and DIV instruction works with an example in 8051 microcontroller. **4b. Find the time required to execute the following instructions if AT89C51 microcontroller is used:** **i) ADDC A,#54 if XTAL frequency is 12 MHz** **ii) XRL 35, #47h if XTAL frequency is 11.0592** **iii) MUL AB if XTAL frequency is 12 MHz** **iv) NOP if XTAL frequency is 11.0592MHz** **4c. Explain how the following instructions works with an example.** **i) MOVX A, @DPTR** **ii) MOVC A, @A+PC**	**08** **04** **04**

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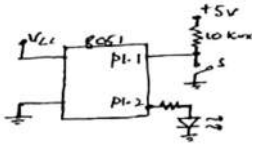
		Module – 3 Questions Bank MICROCONTROLLER – 18EC46	
2015 SCHEME – 15EC563 8051 - MICROCONTROLLER	Jan 2018	**5a. What are the benefits of subroutines?** **5b. Discuss two instructions used to call subroutines with their ranges and write the significance of stack with respect to all instructions.** **5c. Ten 8-bit numbers are stored in RAM locations 40H onwards. Write an ALP to find the Largest number and store it in memory location 50H.**	**02** **06** **08**
		6a. Write an ALP to read switch given in fig. Q6(a). if switch is closed turn ON the LED else turn OFF the LED. Fig.Q6(a)  **6b. For an 8051 system of 11.0592 MHz. Find the time delay for the following subroutine Delay :** **MOV R3, #250** **BACK: NOP** **NOP** **DJNZ R3, BACK** **RET** **6c. Write an ALP to find factorial of an 8-bit number N. Assume value of N! does not exceed 8-bit.**	**04** **06** **06**
	Jun 2018	**5a. With a neat diagram, explain the sequence of events of PUSH, POP, ACALL and RET instructions stack area of internal RAM.** **5b. Write an ALP to find average of 10 numbers stored in external memory from 1000_H. Store result at 2000_H. Assume sum of those 10 numbers does not exceed 8 bits.**	**08** **08**
		6a. Write an ALP to find largest of five 8 bit numbers (without sorting) stored from location 20_H. **6b. Write an ALP to move block of 10 data from internal data memory 30_H to external data memory 9000_H.**	**08** **08**
	Jan 2019	**5a. Write a program tofind the smallest number of an array of N-8 bit unsigned numbers. The starting address is at 2000H and store the result in 2500H.** **5b. Write a program to count the numbers of 1's and 0's in 8 bit data stored.**	**08** **08**
		6a. Write a program to arrange the numbers in ascending order. **6b. Write a program to create a delay of 1 sec. assume that the oscillator frequency is 1.2MHz.**	**08** **08**
	Jun 2019	**5a. Write an ALP to find the Largest number in an array of 10 bytes. Stored in the internal memory block starting with 20H. Store the result at 60H.** **5b. Write an ALP to find sum of ten 8-bit numbers, stored in the internal memory block starting with 30H. Store the 16 bit sum at locations 40H and 41H.**	**08** **08**
		6a. Explain the operation of PUSP and POP and LCALL, ACALL and RET instructions of 8051. Giving all the steps involved. **6b. Write an ALP to transfer 10 bytes of data from location starting with 8030H to location starting with 8041H without overlap.**	**08** **08**
	Jan 2020	**5a. What is stack and explain PUSH and POP instruction works with an example.** **5b. Calculate the delay produced in the program shown and XTAL used is of value 11.0592 MHz.** **MOV R2, #250** **LOOP: NOP** **NOP** **NOP** **NOP** **DJNZ R2, LOOP** **RET**	**06** **05**

		5c. Write an ALP to read the number from P1 if it is odd find the compliment of the number send it through P2 otherwise send it through P3.	**05**
		6a. Write an ALP to read the status of witch S connected to P1.2 if it is in the on condition switch on the LED connected P2.2 otherwise off LED connected P2.2. **6b. What is subroutine and mention the advantages of subroutine.** **6c. Use subroutine to find the factorial of a number stored in memory location 45H. Assume that the number stored in memory location is ≤ 05.**	**06** **05** **05**

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		Module – 4 Questions Bank MICROCONTROLLER – 18EC46	
2015 SCHEME – 15EC563 8051 - MICROCONTROLLER	Jan 2018	7a. Describe the various modes of operation of 8051 Timers. 7b. Write an ALP to create a pulse width of 50ms on P2.3 using Timer '0' operating in Mode 1. Assume crystal frequency = 11.0592MHz. 7c. Write an ALP to generate a square wave of frequency 1KHz on P1.3 using Mode 2. Timer 0. Assume crystal frequency = 22 MHz	04 06 06
		8a. List the advantages of serial data communication over parallel and explain briefly details of SCON register. 8b. Write an ALP to transfer a 'M' serially at 9600 baud rate continuous by through P3.1. Assume XTAL frequency as 11.0592 MHz 8c. Write an 8051 'C' program to receive data bytes serially and put them in P1. Set the baud rate at 4800, 8 bit data and 1 stop bit. Assume XTAL frequency as 11.0592 MHz	04 06 06
	Jun 2018	7a. Distinguish between counter and timers of 8051. Explain the mode 1 and mode 2 operation of timer/counter of 8051. How to start/stop timers of 8051. 7b. Write an ALP to generate a rectangular wave with an ON time of 3ms and an OFF time of 10ms on all pins of port 0. Assume XTAL of 22MHz. Use timer 0 in mode 1.	08 08
		8a. Explain the functions of RS232 pins of DB-9 connector. 8b. Explain the procedure 8051 follows to transmit and receive characters serially. 8c. Write a program for 8051 to transfer the message "GOOD LUCK" serially at baud rate of 9600, 8 bit data with 1 stop bit. Do this continuously, use assembly language?	04 06 06
	Jan 2019	7a. Explain the JUMP and CALL program range with reference to 8051 microcontroller. 7b. Write a program to find the factorial of a number. 7c. Write a program to move a block of data stored in external memory location 9000H to a location staring from F000H (without overlapping).	06 06 04
		8a. Explain the role of CALL and subroutines in 8051 microcontroller programming. 8b. What are timers and counters? Explain its operations. 8c. Explain timer control register and timer mode control register.	04 06 06
	Jun 2019	7a. Explain TMOD register format of 8051. 7b. Explain MODE-1 programming of timers of 8051. 7c. Write and ALP to generate square wave a frequency of 100 KHz on Pin P1.1. Assume crystal frequency, XTAL = 12 MHz. Use Timer 1 in Mode 1.	04 04 08
		8a. Explain the principle of operation of serial port of 8051 to transmit and receive a character serially. 8b. Explain to following RS232 Handshaking signals: RTS and DTR. 8c. Write an 8051 C program to transfer the message 'GOD' serially at 9600 baud rate with XTAL = 11.0592 MHz.	06 02 08
	Jan 2020	7a. Explain TMOD and SCON register with its bit pattern. 7b. Write the steps to be followed for using timer 1 in mode 2 and also find the value to be stored in reg. TH1 and get a delay of 100 µS when XTAL frequency is 11.0592MHz. 7c. Using time 0 write a program to generate a square wave on P1.4 of frequency of 2KHz in model. Assume XTAL frequency is 11.0592MHz.	05 05 06
		8a. What are advantages of serial communication over parallel communication? 8b. Write a program to transfer the message 'HELLO' serially at 4800 baudrate with 1 stop bit. 8c. Write a C Program for 8051 to transfer the letter 'V' serially at 9600 baud continuously use 8-bit data and 1 stop bit.	05 05 06

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		Module – 5 Questions Bank MICROCONTROLLER – 18EC46	
2015 SCHEME – 15EC563 8051 - MICROCONTROLLER	Jan 2018	9a. Briefly explain the software interrupts of 8051. 9b. Discuss the role of TCON register in handling interrupts giving its bit details. 9c. Write a program using interrupts to get data from P1.0 and send it to P2.0, while timer 0 is generating a square wave of 4 KHz, on P2.4. Assume XTAL frequency as 11.0592 MHz.	04 04 08
		10a. A switch is connected to pin P2.7 and a stepper motor to port 1. Write a program to monitor the status as of switching and If SW = 0, Stepper motor should rotate clock wise, continuously. If SW = 1, Stepper motor should rotate anti clock wise, continuously. 10b. Interface ADC 0804 to 8051 and write an ALP to convert the analog input to digital value.	08 08
	Jun 2018	9a. Explain 8051 interrupts and the procedure to enable/disable/mask them. 9b. Write a C-program that continuously gets a single bit of data from P1.7 and sends it to P1.0, while simultaneously creating a square wave of 200µs period on pin P2.5. Use timer 0 to create the square wave. Assume XTAL = 11.0592 MHz.	08 08
		10a. Show an interface of 8051 microcontroller with a stepper motor drive circuit and write an ALP to rotate it 5 steps counter clockwise. 10b. Interface ADC-0804 to 8051-Microcontroller and write a program in assembly level to read analog data and display the converted data at Port 2.	08 08
	Jan 2019	9a. Explain the 8051 SCON register. 9b. Write an 8051 subroutine program to initialize 8051 serial port to operate in the mode 0 transmission. 9c. Explain RS – 232 standards.	08 04 04
		10a. Bring out the difference between interrupts and polling. 10b. Explain interrupt priority register of 8051 microcontroller. 10c. Write an 8051 C program the send letters ‘M’, ‘D’ and ‘E’ to the LCD using delays.	04 04 08
	Jun 2019	9a. Interface 8051 to a stepper motor and write an ALP to rotate it 64º in clockwise direction. Step Angle = 2º. 9b. Explain the different interrupts of 8051 (both external and internal). How to enabled mask them?	08 08
		10a. Write a C program using interrupts to do following. i. Receive data serially and send it to P0. ii. Read Port P1, transmit data serially and give a copy to P2. iii. Make timer 0, to generate a square wave of 5 KHz frequency on P0.1. Assume XTAL = 11.0592 MHz with baud rate at 4800. 10b. Write a C Program to send ‘M’, ‘D’, ‘E’ to the LCD using delays.	08 08
	Jan 2020	9a. Explain the bit pattern of IE register and how (i) to enable the serial interrupt, time R0 interrupt and external hardware interrupt in 8051. 9b. Write an ALP that continuously gets 8 bit data from P0 and sends it to P1 while simultaneously creating a square wave of 200us on pin P2.1 use timer 0 to create a square wave and XTAL frequency is 11.0592 MHz. 9c. Explain how TCON can be used in handling the interrupts and also indicate its bit pattern.	04 06 06
		10a. Write the name of the interrupt present in 8051 and also indicate the starting address reserved in ROM for each interrupt. 10b. Write a ALP to switch on LED connected on P1.3 for 500µSec when INT 1 is activated. XTAL used 12MHz. 10c. Name the 14 pins present in LCD and show how it can be interfaced to microcontroller 8051 with P1 connected to data lines.	05 06 05

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FIRST INTERNAL TEST

Branch: **EC** Date:**28/05/2020**
Sub Name: **Microcontroller** Time: **3.30pm – 5.00pm**
Sem & Sec: **IV Sem** Max Marks: **50**
Duration: 1 ½ hrs.

*Note: Answer all Questions selecting any **ONEFULL** questions from each part.*

Qn. No.	Questions	Marks	CO's	BT's
	PART-A			
1.	**Describe the hardware features of 8051 microcontrollers, with a neat architecture block diagram.**	**10**	**CO-2**	**BT1**
	OR			
2.	**Explain how MUL and DIV instruction works with an example in 8051 microcontroller.**	**10**	**CO-1**	**BT1**
	PART-B			
3.	**Explain the organization of internal RAM memory of 8051.**	**10**	**CO-2**	**BT4**
	OR			
4.	**How many SFR's present in 8051 and write the bit addressable SFR's present in 8051 with its address?**	**10**	**CO-2**	**BT1**
	PART-C			
5.	**Sketch the neat diagram of 8051 PIN-OUT and explain its pins: ALE, RST, $\overline{\text{PSEN}}$, $\overline{\text{EA}}$, $\overline{\text{RD}}$, $\overline{\text{WR}}$, TXD & RXD**	**10**	**CO-2**	**BT4**
	OR			
6.	**Explain the different addressing mode of 8051. Give an example for each one of them.**	**10**	**CO-2**	**BT1**
	PART-D			
7.	**a. What is an embedded system and embedded microcontroller? List its applications.** **b. Differentiate between microprocessor and microcontroller with respect to their architecture and instructions.**	**05** **05**	**CO-2** **CO-1**	**BT4**
	OR			
8.	**Discuss the address ranges that are utilized by jump and call instructions.**	**10**	**CO-2**	**BT1**
	PART-E			
9.	**Show how to interface external PROM and external RAM to 8051. Explain how 8051 access them**	**10**	**CO-3**	**BT4**
	OR			
10.	**Explain the following instructions:** **i) XCHD A, @R0** **ii) SWAP A** **iii) MOVC A, @A+DPTR** **iv) CJNE A, 10H LOOP** **v) DA A**	**10**	**CO-3**	**BT1**

Blooms Taxonomy Levels (BTL):BT1- Explain **BT4** – Develop
Course Outcomes (CO's):
CO1: Understand the difference between a Microprocessor and a Microcontroller and embedded microcontrollers.
CO2: Familiarize the basic architecture of 8051 microcontroller.
CO3: Program 8051microprocessor using Assembly Level Language

USN | 1 | C | E | | | E | C | | | |

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FIRST INTERNAL TEST

Branch: **EC**
Sub Name: **Microcontroller**
Sem & Sec: **IV Sem**
Duration: 1 ½ hrs.

Date:**28/05/2020**
Time: **3.30pm – 5.00pm**
Max Marks: **50**

Note: Answer all Questions selecting any ONEFULL questions from each part.

Qn. No.	Questions	Marks	CO's	BT's
	PART-A			
1.	**Describe the hardware features of 8051 microcontrollers, with a neat architecture block diagram.**	10	CO-2	BT1
	OR			
2.	**Explain how MUL and DIV instruction works with an example in 8051 microcontroller.**	10	CO-1	BT1
	PART-B			
3.	**Explain the organization of internal RAM memory of 8051.**	10	CO-2	BT4
	OR			
4.	**How many SFR's present in 8051 and write the bit addressable SFR's present in 8051 with its address?**	10	CO-2	BT1
	PART-C			
5.	**Sketch the neat diagram of 8051 PIN-OUT and explain its pins: ALE, RST, $\overline{PSEN}$, $\overline{EA}$, $\overline{RD}$, $\overline{WR}$, TXD & RXD**	10	CO-2	BT4
	OR			
6.	**Explain the different addressing mode of 8051. Give an example for each one of them.**	10	CO-2	BT1
	PART-D			
7.	**a. What is an embedded system and embedded microcontroller? List its applications.** **b. Differentiate between microprocessor and microcontroller with respect to their architecture and instructions.**	05 05	CO-2 CO-1	BT4
	OR			
8.	**Discuss the address ranges that are utilized by jump and call instructions.**	10	CO-2	BT1
	PART-E			
9.	**Show how to interface external PROM and external RAM to 8051. Explain how 8051 access them**	10	CO-3	BT4
	OR			
10.	**Explain the following instructions:** **i) XCHD A, @R0** **ii) SWAP A** **iii) MOVC A, @A+DPTR** **iv) CJNE A, 10H LOOP** **v) DA A**	10	CO-3	BT1

Blooms Taxonomy Levels (BTL):BT1- Explain BT4- Develop

Course Outcomes (CO's):

CO1: Understand the difference between a Microprocessor and a Microcontroller and embedded microcontrollers.
CO2: Familiarize the basic architecture of 8051microcontroller
CO3: Program 8051microprocessor using Assembly Level Language

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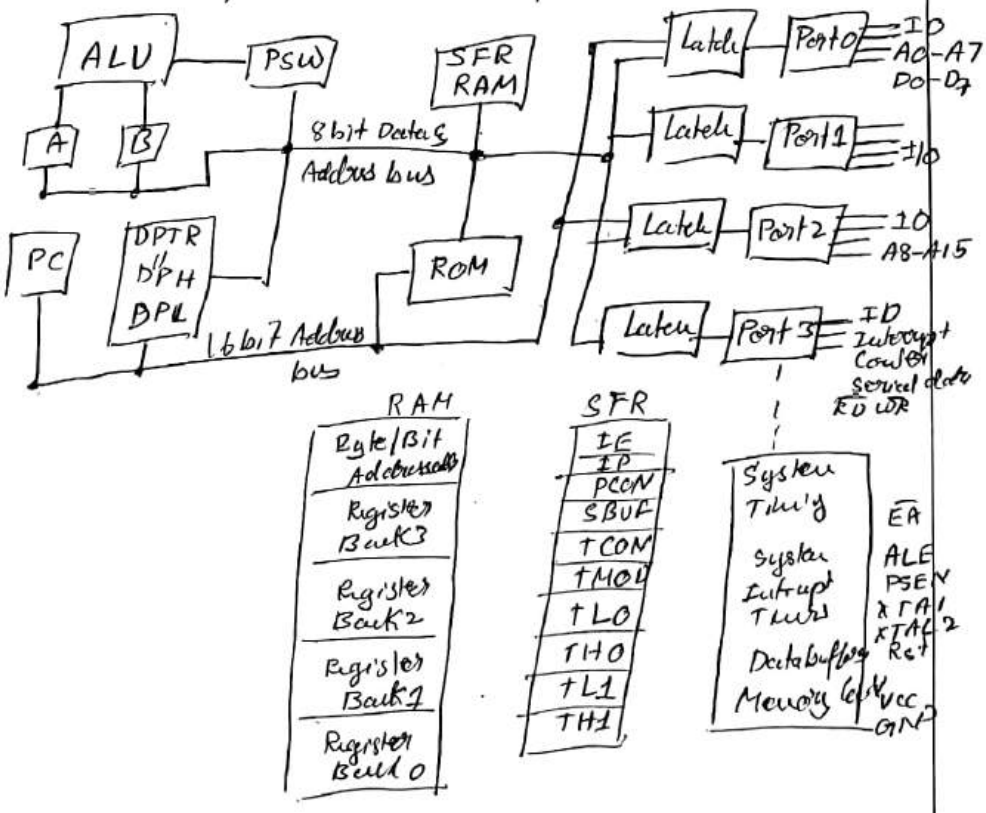
CITY ENGINEERING COLLEGE

DEPARTMENT OF ELCECTRONICS & COMMUNICATION ENGINEERING

SCHEME FOR VALUATION

INTERNAL TEST: I

Semester & Section: IV A **Sub Code:** 18EC46 **Sub Name:** Micro Controller **Date:** 28/5/2020

Question No.	Details of the Answer	Marks Distribution	Total Marks
1.	8051 Hardware features: * 4096 bytes on chip program memory * 128 bytes on chip data memory. * Four Register banks * 32 bit I/O bi-directional 4 8bit ports. * 1 μsec instruction cycle with 12 MHz * 2 Multiple mode 16bit timer / Counter * 2 level prioritized interrupts * Multiple Mode, High speed programmable Serial port	4 (Atleast 8 points)	10
	Architecture / Block diagram of 8051  	6	

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Question No.	Details of the Answer	Marks Distribution	Total Marks
2.	MUL & DIV Instruction with examples		10
	MUL AB Multiply A x B - The 8bit Contents of A-register is Multiplied with 8bit Content of B-register. The 8bit Multiplication results in 16-bit result. After Multiplication the lower byte of the result is available in A-Register & Higher byte of the result is available in B - Register	2	
	Byte: 1 Cycle: 4 operation: (A) x (B) → { Higher byte of Result in A Reg; Lower byte of Rsut in B Reg		
	Flags: CY; OV;	1	

	exc:
	MOV A, #05h
	MOV B, #07H
	MUL AB
	05h x 07h = 00, 23h (B A)		

	Before execution: A=05h, B=07h After execution: A=23h, B=00h	2	
	DIV AB Divide A/B DIV AB divides the Contents of accumulator by the Content of B-Register. The accumulator receives the quotient & B Register receives the remainder	2	
	Byte: 1 Cycle: 4 operation: (A) / (B) → { A = quotient; B = Remainder		
	Flags: CY; OV;	1	

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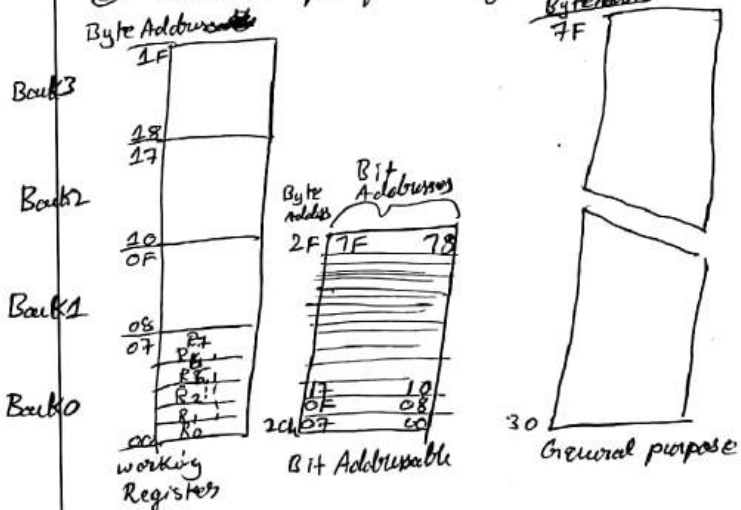
Question No.	Details of the Answer	Marks Distribution	Total Marks
	Ex: MOV A, #0FBH; MOV B, #12H; DIV AB FBh → 251d 12h → 18d 13 → (A) ; 18) 251 (; 234 ; 17 → (B) Before execution: A = FBh (251d), B = 12h (18d) After execution: A = 0Dh (13d), B = 11h (17d)	2	
3.	organization of internal RAM memory of 8051 Soln: Internal RAM is also called as data memory. It has 128 byte RAM organised in to 3 types (a) working register (b) Bit Addressable register (c) General purpose register  explain working, Bit Addressable, General purpose registers.	2 4 4	10
4.	SFR's of 8051 = 21 Nos Special function Registers are accessed by using Addresses from 80H to FFh	2	10

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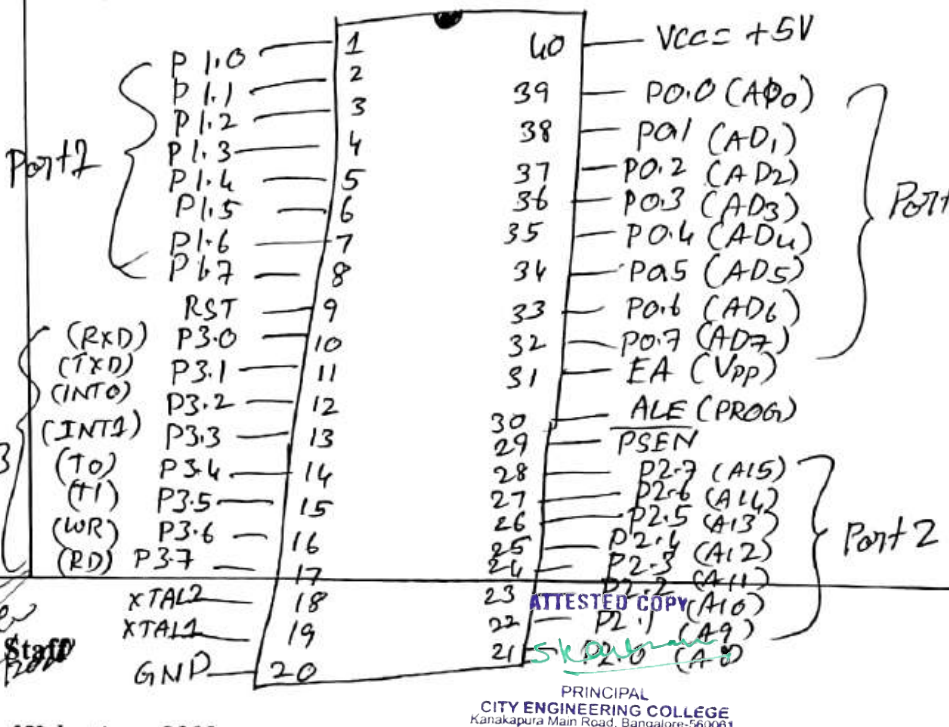
Question No.	Details of the Answer	Marks Distribution	Total Marks
	Some location in SFR's are empty / Reserved	8	

Name	function	Internal Address
A	Accumulator	0E0h
B	Arithmatic	0F0h
DPH	Addressing external Memory	83h
DPL		82h
IE	Interrupt Enable Control	0A8h
IP	Interrupt Priority	0B8h
P0	Input / output Latch	80h
P1		90h
P2		0A0h
P3		0B0h
PCON	power Control	87h
PSW	Program status word	0D0h
SCON	serial port Control	98h
SBUF	serial port Data buffer	99h
SP	stack pointer	81h
TMOD	Timer / Counter Mode Control	89h
TCON	Timer / Counter Control	88h
TL0	Timer 0 low byte	8Ah
TH0	Timer 0 High byte	8Ch
TL1	Timer 1 Low byte	8Bh
TH1	Timer 1 High byte	8Dh

5.	Pin-out of 8051.	4	10



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Question No.	Details of the Answer	Marks Distribution	Total Marks
	Pins: ALE, RST, $\overline{PSEN}$, $\overline{EA}$, $\overline{RD}$, $\overline{WR}$, TXD, RXD ALE = 1 → Port 0 is providing lower order Address (A_0-A_7) ALE = 0 → Port 0 is used as data lines. RST → It is active High signal, when a pulse is applied to this pin, the MC will terminate all its activities & Resets. Program Counter is loaded with 0000h $\overline{PSEN}$ → Program Store enable If the memory access is for the byte of program code in the ROM, then $\overline{PSEN}$ signal goes low & the data byte from the ROM is placed on the data bus. $\overline{EA}$ → External Access $\overline{EA}$ = 1 the code is stored in internal ROM $\overline{EA}$ = 0 the code is stored in external ROM $\overline{RD}$ = 0 → Micro Controller reads the data from external RAM $\overline{WR}$ = 0 → MC writes the data into external RAM TXD & RXD The MC has serial data communication circuits that use SBUF register to hold the data & SCON to control the data communication. The data is Transmitted out of 8051 through TXD line The data is Received by 8051 through RXD line	6	
6.	Different Addressing Modes of 8051 with examples Immediate Addressing Register Addressing Direct Addressing Register Indirect Addressing Indexed Addressing	8 At least 4 with examples 2	10

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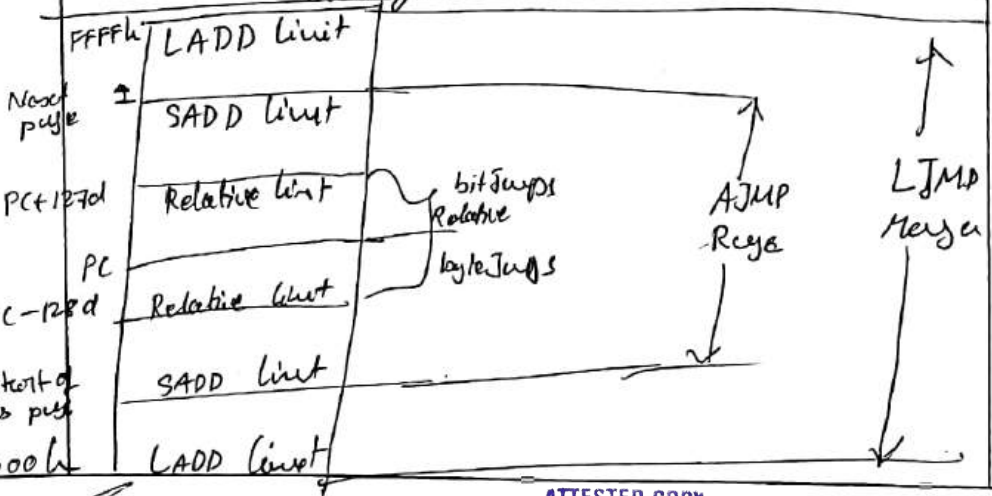
Question No.	Details of the Answer	Marks Distribution	Total Marks
8.	Discuss the Address range Utilized by Jump & Call Instructions.		10

* ~~JMP~~ Jump & Call Instructions replaces the contents of program Counter (PC) with the New address of program execution to start from that new address.
* The difference (in bytes) of this New address & from address in program where Jump or Call instruction is called range of Jump / Call. — 3

Types of Ranges

Ranges	No. of bytes	Examples
Relative −128d to +127d	2 byte Instruction	JC, JNC, JB, JNB, JBC, JZ, JNZ, DJNZ, CJNE — 3
Absolute with in a page of 2K byte	2 byte instruction	ACALL
Long Any where within program memory (0-FFFFh)	3-byte Instruction	LCALL



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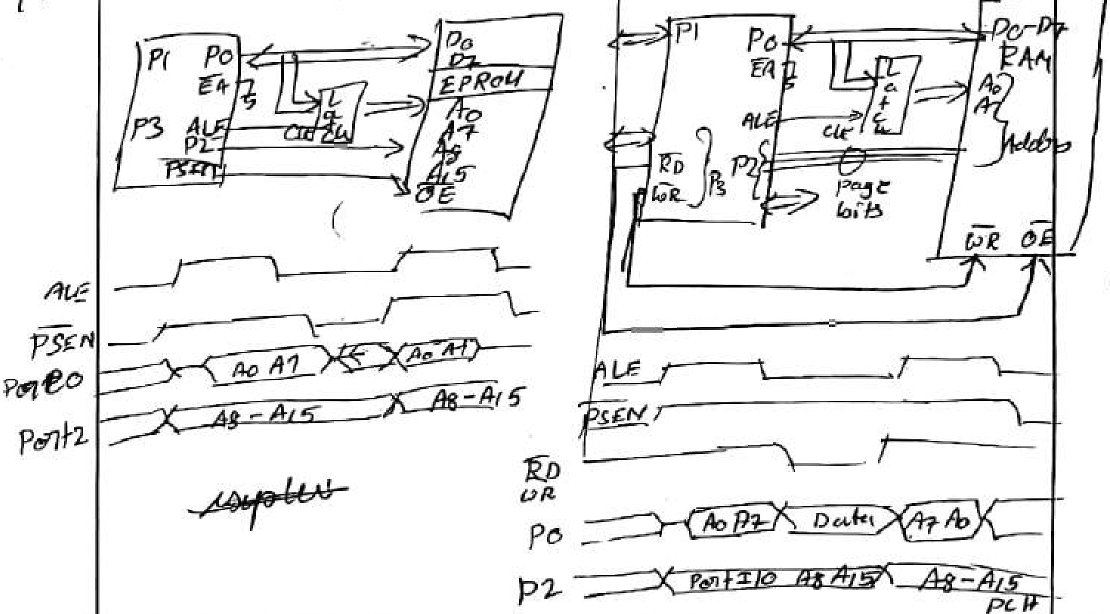
Question No.	Details of the Answer	Marks Distribution	Total Marks
8.	Embedded System · Embedded μC Microprocessor · Micro controller	5 Atleast 8 differences. 5 Atleast 10 points	10
9.	External PROM & External RAM } explain program · Data 	3 7	10
10.	explain instruction. XCHD A, @R0 exchange the lower nibbles of A-Reg with Content pointed by R0 Address Lower Nibble Before execution: A=FFh, R0=50h, 50h=00h After execution: A=F0h, R0=50h, 50h=0Fh	2	10

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Question No.	Details of the Answer	Marks Distribution	Total Marks
	SWAP A Bytes: 1 Cycle: 1 Scoop nibbles of Accumulator operation = (A3-A0) ⟺ (A7-A4) Flags: none Before execution: A = 59h, i.e. A=01011001 After execution: A = 95h, i.e. A=10010101	2	
	MOVC A,@A+DPTR ⟹ Move Code This instruction loads the accumulator with a Code byte of Constant from program memory Byte: 1 Cycles: 2 Flags: None Before execution: A = 00h, DPTR = 1234h, 1234h = EFh (1234h: Code memory Address, EFh: Data) After execution: A = FFh, DPTR = 1234h, 1234h = FFh	2	
	CJNE A, 10H LOOP ⟹ CJNE dest-byte, src-byte, target Compare and Jump if not equal Byte: 3 Cycles: 2 Flags: CY function: PC ← PC + 3 if A ≠ [10h ?] then PC ← PC + LOOP else if A < [10h] then C ← 1 else C ← 0	2	
	DA A → decimal Adjust Accumulator After Addition Bytes: 1 Cycles: 1 operation: if A3-0 > 9 or AC=1 then A3-0 = A3-0 + 6h if A7-4 > 9 or CY=1 then A7-4 = A7-4 + 6h ex: MOV A,#17h ADD A,#38h DAA 17h + 38h = 4Fh + 6 = 55h	2	

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18EC46
....Online....

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SECOND INTERNAL TEST

Branch: **EC**
Sub Name: **Microcontroller**
Sem & Sec: **IV Sem**
Duration: 1 ½ hrs.

Date:**10/06/2020**
Time: **3.30pm – 5.00pm**
Max Marks: **50**

*Note: Answer all Questions selecting any **ONEFULL** questions from each part.*

Qn. No.	Questions	Marks	CO's	BT's
	PART-A			
1.	With a neat diagram, explain the sequence of events of PUSH, POP, LCALL, ACALL and RET instructions stack area of internal RAM.	10	CO-4	BT1
	OR			
2.	**Distinguish between counter and timers of 8051. Explain the mode 1 and mode 2 operation of timer/counter of 8051. How to start/stop timers of 8051.**	10	CO-5	BT1
	PART-B			
3.	**Write an ALP to transfer 10 bytes of data from location starting with 8030H to location starting with 8041H without overlap.***	10	CO-3	BT4
	OR			
4.	**a. Explain the functions of RS232 pins of DB-9 connector.** **b. Explain the procedure 8051 follows to transmit and receive characters serially.**	04 06	CO-5	BT1
	PART-C			
5.	**Ten 8-bit numbers are stored in RAM locations 40H onwards. Write an ALP to find the Largest number and store it in memory location 50H.***	10	CO-3	BT4
	OR			
6.	**Write an ALP to find average of 10 numbers stored in external memory from 1000_H. Store result at 2000_H. Assume sum of those 10 numbers does not exceed 8 bits.**	10	CO-3	BT1
	PART-D			
7.	**a. What is subroutine and mention the advantages of subroutine.** **b. Use subroutine to find the factorial of a number stored in memory location 45H. Assume that the number stored in memory location is ≤ 05.***	05 05	CO-4 CO-3	BT4
	OR			
8.	a. Write an ALP to read the status of witch S connected to P1.2 if it is in the on condition switch on the LED connected P2.2 otherwise off LED connected P2.2. **b. For an 8051 system of 11.0592 MHz. Find the time delay for the following subroutine Delay :** **MOV R3, #250** **BACK: NOP** **NOP** **DJNZ R3, BACK** **RET**	05 05	CO-3 CO-5	BT1
	PART-E			
9.	**Write a program to arrange the numbers in ascending order.**	10	CO-3	BT4

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OR

10.	**Write a program to create a delay of 1 sec. assume that the oscillator frequency is 1.2MHz.**	**10**	**CO-3**	BT1

Blooms Taxonomy Levels (BTL):BT1- Explain BT4 – Develop

Course Outcomes (CO's):

CO3: Program 8051microprocessor using Assembly Level Language

CO4: Understand the interrupt system of 8051 and the use of interrupts.

CO5: Understand the operation and use of inbuilt Timers/Counters and Serial port of 8051.

CO6: Interface 8051 to external memory and I/O devices using its I/O ports.

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Year : 2019 - 2020

Semester : Odd / Even ✓

Name of the Teacher : VISHVA KIRAN

Designation : Asst. Prof.

Department : E & CE

	Sem/Branch	Subject Code	Subject
1.	4 EC	18EC46	Micro Controller
2.			
3.			

	Initials at the End of the			
	1st Month	2nd Month	3rd Month	Semester
Staff	Vki	Vki		
HOD				
Principal				

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IV EC

18EC46 - Micro Controller

ATTENDANCE

Sl. No.	Reg.No.	Name	10/2	11/2	12/2	13/2	17/2	18/2	24/2	25/2	26/2	27/2	28/2	29/2	2/3
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
2018 Batch	ICE 16ECO15	INDIRESH . H. BHRAHMADESHMI	1	2	3	3	4	5	6	7	8	9	10	11	12	13
2	17EC028	JYOTHESH KARNAM	1	2	3	4	5	6	7	8	9	10	11	12	13	14
3	18EC001	A.T. HARSHITH	0	0	1	2	3	4	5	6	7	8	9	10	11	12
4	18EC002	AKANKSHA . G. KULKARNI	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	18EC003	AMARJITH . V.S.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	18EC004	ANKIT KUMAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14
7	18EC005	GANGADHAR . P. UPAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8	18EC006	JOYEETA SARKAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14
9	18EC007	KARTHIK . P. S	1	2	3	4	5	6	7	8	9	10	11	12	13	14
10	18EC008	KRUTHIKA . S.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
11	18EC009	KUSHAL . V. V.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
12	18EC010	MANOJ KUMAR . R.S.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
13	18EC011	MD. IMRANULLA KHAN	1	2	3	4	5	6	7	8	9	10	11	12	13	14
14	18EC012	NAYANA . C.Y.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	18EC013	NOOR FATHIMA AFSAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14
16	18EC014	POORNESH . K.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
17	18EC015	PRAJWAL . L.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
18	18EC016	RAKSHITHA . T. K.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
19	18EC017	SAGAR . S.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
20	18EC018	SAIMA IRFATH . J.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
21	18EC019	SANGEETHA . C.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
22	18EC020	SHREYAS . H.C.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	18EC021	SHRINIDHI B. CHEREKAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	18EC022	SOUNDARYA . H.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	18EC023	SOWNDARYA . H.C.	1	2	3	4	5	6	7	8	9	10	11	12	13	
	No. of Abs.															
	Initials															

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CITY ENGINEERING COLLEGE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CIRCULAR

Ref. No: CEC/ECE/DAC/2019-2020/01 **Date: 24-07-2019**

All the members of Department Advisory Committee are informed to attend a meeting which will be held as follows

Date: 25-07-2019
Time: 03.30 PM
Venue: **LAB A206**

Agenda:

- Conducting Add-on Course and soft skill training
- Faculty development programme
- Conducting coding, debugging events

Prof. Mallikarjuna G S

HOD

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CITY ENGINEERING COLLEGE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Department Advisory Committee Meeting

Date: 25-07-2019
Time: 03.30 PM
Venue: LAB A206

DAC Members Present:

Sl. No	Member Name	Designation	Role	Signature
1	Prof. Mallikarjuna G S	HOD	Convenor	
2	Dr. Shalini Prasad	Professor	Co-Convenor	
3	Prof. Shylaja K	Assistant Professor	Member	
4	Prof. Ravindra S	Assistant Professor	Member	
5	Prof. Aurobindo Koti	Assistant Professor	Member	
6	Prof. SKL Narayana	Assistant Professor	Member	

The Department Advisory Committee meeting was conducted at Department of ECE, on 25th July 2019, at 03:30 PM.

Agenda of the Meeting:

- Conducting Add-on Course and soft skill training
- Faculty development programme
- Conducting coding, debugging events

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Minutes of Meeting:

In the Department Advisory Committee meeting, an overview of the department was presented, emphasizing student achievements, result analysis, and faculty accomplishments. The members discussed various suggestions for improvement and reviewed the meeting agenda.

The Committee proposed the following items for inclusion in the agenda:

- Second and Third year students are encouraged to participate in technical activities and to attend guest lectures or seminars to broaden their knowledge.
- A project exhibition has been proposed, offering final-year students a platform to showcase their work.
- The HOD also briefed about time table preparation, departmental activities.

Prof. Mallikarjuna G S

HOD

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Academic Calendar of VTU, Belagavi for ODD Semester of 2019-2020 (Jul 2019 – Jan 2020)

	I Sem B. E. / B. Tech. / B. Arch. (Tentative)	III, V & VII Sem B. E. /B. Tech. III, V,VII & IX Sem B. Arch.	III & V Sem MCA	III Sem MBA	III Sem M. Tech.	III Sem M. Arch.
Commencement of ODD Semester	01.08.2019	29.07.2019	29.07.2019	08.08.2019	26.08.2019	08.09.2019
Last Working day of ODD Semester	29.11.2019	30.11.2019	30.11.2019	05.12.2019	23.12.2019	06.01.2020
Practical Examinations	03.12.2019 To 13.12.2019	03.12.2019 To 13.12.2019	03.12.2019 To 07.12.2019	-	-	-
Theory Examinations	16.12.2019 To 04.01.2020	16.12.2019 To 07.02.2020	09.12.2019 To 28.12.2019	09.12.2019 To 04.01.2020	27.12.2019 To 10.01.2020	08.01.2020 To 22.01.2020
Internship Viva-Voce	-	-	-	-	12.01.2020 To 19.01.2020	-
Professional training / Organization study	-	-	-	-	-	-
Commencement of EVEN Semester	27.01.2020	10.02.2020	27.01.2020	27.01.2020	27.01.2020	01.02.2020

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NOTE

- **VII Semester B. E / B. Tech** students shall have to undergo **Internship** for a period of four Weeks.
- **I Semester B. E/ B. Tech / B. Arch** Students shall compulsorily undergo **Induction Program** for a period of 3 Weeks (two phases) as per the schedule given by VTU First phase 11 days in first semester and second phase 10 days in second semester.

Accn / All Heads / Exam

1. **College Time Table shall be arranged for five and a half week days and planned to accommodate EDUSAT transmission slots, the schedule of which will be notified separately.**
2. **The faculty/staff shall be available to undertake any work assigned by the university.**
3. **If any of the above date is declared to be a holiday then the corresponding event will come into effect on the next working day.**
4. **Notification regarding Calendar of Events relating to the conduct of University Examination will be issued by the Registrar (Evaluation) from time to time.**

29/6/19

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BANAHALLI, BANGALORE - 560 107

REGISTRAR

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM)

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT
STARTING OF HIGHER SEMESTERS (3^{rd},5^{th} & 7^{th} Semesters **29.7.2019** MON)					1					
					2	GANDHI JAYANTI(DH)				
THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3		8	VIJAYA DASHAMI(DH)	5	**SECOND CIE FOR FIRST SEM.**	3	
WED	7	FIRST SEM INDUCTION	4	FIRST INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	9		6		4	
THU	8		5		10		7		5	
FRI	9		6		11		8		6	
SAT	10	2^{ND} SATURDAY HOLIDAY	7		12	2^{ND} SATURDAY HOLIDAY	9	2^{ND} SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	
TUE	13		10	MOHARAM (DH)	15		12		10	**THIRD CIE FOR FIRST SEM**
WED	14		11		16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANTHI(DH)	13	
SAT	17		14	2^{ND} SATURDAY HOLIDAY	19		16		14	
SUN	18		15		20		17		15	
MON	19		16		21		18		16	
TUE	20		17		22	SECOND INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	19	THIRD INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	17	LAB INTERNALS FOR 1^{st} SEMESTERS
WED	21		18		23		20		18	
THU	22		19		24		21		19	
FRI	23		20	**FIRST CIE FOR FIRST SEM.**	25		22		20	
SAT	24	4^{TH} SATURDAY HOLIDAY	21		26	4^{TH} SATURDAY HOLIDAY	23	4^{TH} SATURDAY HOLIDAY	21	LAST WORKING DAY 1^{ST} SEM
SUN	25		22		27		24		22	
MON	26		23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 3^{rd},5^{th} &7^{th} SEMESTERS	24	VTU PRACTICAL:
WED	28		25		30		27		25	1^{ST} SEMESTER:
THU	29		26		31		28		26	23.12.19 TO 3.1.20
FRI	30		27				29	LAST WORKING DAY 1^{st} SEM	27	THEORY EXAMS :
SAT	31		28	4^{TH} SATURDAY HOLIDAY			30	LAST WORKING DAY 3^{RD},5^{TH} &7^{TH} SEM	28	1^{ST} SEMESTERS : 6.1.20 TO 28.1.2020
SUN			29	ATTESTED COPY					29	
MON			30	PRINCIPAL CITY ENGINEERING COLLEGE Kanakapura Main Road, Bangalore-560061					30	
TUE									31	

VTU PRACTICAL EXAM : 3^{RD} & 5^{TH} SEMESTER: 3.12.19 TO 5.12.19, THEORY EXAMS : 1^{ST} SEMESTER: 6.12.19 TO14.12.19, THEORY EXAMS : 3^{RD} ,5^{TH} &7^{TH} SEMESTERS : 16.12.19 TO 7.2.2020

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CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM)

DEPT OF E&CE

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**
STARTING OF HIGHER SEMESTERS					1					
(3rd,5th & 7th Semesters **29.7.2019** MON)					2	GANDHI JAYANTI(DH)				
THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3		8	VIJAYA DASHAMI(DH)	5	**SECOND CIE FOR FIRST SEM.**	3	
WED	7	FIRST SEM INDUCTION	4	FIRST INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	9		6		4	
THU	8		5		10		7		5	
FRI	9		6		11		8		6	
SAT	10	2ND SATURDAY HOLIDAY	7	*INDUSTRIAL VISIT*	12	2ND SATURDAY HOLIDAY	9	2ND SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	
TUE	13		10	MOHARAM (DH)	15		12		10	**THIRD CIE FOR FIRST SEM**
WED	14		11		16	*GUEST LECTURE 2*	13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANTHI(DH)	13	
SAT	17		14	2ND SATURDAY HOLIDAY	19		16		14	
SUN	18		15		20		17		15	
MON	19		16		21		18		16	
TUE	20		17	*GUEST LECTURE 1*	22	SECOND INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	19	THIRD INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	17	LAB INTERNALS FOR 1st SEMESTERS
WED	21		18		23		20		18	
THU	22		19		24		21		19	
FRI	23		20	**FIRST CIE FOR FIRST SEM.**	25		22		20	
SAT	24	4TH SATURDAY HOLIDAY	21		26	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	21	**LAST WORKING DAY 1ST SEM**
SUN	25		22		27		24		22	
MON	26	*PTM*	23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 3rd,5th &7th SEMESTERS	24	VTU PRACTICAL: 1ST SEMESTER: 23.12.19 TO 3.1.20
WED	28		25		30		27		25	
THU	29		26		31		28		26	THEORY EXAMS : 1ST SEMESTERS : 6.1.20 TO 28.1.2020
FRI	30		27				29	**LAST WORKING DAY 1st SEM**	27	
SAT	31		28	4TH SATURDAY HOLIDAY			**30**	**LAST WORKING DAY 3RD ,5TH &7TH SEM**	28	
SUN			29							
MON			30							

VTU PRACTICAL EXAM : 3RD & 5TH SEMESTER: 3.12.19 TO13.12.19,7TH SEMESTER: 6.12.19 TO14.12.19, THEORY EXAMS : 3RD ,5TH &7TH SEMESTERS : 16.12.19 TO 7.2.2020

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CITY ENGINEERING COLLEGE

Department of Electronics and Communication Engineering

COURSE ALLOCATION ACY: 2019-20 (ODD)

Sl No	Name of the Faculty	Course code and Name	Year& Semester	Signature
1	G.S. Mallikarjuna	18ELE13 - Basic Electrical Engineering 17EC35 - Network analysis	I / 1st II / 3rd	
2	Shalini Prasad	15EC71 - MW & antenna 10EC74 - ESD 15ECL57 - DSP lab	IV / 7th IV / 7th III / 5th	S. Prasad
3	Ravindra. S.	17EC36 - Engg. electromagnetics 10EC762 - RTS 18ELEL17 - Electrical lab	II / 3rd IV / 7th I / 1st	Ravindra S
4	Shylaja. K	15ES51 - Professional Ethics & Humanities 15EC755 - Sat. Comm 15ECL76 - Adv. Comm lab	III / 5th IV / 7th IV / 7th	Shylaja K
5	Arabindo Koti	15EC54 - ITC 10ECL78 - PE lab 18ELEL17 - Electrical lab	III / 5th IV / 7th I / 1st	A. Koti
6	Madhavi. J. Kalakarni	17EC33 - Analog Electronics 15EC553 - DS 17ECL37 - AE lab	II / 3rd III / 5th II / 3rd	MJK
7	SKL Narayan	15EC52 - DSP 10EC751 - DSPA 10ECL77 - VLSI lab	III / 5th IV / 7th IV / 7th	SKLN
8	Vishvakiran R.C.	15EC53 - VHDL 15EC663 - DSDV 15ECL77 - VLSI lab	III / 5th IV / 7th IV / 7th	Vki

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CITY ENGINEERING COLLEGE

Department of Electronics and Communication Engineering

COURSE ALLOCATION ACY: 2019-20 (DDD)

Sl No	Name of the Faculty	Course code and Name	Year& Semester	Signature
9	Sheravanthi Rai	17EC35 – NA 15ECL58 – HDL lab	III / 3rd III / 5th	S
10	Deepa Mathew. K	17EC34 – Digital electronics 17ECL38 – DE lab 10EC73 – PE	II / 3rd V / 3rd V / 4th	DM
11	Krishna. K.S.	10EC72 – DFC 18ELE13 – B. electrical 18ELEL17 – B. electrical lab	IV / 4th I / 1st I / 1st	KS
12	Gopikishan. J.	15EC73 – PE 15ECL76 – ADC lab	IV / 7th IV / 7th	
13	Ranganath. S.L	17EC32 – Electronic Instrumentation 17ECL37 – AE lab	II / 3rd II / 3rd	RSL
14	Geethanjali	18ELN14 – basic electronics	I / 1st	Geethanjali
15	Radhika. T.S.	15EC76 – DIP 15ECL58 – HDL lab	IV / 7th III / 5th	Radhika TS

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HOD, ECE

CITY ENGINEERING COLLEGE

ACADEMIC YEAR:2019-20 (ODD)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PREFERENCE

Name of the Faculty: Anirobindo Koti

Designation: Assistant Professor

Sl. No	Course Code and Name	Year/Semester
1	15EC54 - ITC	III / 5th
2	15EC553 - Operating System	III / 5th
3	10ECL78 - PE lab	IV / 7th
4	Basic Electrical lab - 18ELEL17	I / 1st

A Koti

Signature of Faculty

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CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM)

DEPT OF E&CE

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**
STARTING OF HIGHER SEMESTERS					1					
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THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3		8	VIJAYA DASHAMI(DH)	5	**SECOND CIE FOR FIRST SEM.**	3	
WED	7	FIRST SEM INDUCTION	4	FIRST INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	9		6		4	
THU	8		5		10		7		5	
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TUE	20		17	*GUEST LECTURE 1*	22	SECOND INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	19	THIRD INTERNAL ASSESSMENT 3rd,5th & 7th Semesters	17	LAB INTERNALS FOR 1st SEMESTERS
WED	21		18		23		20		18	
THU	22		19		24		21		19	
FRI	23		20	**FIRST CIE FOR FIRST SEM.**	25		22		20	
SAT	24	4TH SATURDAY HOLIDAY	21		26	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	21	**LAST WORKING DAY 1ST SEM**
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WED	28		25		30		27		25	
THU	29		26		31		28		26	THEORY EXAMS : 1ST SEMESTERS : 6.1.20 TO 28.1.2020
FRI	30		27				29	**LAST WORKING DAY 1st SEM**	27	
SAT	31		28	4TH SATURDAY HOLIDAY			**30**	**LAST WORKING DAY 3RD ,5TH &7TH SEM**	28	
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VTU PRACTICAL EXAM : 3RD & 5TH SEMESTER: 3.12.19 TO13.12.19,7TH SEMESTER: 6.12.19 TO14.12.19, THEORY EXAMS : 3RD ,5TH &7TH SEMESTERS : 16.12.19 TO 7.2.2020

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CITY ENGINEERING COLLEGE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE FILE

NAME	**Vishva Kiran R C**
DESIGNATION	**Asst. Prof.**
SEMESTER	**5th EC**
SECTION	**"A"**
SUBJECT NAME/CODE	**17EC53 – Verilog HDL**
ACADEMIC YEAR	**Odd 2019-20**

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DEPARTMENT OF ….Electronics & Communication Engg.

CONTENTS

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CITY ENGINEERING COLLEGE **WEF 1ST AUG 2019**

Prof. Vishva Kiran RC

Dept. of E&CE

	1 9:15 - 10:10	2 10:10 - 11:05	TEA BREAK 11:05 - 11:20	3 11:20 - 12:15	4 12:15 - 13:10	LUNCH BREAK 13:10 - 14:00	5 14:00 - 14:50	6 14:50 - 15:40	7 15:40 - 16:30
Mo	VERILOG A106 5EC		TEA BREAK			LUNCH BREAK			VERILOG A106 5EC
Tu					VERILOG A106 5EC		VLSI LAB 7EC A1		
We							HDL LAB 5EC A1		
							VLSI LAB 7EC A2		
Th		VERILOG A106 5EC					HDL LAB 5EC A2		
Fr		VERILOG A106 5EC							
Sa									

Timetable generated:26-07-2019

aSc Timetables

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Professor & Head
Dept. of Electronics & Communication Engineering
City Engineering College,
Doddakallasandra, Kanakapura Main Road
Bangalore-560 061.

CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM)

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT
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THU	1	STARTING OF FIRST SEM			3					
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SAT	10	2ND SATURDAY HOLIDAY	7		12	2ND SATURDAY HOLIDAY	9	2ND SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	
TUE	13		10	MOHARAM (DH)	15		12		10	THIRD CIE FOR FIRST SEM
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TUE	20		17		22		19		17	
WED	21		18		23		20		18	
THU	22		19	FIRST CIE FOR FIRST SEM.	24		21		19	
FRI	23		20		25		22		20	
SAT	24	4TH SATURDAY HOLIDAY	21		26	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	21	LAST WORKING DAY 1ST SEM
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TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 3rd,5th &7th SEMESTERS	24	VTU PRACTICAL:
WED	28		25		30		27		25	1ST SEMESTER:
THU	29		26		31		28		26	23.12.19 TO 3.1.20
FRI	30		27				29	LAST WORKING DAY 1st SEM	27	THEORY EXAMS :
SAT	31		28	4TH SATURDAY HOLIDAY			30	LAST WORKING DAY 3RD ,5TH &7TH SEM	28	1ST SEMESTERS : 6.1.20 TO 28.1.2020
SUN			29						29	
MON			30						30	
TUE									31	

VTU PRACTICAL EXAM : 3RD & 5TH SEMESTER: 3.12.19 TO13.12.19,7TH SEMESTER: 6.12.19 TO14.12.19, THEORY EXAMS : 3RD ,5TH &7TH SEMESTERS : 16.12.19 TO 7.2.2020

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VERILOG HDL

B.E., V Semester, Electronics & Communication Engineering/ Telecommunication Engineering

[As per Choice Based Credit System (CBCS) Scheme]

Course Code	17EC53	**CIE Marks**	40
Number of Lecture Hours/Week	04	**SEE Marks**	60
Total Number of Lecture Hours	50 (10 Hours / Module)	**Exam Hours**	03

CREDITS – 04

Course objectives: This course will enable students to:

- Differentiate between Verilog and VHDL descriptions.
- Learn different Verilog HDL and VHDL constructs.
- Familiarize the different levels of abstraction in Verilog.
- Understand Verilog Tasks and Directives.
- Understand timing and delay Simulation.
- Learn VHDL at design levels of data flow, behavioral and structural for effective modeling of digital circuits.

Module-1

Overview of Digital Design with Verilog HDL
Evolution of CAD, emergence of HDLs, typical HDL-flow, why Verilog HDL?, trends in HDLs. (Text1)
Hierarchical Modeling Concepts
Top-down and bottom-up design methodology, differences between modules and module instances, parts of a simulation, design block, stimulus block. (Text1)
L1, L2, L3

Module-2

Basic Concepts
Lexical conventions, data types, system tasks, compiler directives. (Text1)
Modules and Ports
Module definition, port declaration, connecting ports, hierarchical name referencing. (Text1) **L1, L2, L3**

Module-3

Gate-Level Modeling
Modeling using basic Verilog gate primitives, description of and/or and buf/not type gates, rise, fall and turn-off delays, min, max, and typical delays. (Text1)
Dataflow Modeling
Continuous assignments, delay specification, expressions, operators, operands, operator types. (Text1) **L1, L2, L3**

Module-4

Behavioral Modeling
Structured procedures, initial and always, blocking and non-blocking statements, delay control, generate statement, event control, conditional statements, Multiway branching, loops, sequential and parallel blocks. (Text1) **L1, L2, L3**

Module-5

Introduction to VHDL
Introduction: Why use VHDL?, Shortcomings, Using VHDL for Design Synthesis,

Design tool flow, Font conventions.

Entities and Architectures: Introduction, A simple design, Design entities, Identifiers, Data objects, Data types, and Attributes. (Text 2) **L1, L2, L3**

Course Outcomes: At the end of this course, students should be able to

- Write Verilog programs in gate, dataflow (RTL), behavioral and switch modeling levels of Abstraction.
- Write simple programs in VHDL in different styles.
- Design and verify the functionality of digital circuit/system using test benches.
- Identify the suitable Abstraction level for a particular digital design.
- Write the programs more effectively using Verilog tasks and directives.
- Perform timing and delay Simulation.

Text Books:

1. Samir Palnitkar, **"Verilog HDL: A Guide to Digital Design and Synthesis"**, Pearson Education, Second Edition.
2. Kevin Skahill, **"VHDL for Programmable Logic"**, PHI/Pearson education, 2006.

Reference Books:

1. Donald E. Thomas, Philip R. Moorby, "The Verilog Hardware Description Language", Springer Science+Business Media, LLC, Fifth edition.
2. Michael D. Ciletti, "Advanced Digital Design with the Verilog HDL" Pearson (Prentice Hall), Second edition.
3. Padmanabhan, Tripura Sundari, "Design through Verilog HDL", Wiley, 2016 or earlier.

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Doddakalsandra, Off kanakapura road, Bangalore 560 061.

Course Title: **VERILOG HDL**	Course Code: **17EC53**
Total contact hours: L:T:P:S :4:1:1:0	CREDITS – **04**
Internal Marks : **40**	End Term Marks : **60**
Semester : **V**	Academic year : **2019-20**
Lesson plan Author: **Vishva Kiran R C**	Date : **31/07/2019**

Course Objective:

This course will enable students to:

- Designing digital circuits, behavioral and RTL modeling of digital circuits using Verilog HDL.
- Verifying these models and synthesizing RTL models to standard cell libraries and FPGAs.
- Students gain practical experience by designing, modeling, implementing and verifying several digital circuits.

Course Outcomes:

After the completion of the course, the student would be able to

- Describe Verilog hardware description languages (HDL). Design Digital Circuits.
- Write behavioral models of digital circuits. Write Register Transfer Level (RTL) models of digital circuits.
- Verify behavioral and RTL models. Describe standard cell libraries and FPGAs.
- Synthesize RTL models to standard cell libraries and FPGAs. Implement RTL models on FPGAs and Testing & Verification.

Week	Days	Module	Main Topics	Sub Topics	Bloom's Taxonomy Level(L)	Course Outcome (CO)
1	1	I	Overview of Digital Design with Verilog HDL	Evolution of CAD,	U, A1	CO-1
	2			emergence of HDLs,	U, A1	CO-1
	3			typical HDL-flow,	U, A1	CO-1
	4			why Verilog HDL?,	U, A1	CO-1
2	5			trends in HDLs.	U, A1	CO-1
	1		Hierarchical Modeling Concepts	Top-down and bottom-up design methodology	U, A1	CO-1
	2			differences between modules and module instances	U, A1	CO-1
	3			parts of a simulation	U, A1	CO-1
	4			design block, stimulus block.	U, A1	CO-1
3	1	II	Basic Concepts	Lexical conventions,	A1,A2,E	CO-4
	2			data types	A1,A2,E	CO-4
	3			Cont. data types	A1,A2,E	CO-4
	4			system tasks	A1,A2,E	CO-4
	5			Cont. system tasks	A1,A2,E	CO-4
4	1			compiler directives	A1,A2,E	CO-4
	2			Cont. Compiler directives	A1,A2,E	CO-4

	3		Modules and Ports	Module definition	A1,A2,E	CO-4
	4			Cont. module definition	A1,A2,E	CO-4
	5			port declaration	A1,A2,E	CO-4
5	1			connecting ports	R,U, A1	CO3
	2			hierarchical name referencing	R, U, A1	CO3
	3	III	Gate-Level Modeling	Modeling using basic Verilog gate primitives	R, U, A1	CO3
	4			Verilog primitives	R, U, A1	CO3
	5			description of and/or and buf/not type gates	R, U, A1	CO3
6	1			Cont. types of description	R, U, A1	CO3
	2			rise, fall delays	R, U, A1	CO3
	3			turn-off delays	R, U, A1	CO3
	4			min, max	R, U, A1	CO3
	5			typical delays	R, U, A1	CO3
7	1		Dataflow Modeling	Continuous assignments	A1,A2,E	CO2, CO4
	2			delay specification	A1,A2,E	CO2, CO4
	3			expressions	A1,A2,E	CO2, CO4
	4			operators,	A1,A2,E	CO2, CO4
	5			operands	A1,A2,E	CO2, CO4
8	1			operator types	A1,A2,E	CO2, CO4
	2	IV	Behavioral Modeling	Structured procedures	A1,A2,E	CO2, CO4
	3			initial and always	A1,A2,E	CO2, CO4
	4			blocking and non-blocking statements	A1,A2,E	CO2, CO4
	5			delay control,	A1,A2,E	CO2, CO4
9	1			generate statement	R,U	CO5
	2			event control	R,U	CO5
	3			conditional statements	R,U	CO5
	4			Multiway branching	R,U	CO5
	5			loops, sequential	R,U	CO5
10	1			parallel blocks	R,U	CO5
	2	V	Introduction to VHDL	Why use VHDL?,	R,U	CO5
	3			Shortcomings,	R,U	CO5
	4			Using VHDL for Design Synthesis	R,U	CO5
	5			Design tool flow	R,U	CO5
11	1			Font conventions.	R,U	CO5
	2		Entities andArchitectures	Introduction	R,U	CO5
	3			A simple design	R,U	CO5
	4			Design entities	R,U	CO5
	5			Identifiers	R,U	CO5
12	1			Data objects	R,U	CO5
	2			Data types	R,U	CO5
	3			Attributes	R,U	CO5

	4			Revision 01 – Programes in VHDL	R,U	CO1
	5			Revision 02 – Programes in Verilog	R,U	CO1

Bloom's Taxonomy Level (L)

R-Remembering U-Understanding A1-Applying A2-Analysing E-Evaluating C-Creating

Text Books:

1. Samir Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis", Pearson Education, Second Edition.
2. Kevin Skahill, "VHDL for Programmable Logic", PHI/Pearson education, 2006.

Reference Books:

1. Donald E. Thomas, Philip R. Moorby, "The Verilog Hardware Description Language", Springer Science+Business Media, LLC, Fifth edition.
2. Michael D. Ciletti, "Advanced Digital Design with the Verilog HDL" Pearson (Prentice Hall), Second edition.
3. Padmanabhan, Tripura Sundari, "Design through Verilog HDL", Wiley, 2016 or earlier.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C508.1	1	2	3	2	3	1	1	1	2	1	1	1
C508.2	1	2	3	2	3	1	1	1	2	1	1	1
C508.3	1	3	3	1	2	1	1	1	1	2	1	1
C508.4	1	2	3	2	3	1	1	1	2	1	1	1
MODAL VALUE	1	2	3	2	3	1	1	1	2	1	1	1

List of URLs-Text Books, Notes, Multimedia Content, etc

- http://www.nptelvideos.in/2012/11/electronic-design-and-automation.html
- http://nptel.ac.in/courses/106105083/7
- https://sites.google.com/site/zakirsirece/verilog-hdl-notes
- http://www.satishkashyap.com/2013/12/lecture-notes-or-lecture-slides-on_6227.html
- https://www.smartzworld.com/notes/digital-design-through-verilog-hdl-notes-ddtv/
- http://d1.amobbs.com/bbs_upload782111/files_33/ourdev_585395BQ8J9A.pdf
- https://www.pdf-archive.com/2013/04/05/ebook-electronics-verilog-digital-design-synthesis/ebook- electronics-verilog-digital-design-synthesis.pdf

31/7/2019

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CBCS Scheme

USN | | | | | | | | | | |

15EC53

Fifth Semester B.E. Degree Examination, June/July 2018
Verilog HDL

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Explain briefly the typical design flow for design of VLSI circuits. **(08 Marks)**

b. Explain the 4 bit ripple carry counter with block diagram and design hierarchy. **(08 Marks)**

OR

2 a. Explain briefly the two different design methodologies. **(08 Marks)**

b. What is an instance? Explain module instantiation with an example. **(08 Marks)**

Module-2

3 a. Explain the following data types in verilog with an example for each:
i) Nets ii) Registers iii) Memories iv) Parameters **(08 Marks)**

b. Explain monitoring, stopping and finishing in a simulation and also compiler directives. **(08 Marks)**

OR

4 a. Write a note on following lexical conventions used in verilog:
i) Operators ii) Identifiers and keywords
iii) Escaped identifiers iv) Strings **(08 Marks)**

b. Explain different methods of connecting ports to external signals. **(08 Marks)**

Module-3

5 a. Explain the following operators used in verilog with an example.
i) Logical ii) Replication iii) Shift iv) Conditional **(08 Marks)**

b. Write the verilog code and stimulus for gate level 4:1 multiplexer with their logical diagram. **(08 Marks)**

OR

6 a. Write the gate level description for 4 bit ripple carry full adder. **(06 Marks)**

b. Define bufif/notif and write gate instantiation of bufif, notif gates. **(04 Marks)**

c. Define implicit continous assignment delay and net declaration delay with an example. **(06 Marks)**

Module-4

7 a. Explain blocking and non-blocking assignments in behavioural description with an example. **(08 Marks)**

b. Explain structured procedures in behavioural description with example. **(08 Marks)**

OR

8 a. Explain different types of event based timing control in verilog. **(08 Marks)**

b. Explain with an example the two types of blocks in verilog behavioural description. **(08 Marks)**

Module-5

9 a. Explain the synthesis process with a block diagram. **(08 Marks)**

b. Explain the attributes in VHDL with examples. **(08 Marks)**

OR

10 a. Explain simulate the post fit design implementation in VHDL. **(08 Marks)**

b. Explain different scalar types in VHDL. **(08 Marks)**

CBCS SCHEME

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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Verilog HDL

Time: 3 Hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain top-down design methodology with an example. (06 Marks)
b. Explain the typical design flow for designing VLSI IC circuits with a neat flow chart. (10 Marks)

OR

2 a. Explain Bottom-up design methodology with an example. (06 Marks)
b. Explain the different levels of abstraction used for programming in verilog. (10 Marks)

Module-2

3 a. Explain system tasks and compiler directives in verilog. (06 Marks)
b. What are the basic components of a module? Explain all the components of a verilog module with a neat block diagram. (06 Marks)
c. Write verilog description of SR Latch. Also write stimulus code. (04 Marks)

OR

4 a. Write a note on: i) Registers ii) Nets iii) Arrays iv) Parameters v) Vectors vi) Memories (12 Marks)
b. Declare a top-level module "Stimulus". Define Reg_in (4 bit) and Clk (1 bit) as register variables and Reg_out (4 bits) as wire. Instantiate the module "shift-reg" in "stimulus" block and connect the ports by ordered list. Declare A (4 bit) and clock (1 bit) as inputs and B (4 bit) as output in "shift-reg" module. (No need to show internals). Write a verilog code for the above. (04 Marks)

Module-3

5 a. Write the verilog description of 4 bit ripple carry adder at gate level abstraction, with a neat block diagram. Also, write stimulus block. (08 Marks)
b. What would be the output of the following:
a = 4'b1010, b = 4'b1111
i) a & b ii) a && b iii) & a iv) a >> 1 v) a >>> 1 vi) y = {2{a}}
vii) a ^ b viii) z = {a, b}. (08 Marks)

OR

6 a. A full subtractor has three 1-bit inputs x, y and z (previous borrow) and two 1-bit outputs D(Difference) and B(Borrow). The logic equations are

$D = \bar{x}\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\bar{z} + xyz$

$B = \bar{x}y + \bar{x}z + yz$

Write verilog description using dataflow modeling. Instantiate the subtractor module inside a stimulus block and test all possible combinations of inputs x, y and z. (08 Marks)

b. Design 4:1 multiplexer using gate level modeling or structural description. Write stimulus block. (08 Marks)

Module-4

7 a. Explain structured procedure statements in verilog. (06 Marks)
b. Write a verilog behavioral 8:1 multiplexer program using case statement. (06 Marks)
c. Explain casex and casez statements in verilog. (04 Marks)

OR

8 a. Explain procedural assignment statements in verilog. (06 Marks)
b. Explain sequential and parallel blocks with examples. (06 Marks)
c. Write a verilog code to find the first bit with a value 1 in
Flag = 16'b 0010_0000_0000_0000. (04 Marks)

Module-5

9 a. Explain the design tool flow followed in VLSI design with a neat flow diagram. (10 Marks)
b. Write VHDL Data flow description of 1 Bit full Adder. (06 Marks)

OR

10 a. Explain the relationship between a design entity and its entity declaration and architecture body in VHDL. (10 Marks)
b. Write VHDL structural description of 1 Bit Full Adder. (06 Marks)

* * * * *

CBCS SCHEME

USN | | | | | | | | | | 15EC53

Fifth Semester B.E. Degree Examination, June/July 2019
Verilog HDL

Time: 3 Hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Discuss different type of module level with an example. (08 Marks)
b. List the basic type of design methodology. Differentiate between them. (08 Marks)

OR

2 a. What do you mean by instantiation and instances? Write a verilog code for 4 bit ripple carry counter to show instantiation and instances. (08 Marks)
b. What is the need of stimulus block in simulation, discuss with an example. (08 Marks)

Module-2

3 a. List and explain different system tasks and compiler directives of verilog. (10 Marks)
b. List the components of a verilog module. Write a verilog code to list the components of SR latch. (06 Marks)

OR

4 a. Explain, how integer, real and time register data types used in verilog. (08 Marks)
b. Show how connections between signals are specified in the module instantiation and the ports in a module definition. (08 Marks)

Module-3

5 a. Discuss on And/Or Gates with respect to logic symbols, gate instantiation and truth tables. (08 Marks)
b. Design MUX based 4:1 multiplexer, write verilog description for the same and its stimulus. (08 Marks)

OR

6 a. List the characteristics of continuous assignments. (04 Marks)
b. Write the verilog description of 4 bit full adder using dataflow operators and with carry look ahead mechanism. (06 Marks)
c. Discuss briefly available gate delays in verilog. (06 Marks)

Module-4

7 a. Explain multiway branchings loops with examples. (14 Marks)
b. Outline the characteristics of parallel blocks. (02 Marks)

OR

8 a. List and discuss different delay based timing control (09 Marks)
b. Differentiate between blocking and non blocking assignments (07 Marks)

Module-5

9 a. List and explain the short comings of VHDL. (04 Marks)
b. List the different steps of VHDL design process for design synthesis? Discuss briefly. (12 Marks)

OR

10 a. Write VHDL code for 4 bit comparator using behavioral description style. (05 Marks)
b. Write VHDL code for full adder in structural description style using 2 half adders. (05 Marks)
c. Explain scalar data types of VHDL with examples. (06 Marks)

* * * * *

	Module – 1 Questions Bank Verilog HDL– 17EC53	
Important Questions	1. Explain typical design flow for VLSI circuits. 2. Briefly explain evolution of CAD design 3. Write a short note on Emergence of HDL. 4. What are the importance of HDL's in Digital design. 5. What are the features of Verilog HDL. 6. What are the recent trends in HDL. 7. With a relevant diagrams. Explain the types of digital design methodologies. 8. With an example of 4-bt Ripple Carry counter explain the design hierarchy. 9. Explain the different levels of abstraction used in Verilog HDL. 10. Write a Verilog HDl for 4-bit ripple carry counter and explain the module instantiation for same. 11. Mention the syntax for the following a. Module b. Illegal module nesting 12. Explain the two stypes of stimulus block. 13. Consider an example of 4-bit ripple carry counter and explain design block's in detail. 14. Write a stimulus for 4-bit ripple carry counter. 15. An interconnect switch(IS) contains the following components, a shared memory(MEM), a system controller(SC) and a data Crossbar (xbar). a. Define the module MEM, SC and Xbar using the module/endmodule, keywords. You do need to define the internals. Assume that the modules. b. Define the module IS, using the module/endmodule keywords. Instantiate the modules MEM, SC and Xbar and call the instances mem1, sc1 and xbar1 respectively. You do not need to define the internals. Assume that the module IS has no terminals. c. Define a stimulus block (Top), using the module/endmodule keywords.Instantiate the design block IS and call the instance is1. This is the finalstep in building the simulation environment. 16. A 4-bit ripple carry adder (Ripple_Add) contains four 1-bit full adders (FA). a. Define the module FA. Do not define the internals or the terminal list. b. Define the module Ripple_Add. Do not define the internals or theterminal list. Instantiate four full adders of the type FA in the moduleRipple_Add and call them fa0, fa1, fa2, and fa3. 17. Explain the typical design flow for designing VLSI IC circuits, with a neat flow chart.	
Model QP (*2015 Scheme*)	1a. Explain a Typical design flow for designing VLSI IC Circuits using the block diagram. 1b. Explain the different levels of Abstraction used for programming in Verilog 2a. Explain a top-down design methodology and a bottom-up design methodology. 2b. Explain components of a Verilog Module with a neat block diagram.	08 08 10 06
2018 Jan (*2015 Scheme*)	1a. Explain a typical design flow for designing VLSI IC circuit using the block diagram. 1b. Explain top down design methodology and bottom up design methodology. 2a. With a block diagram of 4-bit Ripple carry counter. Explain the design hierarchy. 2b. Explain the trends in hardware Description languages (HDLs)	06 10 10 06
2018 Jun (*2015 Scheme*)	1a. Explain briefly the typical design flow for design of VLSI Circuits. 1b. Explain the 4-bit ripple carry counter with block diagram and design hierarchy. 2a. Explain briefly the two different design methodologies. 2b. What is an instance? Explain module instantiation with an example.	08 08 08 08
2019 Jan (*2015 Scheme*)	1a. Explain top-down design methodology with an example. 1b. Explain the typical design flow for designing VLSI IC circuits, with a neat flow chart. 2a. Explain Bottom-up design methodology with an example. 2b. Explain the different levels of abstraction used for programming in verilog.	06 10 06 10

2019 Jan (*2015 Scheme*)	3a. Explain System Tasks and Compiler Directives in verilog. 3b. What are the basic components of a module? Explain all the components of a verilog module with a neat block diagram. 3c. Write verilog description of SR Latch. Also write stimulus code. 4a. Write a note on: i) Registers ii) Nets iii) Arrays iv) Parameters v) Vectors vi) Memories. 4b. Declare a top-level module "Stimulus". Define reg_in(4 bits) and clk(1 bit) as register variables and reg_out(4 bits) as wire. Instantiate the module "shift-reg" in "stimulus" block and connect the ports by ordered list. Declare A (4 bit) and clock (1 bit) as inputs and B (4 bit) as output in "shift-reg" module. (no need to show internals). Write a verilog code for the above.	06 06 04 12 04
2019 Jun (*2015 Scheme*)	3a. List and explain different system tasks and compiler directives of verilog. 3b. list the components of a verilog module. Write a verilog code to list the components of SR latch. 4a. Explain, how integer, real and time register data types used in verilog. 4b. Show how connections between signals are specified in the module instantiation and the parts in a module definition.	10 06 08 08

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	Module – 4 Questions Bank Verilog HDL – 17EC53	
Important Questions	1. Describe the following statements with an example: initial and always 2. What are blocking and non-blocking assignment statements?Explain with examples. 3. With syntax explain conditional, branching and loop statements available in Verilog HDL behavioural description. 4. Describe sequential and parallel blocks of Verilog HDL. 5. Write Verilog HDL program of 4:1 mux using CASE statement. 6. Write Verilog HDL program of 4:1 mux using If-else statement. 7. Write Verilog HDL program of 4-bit synchronous up counter. 8. Write Verilog HDL program of 4-bit asynchronous down counter. 9. Write Verilog HDL program to simulate traffic signal controller.	
Model QP (*2015 Scheme*)	7a. Explain combined port declaration and combined ANSI C style port declaration with examples in Verilog. 7b. Explain the conditional statements in Verilog. 7c. Write a behavioral 4 bit counter program in Verilog. 8a. Explain different Loop statements in Verilog. 8b. Write a Verilog behavioral 4 to 1 Multiplexer program using CASE statement.	04 04 08 08 08
2018 Jan (*2015 Scheme*)	7a. Explain the blocking assignment statements and non-blocking assignment statements with relevant examples. 7b. Write a note on the following loop statements: (i) While loop (ii) Forever loop 8a.explain sequential and parallel blocks with examples. 8b. write a verilog program for 8-to-1 multiplexer using case statement.	08 08 08 08
2018 Jun (*2015 Scheme*)	7a. Explain blocking and non-blockign assignments in behavioural description with an example. 7b. Explain structured procedures in behavioural description with examples. 8a. Explain different types of event based timing control in verilog. 8b. Explain with an example the two types of blocks in verilog behavioural description.	08 08 08 08
2019 Jan (*2015 Scheme*)	7a. Explain structured procedure statements in verilog. 7b. Write a Verilog behavioral 8:1 multiplexer program using case statement. 7c. Explain casex and casez statements in verilog. 8a. Explain procedural assignment statements in verilog. 8b. Explain sequential and parallel blocks with examples. 8c. Write a verilog code to find the first bit with a value 1 in Flag = 16'b0010_0000_0000_0000.	06 06 04 06 06 04
2019 Jun (*2015 Scheme*)	7a. Explain multiway branching loops with examples. 7b. Outline the characteristics of parallel blocks. 8a. List and discuss different delay based timing control. 8b. differentiate between blocking and non blocking assignments.	14 02 09 07

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	6c. Define implicit continuous assignment delay and net declaration delay with an example.	06
2019 Jan (*2015 Scheme*)	5a. Write the verilog description of 4 bit ripple carry adder at gate level abstraction, with a neat block diagram. Also, write stimulus block. 5b. What would be the output of the following: A=4'b1010, b=4'b1111 i) a &b ii) a && b ii) &a iv) a >> 1 v) a >>> 1 vi) y ={2{a}} vii) a^b viii) z = {a,b}. 6a. A full subtractor has three 1-bit inputs x,y and z(previous borrow) and two 1-bit outputs D(Difference) and B(Borrow). The logci eauations are: $D = \bar{x}\,\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\,\bar{z} + xyz$ $B = \bar{x}y + \bar{x}z + yz$ Write verilog description using dataflow modeling. Instantiatc the subtractor module inside a stimulus block and test all possible combinations of inputs x, y and z. 6b. Design 4:1 Multiplexer using gate level modeling ro structural description. Write stimulus block.	08 08 08 08
2019 Jun (*2015 Scheme*)	5a. Discuss on And/Or Gates with respect to logic symbols, gate instantiation and truth tables. 5b. Design AOI based 4:1 multiplexer, write verilog description for the same and its stimulus. 6a. List the characteristics of continuous assignments. 6b. Write the verilog description of 4 bit full adder using dataflow operators and with carry look ahead mechanism. 6c. Discuss briefly available gate delays in verilog.	08 08 04 06 06

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17EC53

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CITY ENGINEERING COLLEGE

FIRST INTERNAL TEST

Branch: EC
Sub Name: VERILOG HDL
Sem & Sec: V Sem
Duration: 1 ½ hrs.

Date: 07/09/2019
Time: 10.30am – 12.00pm
Max Marks: 50

G.S. Mallikarjun

Note: Answer all Questions selecting any ONE FULL questions from each part.

Qn. No.	Questions	Marks	CO's	BT's
	PART-A			
1.	Explain Top-Down design methodology and Bottom-Up design methodology.	10	CO-1	BT1
	OR			
2.	Explain monitoring, stopping and finishing in a simulation and also compiler directives.	10	CO-2	BT1
	PART-B			
3.	Write a Verilog HDL for 4-bit ripple carry counter and explain the module instantiation for same.	10	CO-1	BT3
	OR			
4.	Write a note on following lexical conventions used in Verilog: i) Operators ii) Identifiers and keywords iii) Escaped identifiers iv) Strings with suitable examples.	10	CO-2	BT1
	PART-C			
5.	Explain the typical design flow for designing VLSI IC circuits, with a neat flow chart.	10	CO-1	BT1
	OR			
6.	a. Explain the trends in hardware Description languages (HDLs) b. Briefly explain evolution of CAD design	06 04	CO-1	BT3
	PART-D			
7.	Explain the different levels of abstraction used for programming in verilog.	10	CO-1	BT1
	OR			
8.	Explain the following data types with an example of Verilog module: i) Nets ii) Register iii) Integers iv) Memories v) Time Register	10	CO-2	BT1
	PART-E			
9.	a. Explain the two types of stimulus block. b. A 4-bit ripple carry adder (Ripple_Add) contains four 1-bit full adders (FA). i) Define the module FA. Do not define the internals or the terminal list. ii) Define the module Ripple_Add. Do not define the internals or the terminal list. Instantiate four full adders of the type FA in the module Ripple_Add and call them fa0, fa1, fa2, and fa3.	05 05	CO-1	BT3
	OR			
10.	Consider an example of 4-bit ripple carry counter and explain design block's in detail. Write a stimulus for 4-bit ripple carry counter. (Both Waveform & Transcript Output)	10	CO-2	BT1

Blooms Taxonomy Levels (BTL):BT1- Explain BT2- Understanding BT3 – Applying BT4 – Analyzing

Course Outcomes (CO's):

CO1: Describe Verilog hardware description languages (HDL). Design Digital Circuits

CO2: Models of digital circuits. Write Register Transfer Level (RTL) models of digital circuits.

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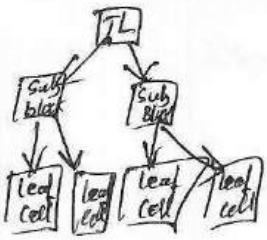
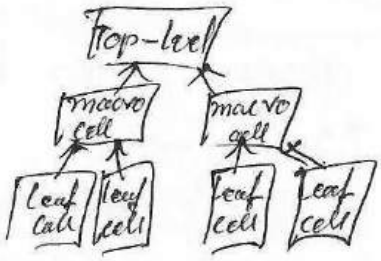
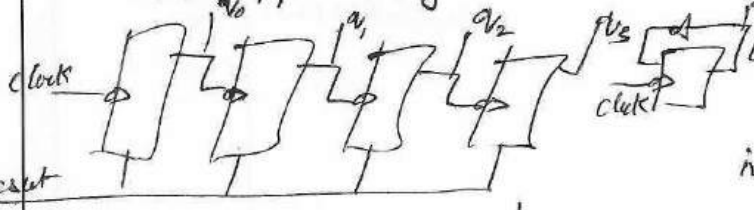
DEPARTMENT OF ELCECTRONICS & COMMUNICATION ENGINEERING

SCHEME FOR VALUATION

INTERNAL TEST: I st

Semester & Section: 5 A **Sub Code:** 17EC53 **Sub Name:** Verilog HDL **Date:** 7/9/2019

Question No.	Details of the Answer	Marks Distribution	Total Marks
1.	Top down design  explain Bottom-up design.  explain	5M + 5M	10
2.	monitor $monitor stop $stop finish $finish Compiler directives. `define `include	6M 4M	10
3.	4bit ripple carry Counter  Block diagram leaf cell instantiation	4 2 4	10

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odd 2019-20 17EC53 – Verilog HDL

Question No.	Details of the Answer	Marks Distribution	Total Marks
6.	Trends in hardware description language Evolution of CAD design	5 5	10
7.	Different Levels of Abstraction * Dataflow * Behavioral * Gate level * Switch level	each 2.5M	10
8.	Nets: wire Register: reg Integer: decimal Notation. Memories: defined using Vector Notation. Time Register: reg time	2 2 2 2 2	10
9.	(a) Two types of stimulus block position Mapping Signal Name Mapping (b) Module FA module Ripple-Add. FA fa0 ( ); FA fa1 ( ); FA fa2 ( ); FA fa3 ( );	2.5 2.5 5	10

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17EC53

CITY ENGINEERING COLLEGE

SECOND INTERNAL TEST

Branch: EC
Sub Name: VERILOG HDL
Sem & Sec: V Sem
Duration: 1 ½ hrs.

Date:22/10/2019
Time: 10.30am – 12.00pm
Max Marks: 50

G.S. malipatil

*Note: Answer all Questions selecting any **ONE FULL** questions from each part.*

Qn. No.	Questions	Marks	CO's	BT's
	PART-A			
1.	Discuss on And/Or Gates with respect to logic symbols, gate instantiation and truth tables.	10	CO-3	BT1
	OR			
2.	What is the need of stimulus block in simulation, discuss with an example.	10	CO-2	BT1
	PART-B			
3.	Design a 2-to-1 Multiplexer using bufif0 and bufif1 gates. The delay specification for these gates are as follows: Delay: Min 1, Typ 2, Max 3 Rise: Min 3, Typ 4, Max 5 Fall: Min 5, Typ 6, Max 7 Turn-off Write gate level description and stimulus in Verilog.	10	CO-3	BT3
	OR			
4.	Show how connections between signals are specified in the module instantiation and the parts in a module definition.	10	CO-2	BT1
	PART-C			
5.	A full subtractor has three 1-bit inputs x,y and z(previous borrow) and two 1-bit outputs D(Difference) and B(Borrow). The logic equations are: $D = \bar{x}\,\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\,\bar{z} + xyz$ $B = \bar{x}y + \bar{x}z + yz$ Write verilog description using dataflow modeling. Instantiate the subtractor module inside a stimulus block and test all possible combinations of inputs x, y and z.	10	CO-3	BT1
	OR			
6.	a. List the characteristics of continuous assignments. b. Write the verilog description of 4 bit full adder using dataflow operators and with carry look ahead mechanism.	04 06	CO-3	BT3
	PART-D			
7.	Write a program for 4to1 Multiplexer, Using conditional Operators in dataflow level of abstraction in Verilog.	10	CO-2	BT1
	OR			
8.	The input output expressions for 1-bit Full Adder are given as sum = a^b^c; co=(a&b)|(b&c)|(c&a). Write the gate level abstraction of 1-bit Full Adder by instantiating and, or, xor gates only.	10	CO-2	BT1
	PART-E			
9.	What would be the output of the following: A=4'b1010, b=4'b1111 i) a &b ii) a && b ii) &a iv) a >> 1 v) a >>> 1 vi) y ={2{a}} vii) a^b viii) z = {a,b}.	10	CO-2	BT3
	OR			
10.	Explain, how integer, real and time register data types used in verilog.	10	CO-2	BT1

Blooms Taxonomy Levels (BTL):BT1- Explain BT2- Understanding BT3 – Applying BT4 – Analyzing

Course Outcomes (CO's): **CO1:** Describe Verilog hardware description languages (HDL). Design Digital Circuits. **CO2:** Write behavioral models of digital circuits. Write Register Transfer Level (RTL) models of digital circuits. **CO3:** Verify behavioral and RTL models. Describe standard cell libraries and FPGAs.

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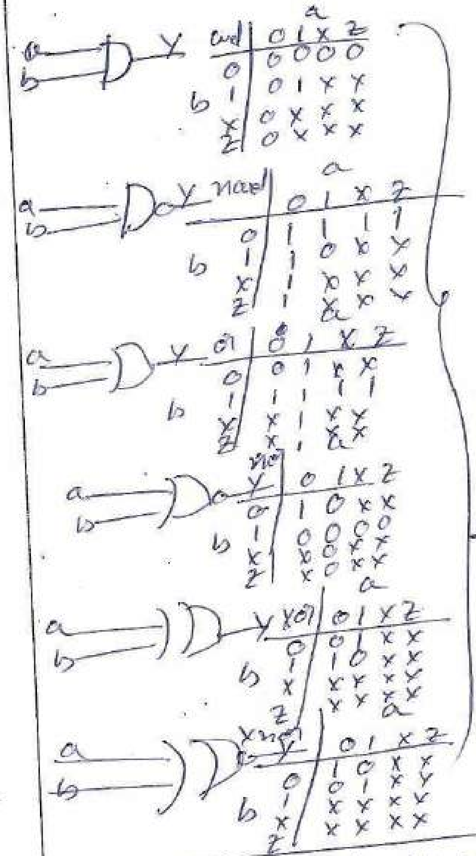
DEPARTMENT OF ELCECTRONICS & COMMUNICATION ENGINEERING

SCHEME FOR VALUATION

INTERNAL TEST: 2IA

Semester & Section: 5 A | Sub Code: 17EC53 | Sub Name: Verilog | Date: 22/10/2019

Question No.	Details of the Answer	Marks Distribution	Total Marks
1	And/Or Gates logic symbols, gate intantiation and Truth Table [P106, Ex 5-1, P108]		10
	 and a1 (Y, a, b); nand n1 (Y, a, b); or r1 (Y, a, b); nor nr1 (Y, a, b); xor X1 (Y, a, b); xnor Xr1 (Y, a, b);	4	
	(gate symbols and truth tables)	6	
2	need of stimulus block in simulation [P60, P61] * once a design blocks is Completed, it must be tested. * The functionality of design block Can be tested by applying stimulus for checking results, such blocks is Called "Stimulus Block". * the stimulus block Can be written in Verilog and is Called as "Test bench"	2	10

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Question No.	Details of the Answer	Marks Distribution	Total Marks
4.	Signals specified in module instances. 2 Methods. ① Connecting by ordered list : * The signals to be connected must appear in the module instantiation in the same order as the ports in the port list in the module definition. ex : module stimulus; reg [3:0] A, B; reg CIN; wire [3:0] SUM; wire C_OUT; fulladd4 fa_ordered (Sum, Cout, A, B, CIN) < stimulus > endmodule module fulladd4 (Sum, C_out, a, b, C_in); output [3:0] Sum; output C_out; input [3:0] a, b; input c_in; < module literals > endmodule ② Connecting ports by name : Verilog provides the capability to connect external signals to ports by the port names, rather than by position ex : fulladd4 fa_byname (.C_out(C_OUT), .Sum(SUM), .b(B), .c_in(C_IN), .a(A));	6 4	10

5.	Full subtractor $D = \bar{X}\bar{Y}Z + \bar{X}Y\bar{Z} + X\bar{Y}\bar{Z} + XYZ$
	$B = \bar{X}Y + \bar{X}Z + YZ$ Dataflow Abstract
	Truth Table:
	X Y Z | B D
	0 0 0 | 0 0
	0 0 1 | 1 1
	0 1 0 | 1 1
	0 1 1 | 1 0
	1 0 0 | 0 1
	1 0 1 | 0 0
	1 1 0 | 0 0
	1 1 1 | 1 1
	module fs (D, B, X, Y, Z);
	output D, B; input X, Y, Z;
	assign D = (~X & ~Y & Z) | (~X & Y & ~Z) | (X & ~Y & ~Z) | (X & Y & Z);
	assign B = (~X & Y) | (~X & Z) | (Y & Z);
	endmodule
	module test;
	reg X, Y, Z; wire d, b;
	fs S1 (.X(X), .Y(Y), .Z(Z), .D(d), .B(b));
	initial $monitor ($time, "X=%b, Y=%b, Z=%b, d=%b, b=%b", X, Y, Z, d, b);
	initial begin
	X=0; Y=0; Z=0;
		①
		②
		②
			10

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Question No.	Details of the Answer	Marks Distribution	Total Marks
	#10 X=0; Y=0; Z=1; #10 X=0; Y=1; Z=0; #10 X=0; Y=1; Z=1; #10 X=1; Y=0; Z=0; #10 X=1; Y=0; Z=1; #10 X=1; Y=1; Z=0; #10 X=1; Y=1; Z=1; end endmodule	4	
	Transcript output matching the Truth table Values.	3	
6 a	Characteristics of Continious assignment ① The left hand side of an assignment must always be a scalar / Vector net / a Concatenation of scalar and Vector net. ② Continious assignment are always active. the assignment expression is evaluated as soon as one of the RHS operands changes and the value is assigned to the LHS net. ③ The operands on the RHS can be Registers/nets / function calls Registers/nets can be scalars/vectors ④ Delay Values can be specified for assignments in terms of time units. Delay Values are used to Control the time when a net is assigned the evaluated Value.	each point 1 Marks	4

6 b	① 4bit full adder using data flow operator
	module FA4(Sum, C_out, a, b, Cin);
	output [3:0] Sum; output C_out; input [3:0] a, b;
	input Cin;
	assign {C_out, Sum} = a + b + Cin;
	end module
		2	6

	② Carry lookahead adder:
	module FA(Sum, C_out, a, b, cin);
	output [3:0] Sum; output C_out;
	input [3:0] a, b; input cin;
	wire P0, g0, P1, g1, P2, g2, P3, g3;
	wire C4, C3, C2, C1;
	assign P0 = a[0] ∧ b[0], P1 = a[1] ∧ b[1], P2 = a[2] ∧ b[2], P3 = a[3] ∧ b[3];
	assign g0 = a[0] & b[0], g1 = a[1] & b[1], g2 = a[3] ∧ b[2], P3 = a[3] & b[3];
	assign C1 = g0 | P0 & Cin, C2 = g1 | (P1 & g0) | (P1 & P0 & Cin), C3 = g2 | (P2 & g1) | (P2 & P1 & g0) | (...)
	assign Sum[0] = P0 ∧ Cin, Sum[1] = P1 ∧ C1, Sum[2] = P2 ∧ C2, Sum[3] = P3 ∧ C3;
	assign Cout = C4;
	endmodule
		4	

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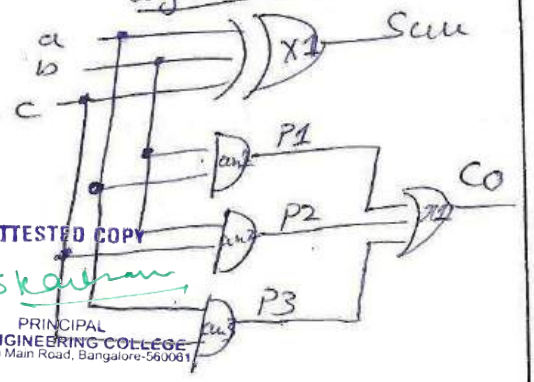
Question No.	Details of the Answer	Marks Distribution	Total Marks

7.	4:1 Multiplexer Using Conditional operators in Dataflow Level of Abstraction.
	Conditional operator Syntax ——— 2
	Condition_expr ? true_expr : false_expr ;
	Verilog Program:
	module mux41 (out, i0, i1, i2, i3, s1, s0);
	// Port declaration.
	output out; input i0, i1, i2, i3; input s1, s0; 5
	// use nested Conditional operator.
	assign out = s1 ? (s0 ? i3 : i2) : (s0 ? i1 : i0);
	endmodule
	explaination —— 2
			10

8.	full Adder Gate level Abstract
	Sum = a ^ b ^ c; Co = (a&b) | (b&c) | (c&a);
	module fa (sum, co, a, b, c);
	output sum, co; 2 (with comments)
	input a, b, c;
	wire p1, p2, p3; // for products.
	xor X1 (sum, a, b, c);
	and an1 (P1, a, b);
	and an2 (P2, b, c);
	and an3 (P3, c, a); 6 (with comments)
	or r1 (co, P1, P2, P3);
	endmodule
	Logic Circuit
	 
	 2
			10

Question No.	Details of the Answer	Marks Distribution	Total Marks
9.	operators output for the input a = 4'b1010 b = 4'b1111		10
	(i) a & b = 4'b1010 & 4'b1111 = 4'b1010 bitwise "and" operator	1	
	(ii) a && b = 4'b1010 && 4'b1111 = false/low logical "and" operator	1	
	(iii) &a = & 4'b1010 ⇒ 1 & 0 & 1 & 0 Reduction '&' operator. Result is 1'b0.	1	
	(iv) a >> 1 = 4'b1010 Right Shift by 1 Count; = 4'b0101	1	
	(v) a >>> 1 = 4'b1010 arithmatic Right Shift by 1 Count; = 4'b1101	1	
	(vi) Y = {2{a}} Riplication operator by 2 times. a = 4'b1010 ⇒ Y = 8'b10101010;	2	
	(vii) a ^ b = 4'b1010 ^ 4'b1111 bitwise xor operator = 4'b0101	1	
	(viii) z = {a, b} Concatenations operator. a = 4'b1010 and b = 4'b1111 z = 8'b10101111;	2	
10.	Integer, real and Time register data types in Verilog example:	2+2+2 = 6 4	10

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17EC53

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THIRD INTERNAL TEST

Branch: EC
Sub Name: VERILOG HDL
Sem & Sec: V Sem
Duration: 1 ½ hrs.

Date:19/11/2019
Time: 10.30am – 12.00pm
Max Marks: 50

Note: Answer all Questions selecting any ONE FULL questions from each part.

Qn. No.	Questions	Marks	CO's	BT's
	PART-A			
1.	Explain monitoring, stopping and finishing in a simulation and also compiler directives.	10	CO-3	BT1
	OR			
2.	Explain multiway branching loops with small examples.	10	CO-2	BT1
	PART-B			
3.	Explain the typical design flow for designing VLSI IC circuits, with a neat flow chart.	10	CO-3	BT3
	OR			
4.	Explain different types of event based timing control in verilog.	10	CO-2	BT1
	PART-C			
5.	Discuss briefly available gate delays in verilog.	10	CO-3	BT1
	OR			
6.	Explain the synthesis process with a block diagram.	10	CO-3	BT3
	PART-D			
7.	Show how connections between signals are specified in the module instantiation and the parts in a module definition.	10	CO-2	BT1
	OR			
8.	Explain the relationship between a design entity and its entity declaration and architecture body in VHDL.	10	CO-2	BT1
	PART-E			
9.	Explain sequential and parallel blocks with examples.	10	CO-2	BT3
	OR			
10.	Explain the design tool flow followed in VLSI design with a neat flow diagram.	10	CO-2	BT1

Blooms Taxonomy Levels (BTL): BT1- Explain BT2- Understanding BT3 – Applying BT4 – Analyzing
Course Outcomes (CO's): **CO1:** Describe Verilog hardware description languages (HDL). Design Digital Circuits. **CO2:** Write behavioral models of digital circuits. Write Register Transfer Level (RTL) models of digital circuits. **CO3:** Verify behavioral and RTL models. Describe standard cell libraries and FPGAs.

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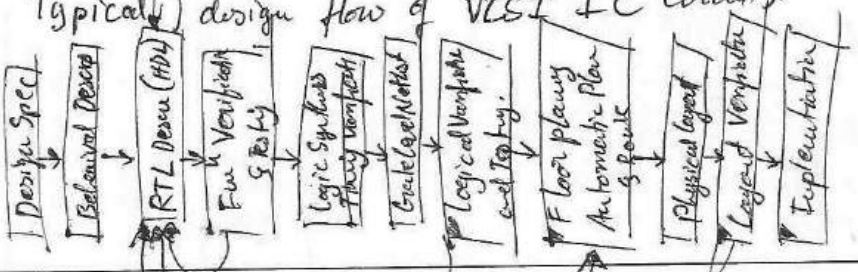
DEPARTMENT OF ELCECTRONICS & COMMUNICATION ENGINEERING

SCHEME FOR VALUATION

INTERNAL TEST: THIRD

Semester & Section: 5 A **Sub Code:** 17EC53 **Sub Name:** Verilog **Date:** 19/11/2019

Question No.	Details of the Answer	Marks Distribution	Total Marks
1.	monitoring : provides a mechanism to monitor a signal when its value changes. $monitor (" ", P1, P2, P3 --- Pn); stopping : puts the simulation in an interactive mode. It is used whenever the designer wants to suspend the simulation and examine the values of signals in the design. #100 $stop; finishing : task terminates the simulation. #900 $finish; Compiler directives : are defined by using the '< Keyword > construct. 'define WORD_SIZE 32 'include header.V	2 2 2 4	10
2.	Multiway branching loops. case casex casez Loops — while For. Repeat forever definition — 1M examples — 3M	2.5M * 4	10
3.	Typical design flow of VLSI IC Circuits. 	diagram 6M explain 4M	10

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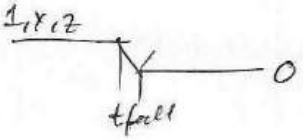
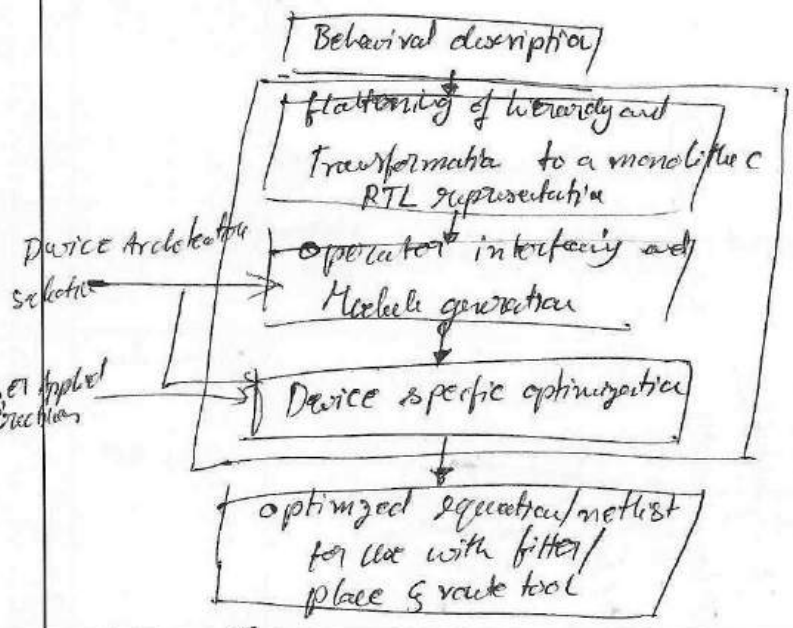
Question No.	Details of the Answer	Marks Distribution	Total Marks
4.	Event Based Timing Control Regular event Control Named event Control Event 'OR', Comma Operator @* operator in sensitivity List	each 2.5M * 4 No	10
5.	Gate delay in Verilog. Rise delay  fall delay  turn off delay. Min / typ / Max Values.	2 2 2 4	10
6.	Synthesis process in VHDL  explain with pads	6 4	10

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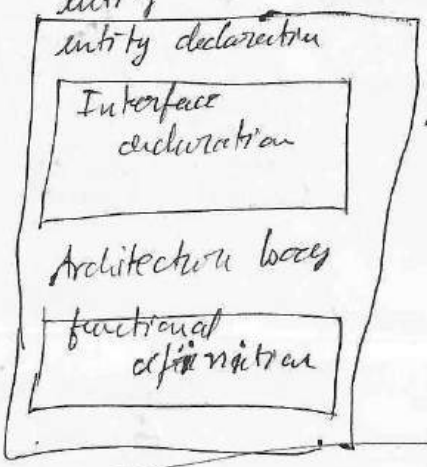
Question No.	Details of the Answer	Marks Distribution	Total Marks
7.	Connections b/w module instantiation & Module declaration 2 Methods — 2M Connection by ordered list explain 2M example 2M Connection by ports names explain 2M example 2M		10
8.	relationship b/w design entity & entity declaration & Architecture body in VHDL  entity declaration syntax explain — 2 Architecture body syntax + explain — 4	4 4	10
9.	sequential block inside always / initial using "begin & end" explain atleast 4 points parallel block inside always / initial using "fork & join" explain : atleast 4 points	3 2 3 2	10

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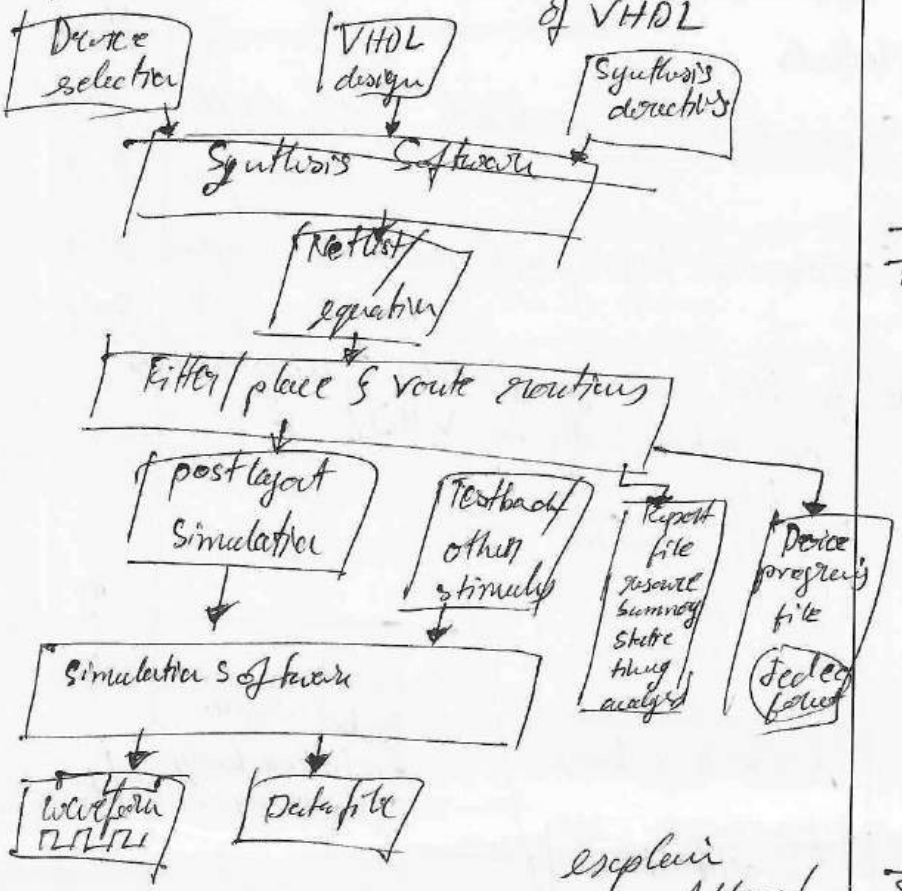
Question No.	Details of the Answer	Marks Distribution	Total Marks
10.	design Tool flow in VLSI design of VHDL  explain Atleast 3 points	7M 3M	10

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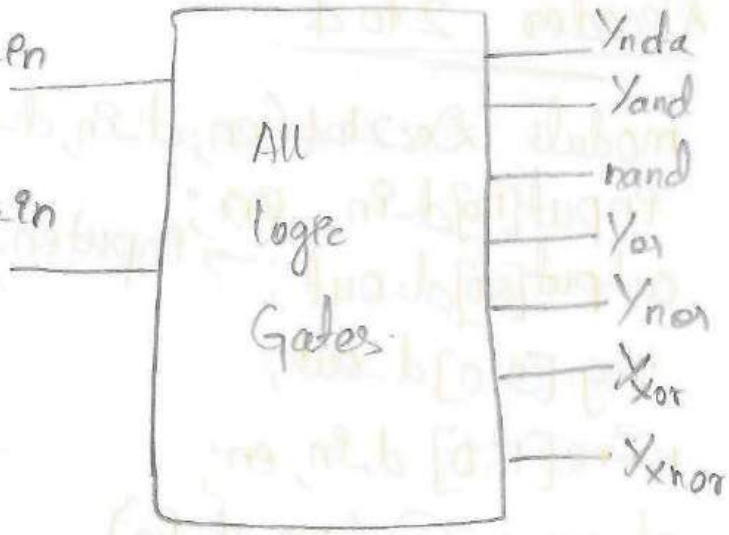
HOD

Pgm: All logic Gates

V^th sem
1CE17EC017

```
module allgates(ain, bin, ynota, yand, ynand, yor,
                ynor, yxor, yxnor);
input  ain, bin;
output ynota, yand, ynand, yor,
       ynor, yxor, yxnor;
assign ynota=~(ain);
assign yand = ain & bin;
assign ynand = ~(ain & bin);
assign yor = ain | bin;
assign ynor = ~(ain | bin);
assign yxor = ain ^ bin;
assign yxnor = ~(ain ^ bin);
end
```




```
module allgates_tb_stimulus;
reg ain, bin;
wire ynota, yand, ynand, yor, ynor, yxor, yxnor;
allgates uut (.ain(ain), .b_in(bin), ynot ain, bin,
              ynota, yand, ynand, yor, ynor, yxor, yxnor);
initial
 begin
 ain = 0 ; bin = 0;
#10  bin = 1;
#10 ain = 1; bin = 1;
#10  bin = 0;
```

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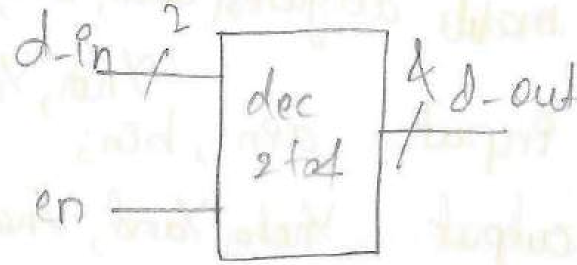
ain, bin, Ynota, Yand, Ynand, Yor, Ynor, Yxor, Yxnor);
endmodule.

Decoder 2 to 4




```
module Dec2to4(en, d_in, d_out);
 input[1:0]d_in, en;
output[3:0]d_out; → input en;
 reg [3:0]d_out;
wire[1:0] d_in, en;
always @(en, d_in)
 begin
    if(en)// Active low
      d_out = 4'bZZZZ;
  end
  else
  begin Case (d_in)
              2'b00 : d_out = 4'b0001;
              2'b01 : d_out = 4'b0010;
              2'b10 : d_out = 4'b0100;
              2'b11 : d_out = 4'b1000;
            default : 4'bZZZ d_out = 4'bZZZZ;
  end case
endmodule.
```

```
reg [1:0] d_in, reg en;
wire [3:0] d_out;
dec2to4 uut (.en(en), .d_in(din), .d_out(dout));
initial
  begin
    en = 1;
  #10 en = 0; d_in = 2'b00;
  #10         d_in = 2'b01;
  #10         d_in = 2'b10;
  #10         d_in = 2'b11;
  #10 en = 1; d_in = 2'b00;
  end
initial #60 $finish;
initial $monitor ($time, " %b %b %b", en,
                  din, dout);
end module.
```

Encoder without priority


```
module enc_wopo_prior (en, a_in, yout);
  input [7:0] a_in;
input en;
output [2:0] y_out;
  wire [7:0] a_in;
    wire en;
```

```
begin
  if (en)  // Active low.
    y_out = 3'bzzz;
  end
  else
    begin  case (a_in)
                2'b00 : y_out = 8'b00000001 : y_out = 3'b000;
                2'b01 :         8'b00000010 : y_out = 3'b001;
                2'b10 :         8'b00000100 : y_out = 3'b010;
                2'b11 :         8'b00001000 : y_out = 3'b011;
                                8'b00010000 : y_out = 3'b100;
                                8'b00100000 : y_out = 3'b101;
                                8'b01000000 : y_out = 3'b110;
                                8'b10000000 : y_out = 3'b111;
                                default : y_out = 3'bzzz;
    end case
  endmodule.

module en_wo_prior_tb;
 reg [7:0] a_in;
  reg en
 wire [2:0] y_out;
en_wo_prior  out (.a_in(a_in), .en(en), .y_out(y_out));
 initial
   begin
      en = 1;
 #10  en = 0;   a_in = 8'b10.000000;
 #10            a_in = 8'b01000000;
```

```
#10     a_in=8'b00001000;
#10     a_in=8'b00000100;
#10     a_in=8'b00000010;
#10     a_in=8'b00000001;
#10     a_in=8'b10000001;
#10     a_in=8'b00011101;
end
initial #120 $finish;
initial $monitor ($time, "%b %b %b", a_in,
                 en, y_out);
endmodule.
```

encoder with priority

```
module enc_w_prior(en, a_in, y_out);
 input [7:0]a_in;
input en;
output [2:0] y_out;
 wire [7:0] a_in;
  wire en;
  reg [2:0] y_out;
 always @(en, a_in)
  begin
      if (en==1'b1)
          y_out = 3'bzzz;
      end
    else
      begin
```

```
(a_in[5] == 1'b1) y_out = 3'b101;
(a_in[4] == 1'b1) y_out = 3'b100;
(a_in[3] == 1'b1) y_out = 3'b011;
(a_in[2] == 1'b1) y_out = 3'b010;
(a_in[1] == 1'b1) y_out = 3'b001;
(a_in[0] == 1'b1) y_out = 3'b000;
    default : y_out = 3'bzzz;
end
endmodule

module en_w_prior_tb;
reg[7:0] a_in;
reg en;
wire [2:0] y_out;
en_w_prior uut( .a_in(a_in), .en(en), .y_out(y_out));
initial
  begin
    en=1;
#10  en=0;
#10    a_in[7] = 8'b10000000;
#10    a_in[6] = 8'b01000000;
#10    a_in[5] = 8'b00100000;
#10    a_in[4] = 8'b00010000;
#10    a_in[3] = 8'b00001000;
```

#10 a_in[0] = 8'b00000001;

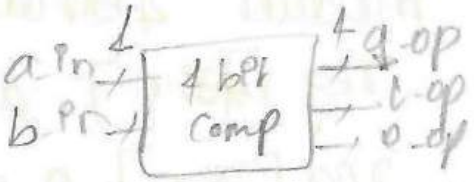
end

initial #120 $finish;

initial $monitor ($time, "%b %b %b %b",
a_in, b_in, g_out);

endmodule.

4 bit comparator




```
module 4bitComparator( a_in, b_in, g_op, l_op, e_op);
input [3:0] a_in, b_in;
output [3:0] g_op, l_op, e_op;
```

→ `wire [3:0] a_in, b_in;`
`reg [3:0] g_op, l_op, e_op;`

```
always @
begin
    if (a_in > b_in)
    g_op = 1 ; l_op = 0 ; e_op = 0;
end
else if
    begin
        if (a_in < b_in)
    g_op = 0 ; l_op = 1; e_op = 0;
    end
else
    begin if (a_in = b_in);
    g_op = 0 ; l_op = 0 ; e_op = 1;
```

```
    default
    g_op=1 ; l_op=1 ; e_op=1 ;
  end
endmodule.

module 4bit comparator_tb;
 reg [3:0] a_in, b_in;
 reg [3:0] g_op, l_op, e_op;
 4bit comparator uut (.a_in(a_in), .b_in(b_in), .g_op
                      (grt), l_op(less), e_op(equ));
 initial
   begin
       a_in=4'b0011 ; b_in=4'b0010;
   #10 a_in=4'b1001 ; b_in = 4'b1101;
   #10 a_in=4'b0101 ; b_in = 4'b1110;
   #10 a_in=4'b0011 ; b_in = 4'b0001;
 end
initial #40 $finish;
initial $monitor ($time, a_in, b_in,
   grt, less, equ);
endmodule.
```

"%t %b %b -> %b %b %b"

Visvesvaraya Technological University

CITY ENGINEERING COLLEGE, BANGALORE

Branch : EC Scheme : 2017 Semester : 5

Sl NO.	USN	17EC52	17EC53	17EC54	17EC553	17EC562	17ECL57	17ECL58	17ES51	STUDENT SIGNATURE
1	1CE17EC004	33	33	34	30	31	25	36	33	
2	1CE17EC005	38	34	39	34	28	25	40	35	
3	1CE17EC008	39	32	31	31	34	31	37	37	
4	1CE17EC009	32	21	32	24	26	22	36	33	
5	1CE17EC010	29	23	33	22	25	26	36	25	
6	1CE17EC011	28	26	30	23	31	35	36	30	
7	1CE17EC014	40	33	38	34	27	26	38	38	
8	1CE17EC015	34	29	34	23	27	25	33	29	
9	1CE17EC016	34	28	28	32	31	26	35	33	
10	1CE17EC017	32	31	30	32	27	25	35	31	
11	1CE17EC019	30	27	30	29	29	36	35	29	
12	1CE17EC020	33	29	33	34	38	25	37	34	
13	1CE17EC021	30	24	20	26	23	24	32	26	
14	1CE17EC024	37	32	37	35	33	40	38	32	
15	1CE17EC026	40	32	39	33	32	35	35	34	
16	1CE17EC027	39	31	38	38	34	30	37	36	
17	1CE17EC029	26	19	20	19	20	22	30	22	
18	1CE17EC031	35	31	36	34	36	26	38	30	
19	1CE17EC032	22	19	22	19	22	32	25	22	
20	1CE17EC033	40	35	40	40	34	40	35	36	
21	1CE17EC035	38	34	38	38	34	40	39	35	
22	1CE17EC036	32	31	39	30	33	35	38	32	
23	1CE17EC039	27	24	28	30	26	23	34	31	
24	1CE17EC042	22	19	22	19	19	23	31	25	
25	1CE17EC043	29	28	30	20	25	34	35	29	
26	1CE17EC044	33	26	36	25	32	28	36	31	
27	1CE17EC045	36	33	31	26	31	35	38	29	
28	1CE17EC046	36	31	36	30	29	40	40	29	
29	1CE17EC049	38	32	39	36	35	35	35	37	
30	1CE17EC052	40	31	40	33	39	37	40	36	
31	1CE17EC055	23	20	23	19	27	33	30	21	
32	1CE17EC056	34	34	26	31	32	38	40	33	
33	1CE17EC058	28	24	30	23	31	33	34	27	
34	1CE17EC059	29	26	30	23	27	28	36	30	
35	1CE17EC062	35	28	32	33	30	31	37	28	
36	1CE17EC063	27	30	30	22	31	37	38	29	
37	1CE17EC064	23	19	19	19	25	28	30	21	
38	1CE17EC065	21	19	19	19	25	29	30	27	

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Module-5

Introduction to VHDL

* Concept of VHDL

→ VHDL is the VHSIC (Very high speed integrated Circuit) Hardware description language.

→ VHDL is An International standard Specification language for describing digital hardware used by industry worldwide.

→ VHDL Enables hardware modeling from the gate to system level

→ VHDL provides a mechanism for digital design and reusable design documentation.

* History of VHDL

→ Very high speed integrated Circuit (VHSIC) program

- Launched in 1980

→ Woods Hole Workshop.

- Held in june 1981 in massachusetts.
- Discussion of VHSIC goals.
- Comprised of members of industry, government and academia.

→ In 1983 a team of intermetrics, IBM and Texas Instruments were awarded a Constract to develop VHDL.

→ In August 1985, the final Version of the language Order government Contract was released : VHDL Version 7.2

→ in deeember 1987, VHDL became IEEE Standard 1076-1987 and in 1988 an ANSI approved standard.

→ in september 1993, VHDL was restandardized to clarify and enhance the language (IEEE Standard 1076-1993)

→ VHDL is now undergoing International review to become an IEC Standard.

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Tel:080-22560313,Fax:080-22560313,Web: http://cityengineeringcollege.ac.in/

DEPARTMENT OF ELECTRONICSANDCOMMUNICATIONENGINEERING

VerilogHDL(17EC53)
(AsperChoicebasedCreditSystem(CBCS)Scheme)
VTHSEMESTER

MODULE-5

Syllabus:

Introduction to VHDL

Introduction: Why use VHDL? Shortcomings, Using VHDL for Design Synthesis, Design tool flow, Font conventions.
Entities and Architectures: Introduction, A simple design, Design entities, Identifiers, Data objects, Data types, and Attributes.

StudyMaterialReferred:

- ✓ Kevin Skahill, "VHDL for Programmable Logic", PHI/Pearson education.

CompiledBy:

Prof.VishvaKiran R C
Assistant professor
Dept.of ECE,CEC

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* A Signal or Variable that is an Integer type and that is to be Synthesized into logic should be Constrained With a range, for Example.

Eg:- Variable a:- Integer range -255 to 256;

* Floating Types:-

-> Floating-point type values are used to Approximate real numbers. Like integers, floating-point type can be Constrained.

-> The only predefined floating type is real, which includes at minimum, the range -1.0E38 to +1.0E38, Inclusive.

* Physical Types:-

-> Physical types values are used as measurement units. The only predefined physical type is time.

-> It's range includes, at minimum, the range of Integer's

-> It primary unit is fs (femto seconds) and it is defined as follows

Eg:- type time is range -2147483647 to 2147483647

Units
fs;
ps = 1000 fs;
ns = 1000 ps;
us = 1000 ns;
ms = 1000 us;
sec = 1000 ms;
min = 60 sec;

hr = 60 min;

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Composite Types:-

* Data Objects of Scalar types can only hold one value at the current simulation time.
* Data Objects of Composite tyes, on the other hand, can hold multiple values at a time.
* Composite types consists of array types and record types.

→ Array types:-

* an object of an Array type consists of multiple elements of the same type.
* The most commonly used array types are those predefined by the IEEE 1076 and 1164 standards:

```
type bit_vector is array (natural range<>) of bit;
type std_ulogic_vector is array (natural range <>) of std_ulogic;
type std_logic_vector is array (natural range <>) of std_logic;
```

→ Record Types:-

* An Object of a record type has multiple elements of different types.
* Individual fields of a record can be referenced by element name.
* The following shows a record_type definations for locals, objects declared as that type, and assignment of value.

Eg:-

```
type iocell is record
    buffer_inp : bit_vector (7 downto 0);
    enable : bit;
    buffer_out : bit_vector (7 downto 0);
end record;
```

Attributes

* An Attribute provides information about items such as entities, architectures, types and signals.
* There are several predefined value, signal, and range attributes that are useful in synthesis.
* Scalar types have value attributes. The value attributes are 'left, 'right, 'high, 'low and 'length.
* The Attribute 'left yields the leftmost value of a type, and 'right the right most.
* The attribute 'high yields the greatest value of a type.
* For Enumerated types, 'low value is the same as 'right.
* Table below shows attributes and their return values.

Return value	Attribute description
Count 'left = 0	'left yields leftmost value of type.
States 'left = idle	
Word 'left = 15	
Count 'right = 127 States 'right = write Word 'righ = 0	'right yields rightmost value of type
Count 'high = 127	'high yields greatest value of type
States 'high = write	
Word 'high = 15	
Count 'low = 0	'low yields the lowest value of type
States 'low = idle	
Word 'low = 0	
count 'length = 128	'length yields the Number of Elements in a constrained array
States 'length = 4	
Word 'length = 16	

17EC53 - VERILOG HDL

ATTENDANCE

Sl. No.	Reg.No.	Name	30/7	31/7	5/8	7/8	14/8	16/8	
			3	2	3	3	4	4	
			1	2	3	4	5	6	7
1	17EC004	AJAY MR	1	2	3	4	5	6	7
2	17EC005	AMRUTHA V	1	2	3	4	5	6	7
3	17EC008	ANSHU KUMARI H	1	2	3	4	5	6	7
4	17EC009	ANUSHA A	1	2	3	4	5	6	7
5	17EC010	APOORVA S	1	2	3	4	5	6	7
6	17EC014	BHANUSHREE M	1	2	3	4	5	6	7
7	17EC015	BHAVANA HE	1	2	3	4	5	6	7
8	17EC016	BHAVANA M	1	2	3	4	5	6	7
9	17EC017	BLESSING SHAROON S	1	2	3	4	5	6	7
10	17EC019	CHANDANA S	1	2	3	4	5	6	7
11	17EC020	CHIKKANNA SWAMY.M.	1	2	3	4	5	6	7
12	17EC021	DARSHAN A RAO	1	2	3	4	5	6	7
13	17EC024	DIVYA S	1	2	3	4	5	6	7
14	17EC026	HARSHINI S	1	2	3	4	5	6	7
15	17EC027	J NANDINI PRIYA	1	2	3	4	5	6	7
16	17EC029	KARTHIK S	1	2	3	4	5	6	7
17	17EC031	LOKESH R	1	2	3	4	5	6	7
18	17EC033	MALA S	1	2	3	4	5	6	7
19	17EC035	N JAIPRIYA	1	2	3	4	5	6	7
20	17EC036	NIMISHA PRASAD	1	.	2	3	4	5	6
21	17EC039	PRADEEPA	1	.	.	2	3	4	5
22	17EC043	PRIYANKA R	1	2	3	4	5	6	.
23	17EC044	RACHITHA HK	1	2	3	4	5	6	7
24	17EC045	RAKESH S	1	2	3	4	5	6	7
25	17EC046	RANJITH NG	1	2	.	3	4	5	6
	No. of Abs.								
	Initials								

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ASSESSMENT

20/8	21/8	27/8	28/8	29/8	30/8	30/8	43	2IA	Test Marks					Sessional Marks	Remarks
2	5	1	3	5	1	4	10	% of Attendance (50)	7/9	22/10		30	10		
8	9	10	11	12	13	14	60		1	2	3		Assig		
									50	50	50			40	
8	9	10	11	12	13	14		19	43	19	49	23	10	33	Ajay M.R
8	9	10	11	12	•	13		30	45	30	41	24	10	34	Amrutha V
8	9	10	•	11	12	13		24	44	24	40	22	10	32	Anche Kiran
8	9	10	11	12	13	14		08	AB	28	23	11	10	21	
8	9	10	11	12	13	14		09	25	09	28	13	10	23	
8	9	10	11	12	13	•		28	46	28	40	23	10	33	Bramhashree M
8	9	10	11	12	13	14		10	40	10	41	19	10	29	Bhavana
8	9	10	11	12	13	14		12	37	12	37	18	10	28	Bhavana M
8	9	10	•	11	12	13		16	41	16	44	21	10	31	Bho Sh
8	9	10	11	12	•	13		19	35	19	27	17	10	27	Chandana S
8	•	9	10	11	12	13		13	46	13	32	19	10	29	Chikkanna Swamy
8	9	10	11	12	13	14		10	31	10	31	15	9	24	Darshan D Rao
8	9	10	11	12	13	14	5	14	49	14	44	22	10	32	S. Divya
8	9	10	11	12	13	•		24	46	24	42	23	09	32	Haseefirnis
•	8	9	10	11	12	13		29	39	29	34	21	10	31	J Nandupriya
8	9	10	11	12	13	14		08	15	08	22	9	10	19	
8	9	10	11	12	13	14		26	39	26	42	22	09	31	Lokesh R
8	9	10	11	12	13	14		25	48	30	44	25	10	35	Mala S.
8	9	10	11	12	13	14		36	44	36	36	24	10	34	N. Gopipriya
7	8	9	10	11	12	13		17	42	17	46	21	10	31	Nimisha Prasad
6	7	8	9	10	11	12		18	30	18	26	15	9	24	Pradeep
•	7	8	9	10	11	12		10	45	10	33	18	10	28	Priyanka R
8	9	10	11	12	13	14		10	36	10	37	17	9	26	Rachitha
•	•	8	9	10	11	12		26	39	26	49	23	10	33	
7	•	8	9	10	11	12		[illegible]	41	18	49	22	9	31	Ranjith N.G
[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]		[initials]	[initials]	[initials]	[initials]				

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ATTENDANCE

Sl. No.	Reg.No.		30/7	31/7	5/8	7/8	14/8	16/8	19/
			3	2	3	3	4	4	2
			1	2	3	4	5	6	7
26	17EC049	RESHMA CA	1	2	3	4	5	6	7
27	17EC052	ROOPA KM	1	2	3	4	5	6	7
28	17EC055	SABIBA TABASSUM	1	2	3	4	5	6	7
29	17EC056	SHASHANK BR	1	2	3	4	5	6	7
30	17EC062	SOUNDARYA V	1	2	.	3	4	5	6
31	17EC063	SUBHOSHIS DAS	.	1	2	3	4	5	6
32	17EC064	SUHAAS KAMATH	1	2	3	4	.	5	6
33	17EC066	SYED SAMEER PASHA S.B	1	2	3	4	5	6	7
34	17EC067	TANUSHREE C	1	2	3	4	5	6	7
35	17EC070	TOUSIF PASHA	.	1	2	3	4	5	.
36	15EC032	MOHAMMED HANEEF	0	1	2	3	4	5	6
37	16EC006	CHANDANA CJ	1	.	2	3	4	5	.
38	16EC010	E. VIJAYALAKSHMI	.	1	2	3	4	5	6
39	16EC016	JEEVAN S	.	.	1	2	3	4	5
~~40~~	~~16EC017~~	~~KAUSHIK A~~ NE Not Eligible	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~
41	17EC059	SHAYANA .M.	.	1	2	3	4	5	6
42	17EC065	SUHAS KN	1	.	2	3	4	5	6
43	17EC62	PRAVEEN	.	1	2	3	4	5	6
44	17EC11	ARATHI	.	1	2	3	.	4	5
45	17EC32	MADHUSUDHAN	1	2	3	4	5	6	7
46	17EC58	SHASHIKALA T	1	2	3	4	5	6	7
47									
48									
49									
50									
	No. of Abs.								
	Initials								

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ASSESSMENT

29/8	21/8	27/8	28/8	29/8	30/8	30/8	AB	% of Attendance	Test Marks 7/9 22/10			30	10	Sessional Marks	Remarks
2	5	1	3	5	1	4			1	2	3				
8	9	10	11	12	13	14	60		50	50	50			40	
.	8	9	10	11	12	13		21	48	21	39	22	10	32	Reshma C.D
8	9	10	11	12	13	14		30	39	30	34	21	10	31	Roopa. K.M
8	9	10	11	12	13	.		AB	AB	12	38	10	10	20	
8	9	10	11	12	13	.		39	37	39	47	25	9	34	Shashank. B. R
7	8	9	10	11	12	13		14	39	14	33	18	10	28	Soundarya V.
7	.	8	9	10	11	12		19	39	19	40	20	10	30	
.	.	7	8	9	10	11		08	21	08	13	9	10	19	
8	9	10	11	12	13	14		39	46	39	45	27	10	37	Sahana
8	9	10	11	.	12	13		07	29	07	42	16	10	26	Jameshwar L
6	7	8	9	10	11	12		15	35	15	22	15	8	23	
7	8	9	10	11	12	.		AB	34	AB	08	7	3	10	
6	7	8	9	10	11	12		20	20	20	22	7	5	19	
7	8	9	10	11	12	13		08	31	08	26	9	5	14	
6	7	8	9	10	11	12		08	27	08	28	9	5	14	Jeevans
~~.~~	~~8~~	~~9~~	~~10~~	~~11~~	~~12~~	~~13~~	~~—~~	~~—~~	~~26~~	~~AB~~	~~Not eligible~~				~~Dec~~
7	8	9	10	11	12	13		02	34	02	40	16	10	26	Mayana. S
7	8	9	10	11	12	13		2010	33	08	14	10	8	19	
7	8	9	10	11	12	13		04	24	04	17	09	10	19	
6	7	8	9	10	11	12		10	37	10	31	16	10	26	Arathi. A
.	8	9	10	11	12	13		26	20	26	06	11	8	19	Vaitheeshwaran
8	9	10	11	12	13	14		08	25	08	37	15	9	24	Shashirekha. T
Dec	Dec	Dec	Dec	Dec	Dec	Dec		Dec	7/9/10	Dec 22/10	Dec 31/10			Dec	

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RECORD OF CLASS WORK

Date	Period	Topics Covered
30/7/2019	3	Module 1: chapter 1: Introduction to VHDL & Verilog.
31/7/2019	2	Evolution of CAD Design, Emergence of HDL
5/8/2019	3	Typical design flow, Importance
7/8/2019	3	Cont. Importance of HDL, Popularity of HDL
14/8/2019	4	Trends in HDL, Revision.
16/8/2019	4	chapter 2: Intro on design flow
19/8/2019	2	Top-down & Bottom-up Design Met
20/8/2019	2	4 bit Ripple Carry Counter
21/8/2019	5	Modules and Instances.
27/8/2019	1	Components of Simulation.
28/8/2019	3	Cont. Simulation Verilog Code Steps
29/8/2019	5	example of Stimulus block & design blo
30/8/2019 (2)	1, 4	Module 1: chapter 3: Introduction, lexical Conventions
31/8/2019	1	Number specification, strings, Identifier,
3/9/2019 (2)	3, 5	Keywords, escaped Identifier,
12/9/2019	3	Data types, Value sets, Nets, Register, Vecto
13/9/2019	5	Integer, Real and Time Register
16/9/2019	3	Re Arrays, Memories, parameters,
17/9/2019 (2)	1, 4	System tasks & Compiler directives.
19/9/2019	3	chapter-4: Modules and port Components
20/9/2019	3	Port declaration, Port Connecting Rules.
21/9/2019	2	Hierarchical Names, Connecting ports to exte
23/9/2019	3	Revision.
25/9/2019	3	Test chapters Gate level Modeling. AND/OR, buff/not

Teachers Signature

HOD'S Signature

RECORD OF CLASS WORK

Date	Period	Topics Covered
25/9/2019	4	Cont. buffnot, buffif, notif, Array instan.
26/9/2019	4	Gate level Multiplexer, 4bit RCEA
27/9/2019	2	stimulus, Gate delays. - turn off delays
30/9/2019	2	Rise time, fall time, min, Max, typ
30/9/2019	5	programmes on delay in gates. examples
1/10/2019	1	chapter:6 Dataflow modeling: Continious Assig
10/10/2019	3	Implicit declarations, Regular Assignt delays
14/10/2019	5	Net declaration delay, ~~op~~ Implicit delays.
15/10/2019	1	Expressions, operators and operands.
17/10/2019	3	examples of Arithmatic, logical,
18/10/2019	3	unary operators examples, ~~logi~~ Relational,
24/10/2019	1, 3	equality bitwise, reduction, shift
31/10/2019	2	Concatination, Replication, Conditional priority
1/11/2019	2	lab: 4:1 Mux dataflow model
6/11/2019	4	lab: 4bit fullAdder dataflow Model.
7/11/2019	1, 2	Module 6: ~~Behav~~ chapter 7: Behavioral Modeling: structured procedu
8/11/2019	3	initial statement, Always statemen
9/11/2019	3	procedural; Blocking & Non Blocking Assignt
11/11/2019	2	Timing Control: Delay - Based Timing Contr
13/11/2019	3	Event - Based Timing Control
14/11/2019	3	Level sensitive Timing Control
15/11/2019	3	Conditional Statements
16/11/2019	2	Multiway Branching Case, Loops.
Additional	classes	for, while, repeat, forever, sequ

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HOD'S Signature

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DEPARTMENT OF MECHANICAL ENGINEERING

CIRCULAR

Ref No: CEC/ME/DAC/ACY 2019-2020/01 Date: 25-07-2019

This is to inform the members of Department Advisory Committee that meeting is scheduled on 25-07-2019 at 10: 00 AM in ME department.

Agenda:

- Planning of Internships & Project work for 7th semester students.
- Involving students in technical activities.
- Conducting workshop/seminar/guest lectures.
- Planning to conduct value added course for students.
- Planning of Course preference, Course allocation & Work load distribution for upcoming odd semester.

Skarunakara

Dr.S.Karunakara

HOD

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Doddakallasandra, Bangalore-560061

DEPARTMENT OF MECHANICAL ENGINEERING

Department Advisory Committee Meeting

Date: 25/07/2019
Time: 10:00 AM
Venue: ME Department

DAC Members Present:

Sl. No	Member Name	Designation	Role
1	Dr. S KARUNAKARA	HOD	Convenor
2	Dr. UMA T R	Professor	Member
3	HARSHA VARDHAN U	Professor	Co-Convenor
4	ANIL KUMAR R	Assistant Professor	Member
5	SHRUTI NAIK	Assistant Professor	Member
6	VIJAY KUMAR	Assistant Professor	Member
7	SAMPATH H P	Assistant Professor	Member
8	RAKESH Y D	Assistant Professor	Member
9	SHIVARAJA H B	Assistant Professor	Co-Convenor
10	AVINASH M	Assistant Professor	Member
11	VEERESH NAIK	Assistant Professor	Member
12	Abhilash K	Design Engineer	Alumni

The Department Advisory Committee meeting was conducted at Department of ME, on 25th July, 2019, at 10 AM.

Agenda of the Meeting:

- Planning of Internships, Project work & Technical Seminar for 8th semester students.
- Involving students in technical activities.
- Planning of AICTE activity report for 8th semester students.
- Conducting workshop/seminar/guest lectures.
- Planning to display necessary details on notice board in the labs.
- Planning of Course preference, Course allocation & Work load distribution for upcoming even semester.

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Minutes of Meeting:

During the Department Advisory Committee meeting, an overview of the department was provided, showcasing student achievement, and faculty accomplishments and contributions. The members discussed suggestions for improvement and reviewed the meeting agenda.

The HOD welcomed all the staff for the meeting. The following points were discussed as follows.

- The subject allotment for the Odd semester of 2019-20 and time table for the same was discussed and distributed.
- The staff members in charge of labs should arrange to display: Name of the lab, Do's and Do not's, Lab time table, List of students batches wise, list of Major equipment's, their date of purchase and last date of service
- The assignments have to be valued for marks as per the concerned scheme and to be kept along with bluebooks, attendance register and academic file.
- It was proposed to conduct a workshop, seminars & guest lecture on recent trending topics.
- The staff members were informed to conduct classes and labs regularly, to timely conduct and complete the entrusted responsibility, to actively participate in the dept and college activities and finally to take suitable actions for getting results and admissions to the dept.
- Attendance shortage list has to be given by respective class teachers and arrangements have to be made to send letters to the concerned parents.

HOD thanked all the staff for having attended the meeting.

Skarunas

Dr.S.Karunakara

HOD

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Skarunas

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CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM), Department of Mechanical Engineering

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
DAY	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**	**Date**	**EVENT**
STARTING OF HIGHER SEMESTERS					1					
(3^{rd},5^{th} & 7^{th} Semesters **29.7.2019** MON)					2	GANDHI JAYANTI(DH)				
THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3	FIRST INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	8	VIJAYA DASHAMI(DH)	5	**SECOND CIE FOR FIRST SEM.**	3	
WED	7	FIRST SEM INDUCTION	4		9		6		4	
THU	8		5		10		7		5	
FRI	9		6		11		8		6	
SAT	10	2ND SATURDAY HOLIDAY	7		12	2ND SATURDAY HOLIDAY	9	2ND SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	
TUE	13		10	MOHARAM (DH)	15		12		10	**THIRD CIE FOR FIRST SEM**
WED	14		11		16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANTHI(DH)	13	
SAT	17		14	2ND SATURDAY HOLIDAY	19		16		14	
SUN	18		15		20		17		15	
MON	19		16		21	SECOND INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	18	THIRD INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	16	
TUE	20		17		22		19		17	LAB INTERNALS FOR 1^{st} SEMESTERS
WED	21		18		23		20		18	
THU	22		19	**FIRST CIE FOR FIRST SEM.**	24		21		19	
FRI	23		20		25		22		20	
SAT	24	4TH SATURDAY HOLIDAY	21		26	4TH SATURDAY HOLIDAY	23	4TH SATURDAY HOLIDAY	21	**LAST WORKING DAY 1^{ST} SEM**
SUN	25		22		27		24		22	
MON	26		23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 3^{rd},5^{th} &7^{th} SEMESTERS .	24	VTU PRACTICAL: 1^{ST} SEMESTER: 23.12.19 TO 3.1.20 THEORY EXAMS : 1^{ST} SEMESTERS : 6.1.20 TO 28.1.2020
WED	28		25		30		27		25	
THU	29		26		31		28		26	
FRI	30		27	ATTESTED COPY			29	**LAST WORKING DAY 1^{st} SEM**	27	
SAT	31		28	4TH SATURDAY HOLIDAY			**30**	**LAST WORKING DAY 3^{RD} ,5^{TH} &7^{TH} SEM**	28	
SUN			29						29	
MON			30						30	
TUE									31	

VTU PRACTICAL EXAM : 3^{RD} & 5^{TH} SEMESTER: 3.12.19 TO13.12.19,7^{TH} SEMESTER: 6.12.19 TO14.12.19, THEORY EXAMS : 3^{RD} ,5^{TH} &7^{TH} SEMESTERS : 16.12.19 TO 7.2.2020

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CITY ENGINEERING COLLEGE
Kanakapura Main Road, Bangalore-560061

CITY ENGINEERING COLLEGE

ACADEMIC YEAR: 2019-20

Department of Mechanical Engineering

COURSE PREFERENCE

Name of the Faculty: Dr. S. Kalmeshwara.

Designation: Professor

Sl. No	Course Code and Name	Year/Semester
1.	15ME71 / Energy Engineering	IV / VII
2.	18ECPLC15 / Engineering Mathematics-III	I / I

Signature of Faculty

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR:

Department of Mechanical Engineering

COURSE PREFERENCE

Name of the Faculty: Dr. Arun. T. R

Designation: Professor.

Sl. No	Course Code and Name	Year/Semester
1	Control Engineering 15ME73	IV / VII
2.	Management & Economics 17ME51	III / V

Signature of Faculty

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CITY ENGINEERING COLLEGE

ACADEMIC YEAR: 2019-20(ODD)

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE ALLOCATION

Sl.No	Name of the Faculty	Course Code and Name	Year/ Semester	Signature
1	Dr. S KARUNAKARA	15ME754, 17ME51	VII, V	
2	Dr. UMA T R	15ME73, 17ME56	VII, V	
3	HARSHA VARDHAN U	18ME34, 17ME51	III, V	
4	ANIL KUMAR R	18ME32, 15ME741	III, VII	
5	SHRUTI NAIK	15ME73, 18ME35	VII, III	
6	VIJAY KUMAR	18ME34, 17ME54	III, V	
7	SAMPATH H P	15ME71, 18ME31	VII, III	
8	RAKESH Y D	18ME33, 15ME72	III, VII	
9	SHIVARAJA H B	18ME31, 17ME56	III, VII	
10	AVINASH M	18ME35, 17ME51	III, V	
11	VEERESH NAIK	17ME53, 15ME72	V,VII	

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CITY ENGINEERING COLLEGE

DEPARTMENT OF MECHANICAL ENGINEERING

ODD 2019-2020 TIME TABLE

SEMESTER: III ME 'A' SEC CBCS **2018 SCHEME** **CLASS ROOM: A307**

DAY	9:00 - 10:00 AM	10:00 - 11:00 AM	11:00 - 11:15 AM	11:15 AM - 12:15 PM	12:15 PM - 1:15 PM	LUNCH	2:00 – 3:00 PM	3:00 – 4:00 PM	4:00 – 5:00 PM
MON	18MAT31	18ME35	*BREAK*	18ME32	18ME35	*LUNCH*	18ME34	18ME35	
TUE	18ME36B	18ME32		18MAT31	18ME36B		18MEL37B		
WED	18ME35	18ME33		18MAT31	18ME32		18ME35	18ME33	
THU	18ME34	18MAT31		18ME33	18ME32		18MEL38B		
FRI	18ME33	18ME34		18ME36B	18ME36B				
SAT	NSS/SPORTS/YOGA BNSK359/BPEK359/BYOK359			NSS/SPORTS/YOGA BNSK359/BPEK359/BYOK359					

SUBJECT CODE	SUBJECT NAME	SUBJECT HANDELED
18MAT31	Transform calculus, fourier series and Numerical techniques	Prof Vanitha G R
18ME32	Metal Casting, Forming & Joining process	Prof Anil Kumar R
18ME33	Material Science and Engineering	Prof Rakesh Y D
18ME34	Basic Thermodynamics	Prof Harshavardhan U
18ME35B	Metal cutting and forming	Dr Uma T R
18ME36B	Mechanical Measurements and Metrology	Prof Shruti Naik
18MEL37B	Mechanical Measurements and Metrology lab	Prof Shruti Naik
18MEL38B	Foundry, Forging and Welding lab	Prof Anil Kumar

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HOD, Dept. of ME

CITY ENGINEERING COLLEGE

DEPARTMENT OF MECHANICAL ENGINEERING

ODD 2019-2020 TIME TABLE

SEMESTER: V ME 'A' SEC CBCS **2017 SCHEME** **CLASS ROOM: A306**

DAY	1	2	TEA	3	4	LUNCH	5	6	7
	9:00 AM 10:00 AM	10:00AM 11:00 AM	11:00 AM 11:15AM	11:15 AM 12:15 PM	12:15 PM 1:15 PM	1:15 PM 2:00 PM	2:00 PM 3:00 PM	3:00 PM 4:00 PM	4:00 PM 5:00 PM
MON	17ME51	17ME554		17ME554	17ME54		17MEL55		
TUE	17ME53	17ME54		17ME562	17ME52		17ME53	17ME562	
WED	17ME554	17ME562	*BREAK*	17ME51	17ME54	*LUNCH*	17ME554	17ME51	
THU	17ME52	17ME53		17ME52	17ME54				
FRI	17ME52	17MEL581		17MEL53	17ME51				
SAT	NSS/SPORTS/YOGA *BNSK359/BPEK359/BYOK359*			NSS/SPORTS/YOGA *BNSK359/BPEK359/BYOK359*					

SUBJECT CODE	SUBJECT NAME	SUBJECT HANDELED
17ME51	Management & Economics	Prof Shruti Naik
18ME52	Design of Machine Elements I	Prof Sampath H P
18ME53	Dynamics of Machines	Veeresh Naik
18ME54	Turbo Machines	Prof Vijay Kumar
18ME554	Non Traditional Machining	Prof Anil Kumar
18ME562	Energy & Environment	Dr Uma T R
18MEL57	Fluid Mechanics Lab	Prof Harshavardhan U
18MEL58	Energy Conversion Lab	Prof Sampath H P

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CITY ENGINEERING COLLEGE

DEPARTMENT OF MECHANICAL ENGINEERING

ODD 2019-2020 TIME TABLE

SEMESTER: VII ME 'A' SEC CBCS **2017 SCHEME** **CLASS ROOM: A305**

DAY	1	2	TEA	3	4	LUNCH	5	6	7
MON	15ME71	15ME754	*BREAK*	15ME72	15ME741	*LUNCH*	DESIGN LAB		
TUE	15ME72	15ME71		15ME73	15ME754		MAJOR PROJECT PHASE-I		
WED	15ME73	15ME72		15ME754	15ME741		15ME754	15ME73	
THU	15ME741	15ME71		15ME72	15ME73				
FRI	CIM LAB			15ME71	15ME741		DEPARTMENT ACTIVITY		
SAT	NSS/SPORTS/YOGA BNSK359/BPEK359/BYOK359			NSS/SPORTS/YOGA BNSK359/BPEK359/BYOK359					

SUBJECT CODE	SUBJECT NAME	SUBJECT HANDELED
15ME71	Control Engineering	Dr. Uma T R
15ME72	CAD/CAM	Prof Rakesh Y D
15ME73	Total Quality Management	Shruti Naik
15ME741	Additive Manufacturing	Prof Anil Kumar
15ME754	Non-Conventional Energy Resources	Dr. S Karunakara
15MEL76	CIM LAB	Prof Shruti Naik
15MEL77	DESIGN LAB	Prof Sampath H P
15MEP78	PROJECT PHASE I	Prof Harshavardhan U

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HOD, Dept. of ME

CITY ENGINEERING COLLEGE

(Doddakallsandra, Off Kanakapura Road, Bangalore-560061)

Department of Mechanical Engineering

Faculty Academic File

NAME: S. KARUNAKARA

DESIGNATION: Prof & Head

SEMESTER: VII

SECTION: A

SUBJECT NAME & CODE EE,IP/15MEF1

ACADEMIC YEAR: 2019-20

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CITY ENGINEERING COLLEGE, BENGALURU-560061. ACADEMIC CALENDAR 2019-20 (ODD SEM)

AUGUST 2019			SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2018	
DAY	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT	Date	EVENT
STARTING OF HIGHER SEMESTERS (3^{rd},5^{th} & 7^{th} Semesters **29.7.2019** MON)					1					
					2	GANDHI JAYANTI(DH)				
THU	1	STARTING OF FIRST SEM			3					
FRI	2				4		1	KANNADA RAJYOTSAVA(DH)		
SAT	3				5		2			
SUN	4		1		6		3		1	
MON	5		2	VINAYAKA CHATURTHI(DH)	7	MAHALAYA AMAVASYA(DH)	4		2	
TUE	6		3	FIRST INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters	8	VIJAYA DASHAMI(DH)	5		3	PRACTICAL EXAMS 1^{st},3^{rd},5^{th} & 7^{th} SEMESTERS 3-13 DEC 2019 7^{th} SEM. 6-14, DEC 2018
WED	7	FIRST SEM INDUCTION	4		9		6		4	
THU	8		5		10	Technical Talk for 3^{rd} and 5^{th} sem	7		5	
FRI	9		6		11		8		6	
SAT	10	2^{ND} SATURDAY HOLIDAY	7	Technical Talk for 7th sem	12	2^{ND} SATURDAY HOLIDAY	9	2^{ND} SATURDAY HOLIDAY	7	
SUN	11		8		13		10		8	
MON	12	BAKRID(DH)	9		14		11		9	
TUE	13		10	MOHARAM (DH)	15	Industrial visit for 5^{th} sem	12		10	
WED	14		11	FIRST CIE FOR FIRST SEM.	16		13		11	
THU	15	INDEPENDENCE DAY(DH)	12		17		14		12	
FRI	16		13		18		15	KANAKA JAYANTHI(DH)	13	
SAT	17		14	2^{ND} SATURDAY HOLIDAY	19	Project Phase-1 for 7^{th} sem	16		14	
SUN	18		15		20		17		15	
MON	19		16	Industrial visit for 3^{rd} sem	21	SECOND INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters SECOND CIE FOR FIRST SEM.	18	THIRD INTERNAL ASSESSMENT 3^{rd},5^{th} & 7^{th} Semesters THIRD CIE FOR FIRST SEM	16	
TUE	20		17		22		19		17	THEORY EXAMS 1^{st} Sem 16.12.2019 to 4.01.2020 3^{rd}-7^{th} Sem 16.12.2019 to 07.02.2020
WED	21		18		23		20		18	
THU	22		19		24		21		19	
FRI	23		20		25		22		20	
SAT	24	4^{TH} SATURDAY HOLIDAY	21	Parents and Teacher meeting	26	4^{TH} SATURDAY HOLIDAY	23	4^{TH} SATURDAY HOLIDAY	21	
SUN	25		22		27		24		22	
MON	26		23		28		25		23	
TUE	27		24		29	DEEPAVALI(DH)	26	LAB INTERNALS FOR 1^{st},3^{rd},5^{th} &7^{th} SEMESTERS	24	
WED	28		25		30		27		25	
THU	29		26		31		28		26	
FRI	30		27				29	LAST WORKING DAY 1^{st} SEM	27	
SAT	31	Technical talk by Dr. Arunakumar on Fatigue	28	4^{TH} SATURDAY HOLIDAY			30	LAST WORKING DAY 3^{RD},5^{TH} &7th SEM	28	
SUN			29						29	
MON			30						30	
TUE									31	

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ENERGY ENGINEERING

Course	Code	Credits	L-T-P	Assessment		Exam Duration
				SEE	CIA	
Energy Engineering	15ME71	04	3-2-0	80	20	3Hrs

Courselearning objectives is to

- Understand energy scenario,energy sources and their utilization
- Learn about energy conversion methods and their analysis
- Study the principles of renewable energy conversion systems
- Understand the concept of green energy and zero energy.

Module – I

Thermal Energy conversion system: Review of energy scenario in India,General Philosophy and need of Energy ,Different Types of Fuels used for steam generation,Equipment for burning coal in lump form, strokers, different types, Oilburners, Advantages and Disadvantages of using pulverized fuel, Equipmentfor preparation and burning of pulverized coal, unit system and bin system.Pulverized fuel furnaces, cyclone furnace, Coal and ash handling, Generationof steam using forced circulation, high and supercritical pressures.Chimneys: Natural, forced, induced and balanced draft, Calculations andnumerical involving height of chimney to produce a given draft. Coolingtowers and Ponds. Accessories for the Steam generators such asSuperheaters, De-superheater, control of superheaters, Economizers, Air preheatersand re-heaters.

9 Hours

Module – II

Diesel Engine Power System: Applications of Diesel Engines in Power field.Method of starting Diesel engines. Auxiliaries like cooling and lubricationsystem, filters, centrifuges, Oil heaters, intake and exhaust system, Layout ofdiesel power plant.

Hydro-Electric Energy: Hydrographs, flow duration and mass curves, unithydrograph and numerical. Storage and pondage, pumped storage plants, low, medium and high head plants, Penstock, water hammer, surge tanks,gates and valves. General layout of hydel power plants.

7 Hours

Module – III

Solar Energy: Fundamentals; Solar Radiation; Estimation of solar radiation on horizontal and inclined surfaces; Measurement of solar radiation data, Solar Thermal systems: Introduction; Basics of thermodynamics and heat transfer; Flat plate collector; Evacuated Tubular Collector; Solar air collector; Solar concentrator; Solar distillation; Solar cooker; Solar refrigeration and air conditioning; Thermal energy storage systems, Solar Photovoltaic systems: Introduction; Solar cell Fundamentals; Characteristics and classification; Solar cell: Module, panel and Array construction; Photovoltaic thermal systems

8 Hours

Module – IV

Wind Energy: Properties of wind, availability of wind energy in India, windvelocity and power from wind; major problems associated with wind power,wind machines; Types of wind machines and their characteristics, horizontaland vertical axis wind mills, coefficient of performance of a wind mill rotor(Numerical Examples).
Tidal Power: Tides and waves as energy suppliers and their mechanics;fundamental characteristics of tidal power, harnessing tidal energy,limitations. **8 Hours**

Module – V
Biomass Energy: Introduction; Photosynthesis Process; Biofuels; Biomass Resources; Biomass conversion technologies; Urban waste to energy conversion; Biomass gasification.
Green Energy: Introduction: Fuel cells: Overview; Classification of fuel cells; Operating principles; Fuel cell thermodynamics Nuclear, ocean, MHD, thermoelectric and geothermal energy applications; Origin and their types; Working principles, Zero energy Concepts
8 Hours

Course Outcomes
At the end of the course, the student will be able to:
- Summarize the basic concepts of thermal energy systems,
- Identify renewable energy sources and their utilization.
- Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems.
- Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, biogas.
- Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator.
- Identify methods of energy storage for specific applications

TEXT BOOKS:

1. B H Khan, Non conventional energy resources, 3rd Edition, McGraw Hill Education
2. Principles of Energy conversion, A. W. Culp Jr., McGraw Hill. 1996

REFERENCE BOOKS:

1. S.P. Sukhatme, Solar Energy: principles of Thermal Collection and Storage, Tata McGraw-Hill (1984).
2. C. S. Solanki, "Solar Photovoltaic's: Fundamental A pplications and Technologies, Prentice Hall of India, 2009.
3. L.L. Freris, Wind Energy Conversion Systems, Prentice Hall, 1990.

Scheme of Examination: Two question to be set from each module. Students have to answer five full questions, choosing at least one full question from each module.

CITY ENGNEERING COLLEGE

ENERGY ENGINEERING DAY WISE LESSON PLAN

WEEK	DAY	MODULE	TOPICS PLANED	BLOOM'S TAXONOMY LEVEL (L)	COURSE OUT COME (CO)
1	1	III	Solar Energy: Fundamentals; Solar Radiation.	L1, L2	CO1, CO2
	2		Estimation of solar radiation on horizontal and inclined surfaces; Measurement of solar radiation data.	L1, L2	CO1, CO2
	3		Solar Thermal systems: Introduction; Basics of thermodynamics and heat transfer.	L1, L2	CO1, CO2
	4		Flat plate collector; Evacuated Tubular Collector.	L1, L2	CO1, CO2
2	5		Solar air collector; Solar concentrator; Solar distillation; Solar cooker.	L1, L2	CO1, CO2
	6		Solar refrigeration and air conditioning; Thermal energy storage systems.	L1, L2	CO1, CO2
	7		Solar Photovoltaic systems: Introduction; Solar cell Fundamentals.	L1, L2	CO1, CO2
	8		Characteristics and classification; Solar cell: Module, panel and Array construction.	L1, L2	CO1, CO2
3	9		Photovoltaic thermal systems.	L1, L2	CO1, CO2
	10	IV	Wind Energy: Properties of wind, availability of wind energy in India, wind velocity and power from wind.	L1, L2	CO1, CO2
	11		Major problems associated with wind power, wind machines.	L1, L2	CO1, CO2
	12		Types of wind machines and their characteristics, horizontal and vertical axis wind mills.	L1, L2	CO1, CO2
4	13		coefficient of performance of a wind mill rotor & Numerical Examples.	L3, L4,L5	CO1, CO2
	14		Numerical Examples.	L3, L4,L5	CO1, CO2
	15		Tidal Power: Tides and waves as energy suppliers and their mechanics.	L1, L2	CO1, CO3
	16		fundamental characteristics of tidal power.	L1, L2	CO1, CO3
5	17		harnessing tidal energy, limitations.	L1, L2	CO1, CO3
	18	V	Biomass Energy: Introduction; Photosynthesis Process.	L1, L2	CO1, CO2
	19		Biofuels; Biomass Resources; Biomass conversion technologies.	L1, L2	CO1, CO2
	20		Urban waste to energy conversion; Biomass gasification.	L1, L2	CO1, CO2
6	21		Green Energy: Introduction: Fuel cells: Overview; Classification of fuel cells.	L1, L2	CO4
	22		Operating principles.	L1, L2	CO4
	23		Fuel cell thermodynamics Nuclear, ocean, MHD.	L1, L2	CO4
	24		thermoelectric and geothermal energy applications.	L1, L2	CO4
	25		Origin and their types; Working principles, Zero energy Concepts.	L1, L2	CO4

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	26	II	Diesel Engine Power System: Applications of Diesel Engines in Power field.	L1, L2	CO4
	27		Method of starting Diesel engines. Auxiliaries like cooling and lubrication system, filters.	L1, L2	CO4
	28		Method of starting Diesel engines. Auxiliaries like centrifuges, Oil heaters, intake and exhaust system.	L1, L2	CO4
8	29		Layout of diesel power plant.	L1, L2	CO1, CO3
	30		Hydro-Electric Energy: Hydrographs, flow duration and mass curves, unit hydrograph and numerical.	L1, L2	CO1, CO3
	31		Numerical Examples.	L3, L4,L5	CO1, CO3
	32		Numerical Examples.	L3, L4,L5	CO1, CO3
9	33		Storage and pondage, pumped storage plants, low, medium and high head plants, Penstock, water hammer, surge tanks, gates and valves.	L1, L2	CO1, CO3
	34		General layout of hydel power plants.	L1, L2	CO1, CO3
	35	I	Thermal Energy conversion system: Review of energy scenario in India, General Philosophy and need of Energy.	L1, L2	CO4, CO5
	36		Different Types of Fuels used for steam generation.	L1, L2	CO4, CO5
10	37		Equipment for burning coal in lump form, strokers, different types, Oil burners.	L1, L2	CO4, CO5
	38		Advantages and Disadvantages of using pulverized fuel, Equipment for preparation and burning of pulverized coal, unit system and bin system.	L1, L2	CO4, CO5
	39		Pulverized fuel furnaces, cyclone furnace.	L1, L2	CO4, CO5
	40		Coal and ash handling, Generation of steam using forced circulation, high and supercritical pressures.	L1, L2	CO4, CO5
11	41		Chimneys: Natural, forced, induced and balanced draft.	L1, L2	CO4, CO5
	42		Calculations and numerical involving height of chimney to produce a given draft.	L1, L2	CO4, CO5
	43		Cooling towers and Ponds. Accessories for the Steam generators such as Superheaters, Desuperheater.	L1, L2	CO4, CO5
	44		control of superheaters, Economizers, Air preheaters and re-heaters.	L1, L2	CO4, CO5

Course Outcomes

At the end of the course, the student will be able to:

- **Summarize the basic concepts of thermal energy systems, Identify renewable energy sources and their utilization**
- **Understand the basic concepts of solar radiation and analyze the working of solar PV and thermal systems.**
- **Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass.**
- **Understand the concepts and applications of fuel cells, thermoelectric convertor and MHD generator.**
- **Identify methods of energy storage for specific applications**

TEXT BOOKS:

1. **B H Khan, Non conventional energy resources, 3rd Edition, McGraw Hill Education**
2. **Principles of Energy conversion, A. W. Culp Jr., McGraw Hill. 1996**

COURSE CODE: 15ME71

CITY ENGINEERING COLLEGE BANGALORE – 62

FIRST INTERNAL TEST

PROGRAMME: MECHANICAL ENGINEERING
COURSE NAME: ENERGY ENGINEERING
SEM: VII
Duration: 1.30 Hrs

DATE: 06/09/2019
TIME: 10.30-12.00

MAX MARKS: 40

Note: Answer any FIVE questions choosing atleast one from each Part.

Sl.No	PART – A	Marks	CO'S	BT'S
1.	Discuss the modern layout of Thermal power plant	10	CO1	BT1, BT2
	OR			
2.	Classify coal, composition and its uses	10	CO1	BT1, BT2
	PART – B			
3.	Explain the different types of circulation system adopted in boilers	10	CO1	BT1, BT2
	OR			
4.	Explain with a neat sketch diesel power plant	10	CO1	BT1, BT2
	PART-C			
5.	Discuss in detail any two lubricating systems	10	CO2	BT1, BT2
	OR			
6.	What are the different methods of fuel injection system used in diesel power plant	10	CO2	BT1, BT2
	PART-D			
7.	With neat sketches classify different hydro -electric power plants based on heads	10	CO2	BT1, BT2
	OR			
8.	Draw a neat layout of hydroelectric power plant and discuss its important parts	10	CO2	BT1, BT2
	PART-E			
9.	Explain the different types of gates used in hydroelectric power plants	10	CO2	BT1, BT2
	OR			
10.	What is meant by water hammer Explain different types of surge tanks?	10	CO2	BT1, BT2

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Blooms Taxonomy Levels (BTL)
BT2- Understanding **BT3** – Applying **BT4** – Analyzing **BT5**- Evaluating

Course outcomes(CO's)
CO1- Explain the various approaches of TQM.
CO2- Infer the customer perception of quality.

CITY ENGINEERIN COLLEGE
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SCHEME FOR VALUATION

Internal Test 1

Semester & Section:

Date: 6/9/19

Question No.	Details of the Answer	Marks Distribution	Total Marks
1.	layout thermal plant Explanation	6 4	10
2.	cross coal — uses	6 4	10
3.	circulation in boilers 3-types	9+1	10
4	Sketch Diesel layout part Exp	4 6	10
5.	2 lubricating sys	5×2	10
6.	3 methods of fuel injection in diesel p. plant	3×3 +1	10
7.	Hydro Elect p. plants — classification	1+ 3+3+ 3	10
8	Hydro p. plant layout parts Discussion	4 6	10
9.	Types of water Hydro p plant	3+3+4	10
10	water hammer surge tank	4 6	10

Staff

S. Kalam

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S. Kalam

COURSE CODE: 15ME71

CITY ENGINEERING COLLEGE BANGALORE – 62

SECOND INTERNAL TEST

PROGRAMME: MECHANICAL ENGINEERING
COURSE NAME: ENERGY ENGINEERING
SEM: VII
Duration: 1.30 Hrs

DATE: 21/10/2019
TIME: 10.30-12.00

MAX MARKS: 50

Note: Answer any FIVE questions choosing atleast one from each Part.

Sl.No	PART – A	Marks	CO'S	BT'S
1.	With a neat sketch explain solar flat plate collector.	10	CO1	BT1, BT2
	OR			
2.	With a neat sketch explain evacuated tube collector.	10	CO1	BT1, BT2
	PART – B			
3.	With neat sketches explain any two solar applications.	10	CO1	BT1, BT2
	OR			
4.	Explain briefly about the working principle of photovoltaic cell.	10	CO1	BT1, BT2
	PART-C			
5.	List down the advantages and limitations of solar energy and winged energy with reasons.	10	CO2	BT1, BT2
	OR			
6.	Describe the Principle behind harnessing wind energy and how it is useful to mankind.	10	CO2	BT1, BT2
	PART-D			
7.	With neat sketches explain horizontal axis wind turbine and vertical axis wind turbine.	10	CO2	BT1, BT2
	OR			
8.	Compare horizontal and vertical axis wind turbines	10	CO2	BT1, BT2
	PART-E			
9.	List down the places in India about the capacity solar energy and wind energy developed	10	CO2	BT1, BT2
	OR			
10.	Explain briefly about the Principle, fuel, capacity, advantages and limitations of any four power plants	10	CO2	BT1, BT2

Blooms Taxonomy Levels (BTL)
BT1-Remembering,**BT2**- Understanding **BT3** – Applying **BT4** – Analyzing **BT5**- Evaluating

2nd Test 21/10/19

Question No.	Details of the Answer	Marks Distribution	Total Marks
1	Sketch Plate collector Description	4 6	10
2.	Evacuated tube collector Description	4 6	10
3.	2 Solar Applications	5×2	10
4.	principle PVC Explanation	4 6	10
5.	ADV/DISADV Solar Wind	5 5	10
6.	Principle Wind Energy working	4 6	10
7	H.A. Wind Turbine - V. Axis Wind Turbine -	5 5	10
8	Comparison H.A. Wind T V.A. Wind T	5 5	10
9.	Places of Solar Energy Wind Energy	5 5	10
10	Fuel, capacity ADV/DIS. 4 Power plants -	3+3	10

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SUB CODE: 15ME71

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THIRD INTERNAL TEST

Branch: MECHANICAL
Sub Name: ENERGY ENGINEEING
Sem & Sec:7TH A Max Marks: 50
Duration: 1 ½ hrs.

Date:18/11/2019
Time:10.30-12.00AM

Q No.	Sub Q No.	Questions	M	CO	BTL
		PART A			
1	a	With neat sketches explain single basin and double basin tidal power plant	10	CO3	BT1 BT2
		OR			
2	a	List down the advantages disadvantages and applications of tidal power plant	10	CO3	BT1 BT2
		PART B			
3	a	With neat sketch explain open cycle ocean thermal energy	10	CO3	BT1 BT2
		OR			
4	a	Outline the working principle of geothermal energy	10	CO3	BT1 BT2
		PART C			
5	a	Classify biomass energy	10	CO3	BT1 BT2
		OR			
6	a	With a neat sketch explain fixed dome digester	10	CO3	BT1 BT2
		PART D			
7	a	What is nuclear energy? explain in detail about the working principle of nuclear reactor	10	CO3	BT1 BT2 BT3
		OR			
8	a	With a neat sketch explain open cycle MHD	10	CO3	BT1 BT2
		PART E			
9	a	Write short notes on zero energy concept and fuel cell	10	CO3	BT1 BT2
		OR			
10	a	Write short notes on thermoelectric power generation	10	CO3	BT1 BT2

----------**ALL THE BEST**----------

Course objective	Course objective Definition
CO3	Understand principles of energy conversion from alternate sources including wind, geothermal, ocean, biomass, and biogas.

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Internal Test 3rd **Date:** 18/11/19

Semester & Section:

Question No.	Details of the Answer	Marks Distribution	Total Marks
1.	Exp Single basin & Double basin Tidal pplet	5+5	10
2.	ADV/DISADV TIDAL P. Plant Applications	4 6	10
3.	Open cycle Ocean Thermal Exp + layout	6+4	10
4	layout Geothermal — Explanation —	4 6	10
5.	classification — Biomass — (Any two)	5+5	10
6.	Sketch + Exp Fix Dome Digester	4+6	10
7	Sketch Nuclear reactor Explanation	4 6	10
8.	open cycle MHD, Sketch Exp	4 6	10
9.	Hydrogen Concept Fuel cell	5 5	10
10.	Thermoelectric P.P layout Explanation	4 6	10

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Energy Engineering

Question Bank

1. Explain the working principle of biomass energy
2. Explain fixed dome plant of biomass energy
3. Explain the principle of ocean thermal energy
4. Discuss geothermal energy in detail
5. Explain biomass energy conversion concept
6. List down the advantages and disadvantages of GTE
7. Discuss the process principle of nuclear energy
8. List down the advantages and disadvantages of nuclear energy
9. Describe in detail about fuel cell
10. Explain zero energy concepts