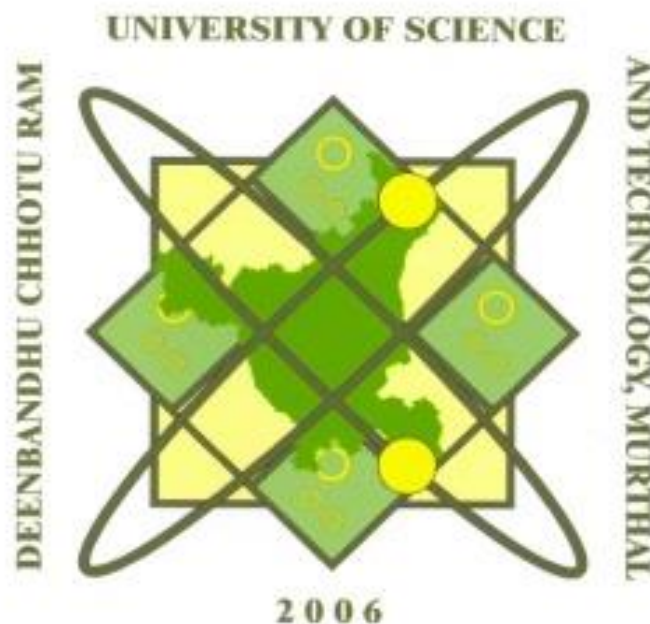


SCHEME & SYLLABUS

B.Tech Electronics & Communication Engineering
Effective from 2012-13



Department of Electronics & Communication Engineering
Deenbandhu Chhotu Ram University of Science & Technology,
Murthal (Sonipat), Haryana, 131039

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. 1st YEAR (SEMESTER – I) (COMMON FOR ALL BRANCHES)
Credit Based Scheme w.e.f. 2012-13

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	HUM101B	COMMUNICATIVE ENGLISH	3	1	-	25	75	-	100	4	3
2	MATH101B	MATHEMATICS-I	3	1	-	25	75	-	100	4	3
3	PHY101B	ENGINEERING PHYSICS-I	3	1	-	25	75	-	100	4	3
4	ME101B	MANUFACTURING PROCESSES (Gr-A)	3	1	-	25	75	-	100	4	3
	CH101B	ENGINEERING CHEMISTRY (Gr-B)	3	1	-	25	75	-			
5	EE101B	PRINCIPLES OF ELECTRICAL ENGINEERING (Gr-A)	3	1	-	25	75	-	100	4	3
	CSE101B	INTRODUCTION TO COMPUTERS & PROGRAMMING (Gr-B)	3	1	-	25	75	-			
6	ME103B	ENGINEERING GRAPHICS & DRAWING (Gr-A)	1	-	4	40	-	60	100	3	3
	ME105B	ELEMENTS OF MECHANICAL ENGINEERING (Gr-B)	3	1	-	25	75	-			
7	PHY103B	PHYSICS LAB-I	-	-	2	20	-	30	50	1	3
8	ME107B	WORKSHOP PRACTICE (Gr-A)	-	-	4	40	-	60	100	2	3
	CH103B	CHEMISTRY LAB (Gr-B)	-	-	2	20	-	30			
9	EE103B	PRINCIPLES OF ELECTRICAL ENGINEERING LAB (Gr-A)	-	-	2	20	-	30	50	1	3
	CSE103B	COMPUTER PROGRAMMING LAB (Gr-B)	-	-	2	20	-	30			
10	ME109B	ELEMENTS OF MECHANICAL ENGINEERING LAB (Gr-B)	-	-	2	20	-	30	50	1	3
Total			16	5	12	245	375	180	800	27	
			18	6	8	230	450	120	800	28	

Note:

- 1 Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of sports is given in General Proficiency Syllabus.
- 2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- 3 Electronic gadgets including Cellular phones are not allowed in the examination.
- 4 All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. 1st YEAR (SEMESTER – II) (COMMON FOR ALL BRANCHES)
Credit Based Scheme w.e.f. 2012-13

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1.	MATH102B	MATHEMATICS-II	3	1	-	25	75	-	100	4	3
2	PHY102B	ENGINEERING PHYSICS-II	3	1	-	25	75	-	100	4	3
3	ME101B	MANUFACTURING PROCESSES (Gr-B)	3	1	-	25	75	-	100	4	3
	CH101B	ENGINEERING CHEMISTRY(Gr-A)	3	1	-	25	75	-			
4	EE101B	PRINCIPLES OF ELECTRICAL ENGINEERING (Gr-B)	3	1	-	25	75	-	100	4	3
	CSE101B	INTRODUCTION TO COMPUTERS & PROGRAMMING (Gr-A)	3	1	-	25	75	-			
5	ECE102B	BASICS OF ELECTRONICS ENGINEERING	3	1	-	25	75	-	100	4	3
	BT102B	BASICS OF BIO TECHNOLOGY									
	HUM102B	ORAL COMMUNICATION SKILLS									
	CE102B	BASICS OF CIVIL ENGINEERING									
6	ME103B	ENGINEERING GRAPHICS & DRAWING (Gr-B)	1	-	4	40	-	60	100	3	3
	ME105B	ELEMENTS OF MECHANICAL ENGINEERING (Gr-A)	3	1	-	25	75	-	100	4	
7	PHY104B	PHYSICS LAB-II	-	-	2	20	-	30	50	1	3
8	ME107B	WORKSHOP PRACTICE (Gr-B)	-	-	4	40	-	60	100	2	3
	CH103B	CHEMISTRY LAB (Gr-A)	-	-	2	20	-	30	50	1	
9	EE103B	PRINCIPLES OF ELECTRICAL ENGINEERING LAB (Gr-B)	-	-	2	20	-	30	50	1	3
	CSE103B	COMPUTER PROGRAMMING LAB (Gr-A)	-	-	2	20	-	30	50		
10	ME109B	ELEMENTS OF MECHANICAL ENGINEERING LAB (Gr-A)	-	-	2	20	-	30	50	1	3
11	GP102B	GENERAL PROFICIENCY & ETHICS	1			-		50	50	2	-
Total			17	5	12	245	375	230	850	29	
Gr-B			19	6	8	230	450	170	850	30	
Gr-A											

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- Each student has to undergo a workshop of at least 4 weeks (80-100 hours) at the end of II semester during summer vacations. Out of the four weeks, two weeks would be dedicated to general skills and two weeks training for specialized discipline/ department. The evaluation of this training shall be carried out in the III semester.
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic gadgets including Cellular phones are not allowed in the examination.
- The elective course HUM102B ORAL COMMUNICATION SKILLS is deleted with effect from session 2013-14.
- All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. II YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER III
Credit Based Scheme w.e.f. 2013-2014

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	MGT201B	ENGINEERING ECONOMICS (Common for all branches Except BT& BME) (Gr-A)	4	-	-	25	75	-	100	4	3
	GES201B	ENVIRONMENTAL STUDIES(Common for all branches) (Gr-B)	3	-	-	-	75	-	75	-	3
2	ECE201B	DIGITAL ELECTRONICS(EE, ECE, CSE,IC,EEE,common with BME,AEI in 4 th Sem.)	3	1	-	25	75	-	100	4	3
3	EE211B	NETWORK ANALYSIS AND SYNTHESIS (ECE,AEI)	3	1	-	25	75	-	100	4	3
4	ECE203B	ANALOG ELECTRONICS (BME,ECE,common with 4 TH Sem. AEI)	3	1	-	25	75	-	100	4	3
5	ECE207B	SIGNALS & SYSTEMS	3	1	-	25	75	-	100	4	3
6	CSE201B	DATA STRUCTURES (CSE,ECE,AEI)	3	1	-	25	75	-	100	4	3
7	ECE221B	DIGITAL ELECTRONICS LAB (EE, ECE, CSE,IC,EEE,common with BME,AEI in 4 th Sem.)	-	-	2	20	-	30	50	1	3
8	ECE223B	ANALOG ELECTRONICS LAB (BME,ECE, common with 4 th Sem. AEI)	-	-	2	20	-	30	50	1	3
9	EE241B	NETWORK ANALYSIS AND SYNTHESIS LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
10	CSE221B	DATA STRUCTURES LAB (CSE,ECE,AEI)	-	-	2	20	-	30	50	1	3
11	GES203B	ENVIRONMENTAL STUDIES FIELD WORK(Gr-B)	-	-	-	-	-	25	25	-	-
12	ME217B	WORKSHOP TRAINING (Common for all branches Except BT & AE)	-	-	2	50	-	-	50	2	-
Total			18	5	10	255	375	120	750	26	
Gr-B			19	5	10	280	450	120	850	30	
Gr-A											

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic Gadgets including Cellular Phones are not allowed in the examination.
- Assessment of Workshop Training (ME217B) will be based on seminar, viva-voce, report and certificate of professional training obtained by the student from in-house workshop.
- All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. II YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER IV
Credit Based Scheme w.e.f. 2013-2014

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	MGT201B	ENGINEERING ECONOMICS (Common for all branches Except BT& BME) (Gr-B)	4	-	-	25	75	-	100	4	3
	GES201B	ENVIRONMENTAL STUDIES(Common for all branches) (Gr-A)	3	-	-	-	75	-	75	-	3
2	CSE210B	COMPUTER ARCHITECTURE & ORGANIZATION(ECE, CSE, common with 5 th Sem. AEI)	3	1	-	25	75	-	100	4	3
3	ECE204B	DIGITAL CIRCUIT AND SYSTEM	3	1	-	25	75	-	100	4	3
4	ECE206B	ANALOG ELECTRONIC CIRCUITS (BME, ECE, common with 5 th Sem. AEI)	3	1	-	25	75	-	100	4	3
5	ECE208B	POWER ELECTRONICS (ECE, common with 6 th Sem. AEI)	3	1	-	25	75	-	100	4	3
6	ECE210B	COMMUNICATION SYSTEMS(ECE, common with 3 rd Sem. CSE, 6 th Sem. AEI)	3	1	-	25	75	-	100	4	3
7	ECE212B	FIELD AND WAVES(ECE, common with 3 rd Sem. AEI)	3	1	-	25	75	-	100	4	3
8	ECE224B	DIGITAL CIRCUIT AND SYSTEM LAB	-	-	2	20	-	30	50	1	3
9	ECE226B	ANALOG ELECTRONIC CIRCUITS LAB(BME, ECE, common with 5 th Sem. AEI)	-	-	2	20	-	30	50	1	3
10	ECE228B	POWER ELECTRONICS LAB (ECE, common with 6 th Sem. AEI)	-	-	2	20	-	30	50	1	3
11	ECE230B	COMMUNICATION SYSTEMS LAB(ECE, 6 th Sem. AEI)	-	-	2	20	-	30	50	1	3
12	GES203B	ENVIRONMENTAL STUDIES FIELD WORK(Gr-A)	-	-	-	-	-	25	25	-	-
13	GPEC202B	GENERAL PROFICIENCY & ETHICS	1	-	-	-	-	75	75	2	-
Total			23	6	8	255	525	195	975	34	
			22	6	8	230	450	195	875	30	

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of is given in General Proficiency Syllabus.
- The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic Gadgets including Cellular Phones are not allowed in the examination.
- At the end of 4th semester each student has to undergo four weeks Professional Training of 4 weeks in an Industry/ Institute/ Professional Organization/ Research Laboratory/ training centre etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization & its evaluation shall be carried out in the 5th Semester.
- The ENVIRONMENTAL STUDIES (GES201B) & ENVIRONMENTAL STUDIES FIELD WORK (GES203B) are compulsory & qualifying courses.
- All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. III YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER V
Credit Based Scheme w.e.f. 2014-2015

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	ECE301B	COMMUNICATION ENGINEERING	3	1	-	25	75	-	100	4	3
2	ECE303B	ELECTRONIC MEASUREMENT AND INSTRUMENTATION (ECE,AEI & 6 th Sem. IC)	3	1	-	25	75	-	100	4	3
3	ECE305B	CONSUMER ELECTRONICS	3	1	-	25	75	-	100	4	3
4	ECE307B	LINEAR INTEGRATED CIRCUIT (ECE,BME)	3	1	-	25	75	-	100	4	3
5	ECE309B	MICROPROCESSORS AND INTERFACING (BME,CSE ,ECE,AEI)	3	1	-	25	75	-	100	4	3
6	CSE204B	OBJECT ORIENTED PROGRAMMING(ECE,common with 4 th Sem. CSE,AEI)	3	1	-	25	75	-	100	4	3
7	CSE224B	OBJECT ORIENTED PROGRAMMING LAB(ECE,common with 4 th Sem. CSE,AEI)	-	-	2	20	-	30	50	1	3
8	ECE323B	ELECTRONIC MEASUREMENT AND INSTRUMENTATION LAB(ECE,AEI,common with 6 th Sem. IC)	-	-	2	20	-	30	50	1	3
9	ECE325B	CONSUMER ELECTRONIC LAB	-	-	2	20	-	30	50	1	-
10	ECE327B	LINEAR INTEGRATED CIRCUIT LAB	-	-	2	20	-	30	50	1	3
11	ECE329B	MICROPROCESSORS & INTERFACING LAB (BME,CSE ,ECE,AEI)	-	-	2	20	-	30	50	1	3
12	ECE335B	PROFESSIONAL TRAINING-I	-	-	2	50	-	-	50	2	-
Total			18	6	12	300	450	150	900	31	

Note:

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
2. The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic Gadgets including Cellular Phones are not allowed in the examination.
4. Assessment of Professional training. I (ECE335B) will be based on seminar, viva-voce, report and certificate of professional training obtained by the student from the industry / institute / research lab / training centre etc.

DEENBANDHUCHHOTURAMUNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. III YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VI
Credit Based Scheme w.e.f. 2014-2015

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	HUM302B	REPORT WRITING SKILLS (common for all branches)	1	-	-	25	50	-	75	1	2
2	ECE302B	MICROWAVE AND RADAR ENGINEERING(ECE,EEE)	3	1	-	25	75	-	100	4	3
3	EE312B	CONTROL SYSTEM ENGINEERING(ECE, BME, common with 5 th Sem. AEI)	3	1	-	25	75	-	100	4	3
4	ECE304B	ANTENNA AND WAVE PROPAGATION	3	1	-	25	75	-	100	4	3
5	ECE306B	HDL BASED SYSTEM DESIGN(ECE,AEI)	3	1	-	25	75	-	100	4	3
6	ECE308B	MICROELECTRONICS(ECE, AEI)	3	1	-	25	75	-	100	4	3
7	ECE310B	MICROCONTROLLER BASED SYSTEM DESIGN (ECE,common with BME)	3	1	-	25	75	-	100	4	3
8	ECE322B	MICROWAVE AND RADAR ENGINEERING LAB(ECE,EEE)	-	-	2	20	-	30	50	1	3
9	EE332B	CONTROL SYSTEM ENGINEERING LAB(ECE, common with 5 th Sem. AEI)	-	-	2	20	-	30	50	1	3
10	ECE326B	HDL BASED SYSTEM DESIGN LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
11	ECE330B	MICROCONTROLLER LAB(ECE,common with BME)	-	-	2	20	-	30	50	1	3
12	GPEC302B	GENERAL PROFICIENCY & ETHICS	1	-	-	-	-	75	75	2	-
13	HUM304B	ORAL PRESENTATION SKILLS (common for all branches)	-	-	2	20	-	30	50	1	2
Total			20	6	10	275	500	225	1000	32	

Note:

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
2. The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic Gadgets including Cellular Phones are not allowed in the examination.
4. At the end of 6th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional / Organization/ Research Laboratory / training centre etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. IV YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VII
Credit Based Scheme w.e.f. 2015-2016

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	ECE401B	INDUSTRIAL PROCESS CONTROL AND INSTRUMENTATION(ECE,AEI)	3	1	-	25	75	-	100	4	3
2	ECE403B	DIGITAL SIGNAL PROCESSING(ECE,AEI)	3	1	-	25	75	-	100	4	3
3	ECE405B	SATELLITE COMMUNICATION	3	1	-	25	75	-	100	4	3
4	ECE407B	VLSI DESIGN(ECE,AEI,EEE)	3	1	-	25	75	-	100	4	3
5		*OPEN ELECTIVE	4	-	-	25	75	-	100	4	3
6	ECE421B	PROGRAMMABLE LOGIC CONTROLLERS LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
7	ECE423B	DIGITAL SIGNAL PROCESSING LAB using MATLAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
8	ECE425B	SATELLITE COMMUNICATION LAB	-	-	2	20	-	30	50	1	3
9	ECE427B	VLSI DESIGN LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
10	ECE431B	PROJECT	-	-	4	100	-	-	100	4	-
11	ECE435B	PROFESSIONAL TRAINING . II	-	-	2	50	-	-	50	2	-
		Total	16	4	14	355	375	120	850	30	

LIST OF OPEN ELECTIVES:

1	MEI 623B	ENTREPRENEURSHIP	6	BT401B	BIOINFORMATICS
2	BME451B	MEDICAL INSTRUMENTATION	7	AE417B	MODERN VEHICLE TECHNOLOGY
3	ECE305B	CONSUMER ELECTRONICS	8	CE451B	POLLUTION & CONTROL
4	EE451B	ENERGY AUDIT	9	CSE411B	MANAGEMENT INFORMATION SYSTEM
5	EEE457B	ENERGY RESOURCES & TECHNOLOGY	10	IT413B	CYBER SECURITY

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- Students will be permitted to opt for any one elective run by the other department. However, the department shall offer those elective for which they have expertise. The choice of the students for any elective shall not be binding for the department to offer, if the department does not have expertise. The minimum strength of the students should be 20 to run an elective course.
- Assessment of Professional Training-II, undergone at the end of VI semester, will be based on seminar, viva-voce, report and certificate of Professional Training obtained by the student from the industry, institute, research lab, training center etc
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Assessment Electronics gadgets including Cellular phones are not allowed in the examination.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. IV YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VIII
Credit Based Scheme w.e.f. 2015-2016

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	ECE402B	WIRELESS COMMUNICATION SYSTEMS	3	1	-	25	75	-	100	4	3
2	ECE404B	DATA COMMUNICATION AND NETWORK(ECE,EEE)	3	1	-	25	75	-	100	4	3
3		DEPT. ELECTIVE I	4	-	-	25	75	-	100	4	3
4		DEPT. ELECTIVE II	4	-	-	25	75	-	100	4	3
5	ECE424B	DATA COMMUNICATION AND NETWORK LAB	-	-	2	20	-	30	50	1	3
6	ECE431B	PROJECT	-	-	8	75	-	125	200	8	3
7	ECE438B	SEMINAR	-	-	2	50	-	-	50	2	-
8	GPEC402B	GENERAL FITNESS FOR THE PROFESSION	-	-	-	-	-	100	100	4	3
Total			14	2	12	245	300	255	800	31	

DEPT. ELECTIVE-I			DEPT. ELECTIVE-II		
S.NO	CODE	TITLE	S.NO	CODE	TITLE
1	ECE406B	NEURAL NETWORK & FUZZY LOGIC	1	ECE416B	DIGITAL IMAGE PROCESSING
2	ECE408B	ELECTRONIC MATERIALS AND NANO TECHNOLOGY	2	ECE418B	RELIABILITY ENGINEERING
3	ECE410B	BIOMEDICAL ELECTRONICS	3	ECE420B	TELECOMMUNICATION SWITCHING SYSTEMS
4	ECE412B	OPTICAL COMMUNICATION	4	ECE426B	EMBEDDED SYSTEM DESIGN
5	ECE414B	RADAR AND SONAR ENGINEERING	5	ECE428B	POWER SYSTEM STABILITY AND FACTS

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic Gadgets including Cellular Phones are not allowed in the examination.
- Project coordinator will be assigned the project (ECE436B) load of, maximum of 2 hrs. per week including his own guiding load of one hr. However, the guiding teacher will be assigned maximum of one period of teaching load irrespective of number of students/groups under him/her. Project involving design, fabrication, testing, computer simulation, case studies etc., which has been commenced by students in VII semester will be completed in VIII semester.
- For the course ECE438B (Seminar), a student will select a topic from emerging areas of Engineering & Technology and study it independently. Student will give a seminar / talk on the topic.
- The evaluation of the student for his / her General Fitness for Profession shall be carried out by a team consisting of Dean Faculty of Engineering. & Technology, Chairperson of concerned department and external examiner appointed by University.
- The minimum strength of the students should be 20 to run an elective course.

SYLLABUS

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. 1st YEAR (SEMESTER – I) (COMMON FOR ALL BRANCHES)
Credit Based Scheme w.e.f. 2012-13

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	HUM101B	COMMUNICATIVE ENGLISH	3	1	-	25	75	-	100	4	3
2	MATH101B	MATHEMATICS-I	3	1	-	25	75	-	100	4	3
3	PHY101B	ENGINEERING PHYSICS-I	3	1	-	25	75	-	100	4	3
4	ME101B	MANUFACTURING PROCESSES (Gr-A)	3	1	-	25	75	-	100	4	3
	CH101B	ENGINEERING CHEMISTRY (Gr-B)	3	1	-	25	75	-			
5	EE101B	PRINCIPLES OF ELECTRICAL ENGINEERING (Gr-A)	3	1	-	25	75	-	100	4	3
	CSE101B	INTRODUCTION TO COMPUTERS & PROGRAMMING (Gr-B)	3	1	-	25	75	-			
6	ME103B	ENGINEERING GRAPHICS & DRAWING (Gr-A)	1	-	4	40	-	60	100	3	3
	ME105B	ELEMENTS OF MECHANICAL ENGINEERING (Gr-B)	3	1	-	25	75	-			
7	PHY103B	PHYSICS LAB-I	-	-	2	20	-	30	50	1	3
8	ME107B	WORKSHOP PRACTICE (Gr-A)	-	-	4	40	-	60	100	2	3
	CH103B	CHEMISTRY LAB (Gr-B)	-	-	2	20	-	30			
9	EE103B	PRINCIPLES OF ELECTRICAL ENGINEERING LAB (Gr-A)	-	-	2	20	-	30	50	1	3
	CSE103B	COMPUTER PROGRAMMING LAB (Gr-B)	-	-	2	20	-	30			
10	ME109B	ELEMENTS OF MECHANICAL ENGINEERING LAB (Gr-B)	-	-	2	20	-	30	50	1	3
Total			16	5	12	245	375	180	800	27	
			18	6	8	230	450	120	800	28	

Note:

- 1 Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of sports is given in General Proficiency Syllabus.
- 2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- 3 Electronic gadgets including Cellular phones are not allowed in the examination.
- 4 All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

HUM101B

COMMUNICATIVE ENGLISH

B. Tech. Semester - I (Common for all Branches)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

Communicative Grammar:

- A) Spotting the errors pertaining to tenses, conditional sentences, Concord – grammatical concord, notional concord and the principle of proximity b/w subject and verb
B) Voice, Reported Speech.

UNIT II

Language through Literature:

Linguistic Reading of the following texts:

- A) 'Kabuliwallah' by Rabindranath Tagore*
B) 'Am I Blue?' by Alice Walker*
C) 'If You are Wrong, Admit It' by Dale Carnegie*
D) 'Engine Trouble' by R.K. Narayan*

The prescribed texts will be used as case studies for various components of the syllabus. * the Source is given in the list of Texts Books given below.

UNIT III

Group Communication:

- A) Communication: concept, Process and Barriers
B) Communicating using Standard Pronunciation with the help of IPA
C) Formal Speaking with peers (e.g. discussion, talks on current issues in a class)
D) Writing official letters on issues concerning students and social life
E) Writing small reports on scientific issues, IT issues, University fests/programmes
F) E-mail writing and writing for web

UNIT IV

Communicative Creativity:

- A) Comprehension: Extracting, interpreting, summarizing, reviewing and analyzing the prescribed texts.
B) Composition: Developing themes and situations through role play activities or dialogue writing.

Text Books:

1. Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. A Comprehensive Grammar of the English Language. London: Longman, 1989
2. Communicative English for Engineers and Professionals by Nitin Bhatnagar & Mamta Bhatnagar New Delhi: Pearson / Longman
3. Crystal, David. Rediscover Grammar. London: Longman/Pearson, 1988.
4. *Tagore, Rabinder. "Kabuliwallah", Famous Indian Stories. Ed. M.G.Narsimha Murthy .Mumbai: Orient Blackswan, 2009. (Web source: www.angelfire.com)
5. * Walker, Alice. "Am I Blue", An Anthology of Short Stories . Ed. Usha Bande .New Delhi: OUP , 2004. (Web source- www.old.li.sru.edu)
6. *Narayanan .K.R. "Engine Trouble", Contemporary English Prose .Ed. K.P.K.Menon. New York: OUP,1976. (Web Source- www.scribd.com)
7. *Carnegie, Dale. "If you are wrong admit it", An Anthology of Modern Prose. Ed Manmohan K.Bhatnagar.Delhi :Macmillan India Ltd,2006.

Suggested Reading:

1. Pink, M.A. and S.E. Thomas. *English Grammar, Composition and Correspondence*. Delhi: S. Chand and Sons McRae, John and Roy Boardman.
2. *Reading Between the Lines*. Delh: Foundation Books (Cambridge University Press)Sharma, Sangeeta and Binod Mishra.
3. *Communication Skills for Engineers and scientists*. Delhi: PHI, 2009
4. Fitikides, T.J. *Common Mistakes in English*. Essex: Pearson Education, 1936, 6th edition 2000.

SCHEME OF END SEMESTER EXAMINATION (MAJOR TEST)

Theory

1. The duration of the exam will be 3 hours.
2. The Question Paper for this theory course shall have seven questions in all covering all the units of the syllabus..
3. The student is required to attempt all the seven questions.
4. Questions No. 1 based on Unit I is of **15** marks. It may be in the form of 'Do as directed: trace the error, choose the correct alternative, supply the correct alternative/s, change the voice, convert the speech from direct to indirect or vice-versa'.
5. Question no 2 and 3 based on prescribed texts in Unit II. Question no 2 of **10** marks is to evaluate the comprehension of the text through short answer questions or a long answer question to assess the students' reading comprehension, interpretative and analytical abilities. Question no 3 of **15** marks will judge the linguistic aspect of the text such as using a particular word in its various syntactic forms like noun, adjective, verb etc.; matching the lists of words and their explanation; providing opposite/similar meanings and other grammar components prescribed in Unit I of the syllabus.
6. Question no 4 based on Unit III is of **10** marks. It may be in the form of transcription of words given, describe an event, classmate, discuss an issue etc.
7. Question no 5 based on Unit III is of **10** marks. It requires the student to frame either a small report on a topic given or write the given official letter, or e-mail a message.
8. Question no 6 based on unit IV is of **10** marks. It evaluates the Comprehension and Interpretation of the texts prescribed in Unit II. The vocabulary, general understanding and interpretation of the content may be evaluated in the form of question answer exercise, culling out important points, suggesting a suitable topic/title, summarising and interpreting.
9. Question No. 7 based on unit IV is of **5** marks. It requires the student to develop a hypothetical situation in a dialogue form, or to develop an outline, key expression, for role play activity.

MATH101B

MATHEMATICS - I

B. Tech. Semester - I (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Infinite series :

Convergence and divergence, Comparison, D' Alembert's ratio, Integral, Raabe's, Logarithmic and Cauchy root tests, Alternating series, Absolute and conditional convergence.

Applications of Differentiation : Taylor's and Maclaurin's series, Asymptotes, Curvature Asymptotes.

UNIT-II

Partial Differentiation & its Applications :

Functions of two or more variables; partial derivatives, Total differential and differentiability, Derivatives of composite and implicit functions, Jacobians, Higher order partial derivatives.

Homogeneous functions, Euler's theorem, Taylor's series for functions of two variables (without proof), maxima-minima of function of two variables, Lagrange's method of undetermined multipliers, Differentiation under integral sign.

UNIT-III

Applications of Single & Multiple Integration :

Applications of single integration to find volume of solids and surface area of solids of revolution. Double integral, change of order of integration, Double integral in polar coordinates, Applications of double integral to find area enclosed by plane curves and volume of solids of revolution.

Triple integral, volume of solids, change of variables, Beta and gamma functions and relationship between them.

UNIT-IV

Vector Calculus :

Differentiation of vectors, scalar and vector point functions Gradient of a scalar field and directional derivative, divergence and curl of a vector field and their physical interpretations.

Integration of vectors, line integral, surface integral, volume integral, Green, Stoke's and Gauss theorems (without proof) and their simple applications.

Text Books :

1. Advanced Engineering Mathematics : F. Kreyszig.
2. Higher Engineering Mathematics : B.S. Grewal.

Reference Books :

1. Engineering Mathematics Part-I : S.S. Sastry.
2. Differential and Integral Calculus : Piskunov.
3. Advanced Engineering Mathematics : R.K. Jain and S.R.K. Iyengar
4. Advanced Engg. Mathematics : Michael D. Greenberg

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

PHY101B

ENGINEERING PHYSICS - I B. Tech. Semester - I (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

PHYSICAL OPTICS:

Interference: Division of wave front-Fresnel's Biprism, Division of amplitude – Newton's rings, Michelson interferometer, applications.

Diffraction : Difference between Fraunhofer and Fresnel diffraction, Fraunhofer diffraction through a slit, Plane transmission diffraction grating and its spectra, dispersive and resolving powers.

Polarization : Polarised and unpolarized light, double refraction, Nicol prism, quarter and half wave plates, Plane, Elliptically & circularly polarised light, Polarimetry: Biquartz and Laurent's half-shade polarimeters.

UNIT-II

LASER & FIBRE OPTICS:

Introduction, Spontaneous and stimulated emissions, Laser action, characteristics of laser beam, Ruby laser, He-Ne, Nd-Yag and semiconductor lasers, applications of laser.

Introduction, Propagation of light in fibres, Types of fiber (pulse & continuous), numerical aperture, Modes of propagation in optical fibre, application of optical fibre.

ACOUSTIC OF BUILDINGS:

Introduction, Reverberation, Sabine's formula for reverberation time, Absorption coefficient and its measurements, factors affecting the architectural acoustics and their remedy, Sound absorbing materials.

UNIT-III

TRANSMISSION OF HEAT AND THERMAL RADIATION:

Modes of transmission of heat, Thermal conductivity, Rectilinear flow of heat through a rod, Radial flow of heat through a spherical shell, determination of Thermal conductivity of good and bad conductors.

Black body, Emissive and Absorptive Powers, Wein's Displacement Law, Kirchhoff's Law, Stefan's Law, Determination of Stefan's Constant.

UNIT-IV

NUCLEAR & ELEMENTARY IDEA OF PARTICLE PHYSICS:

Outline of interaction of charged particles and of Gamma-rays with matter. Counters: Gas filled counters (Ionization Chamber, Proportional Counter and G M Counter). Detector: Scintillation detector, Semiconductor detectors (p-n junction detector), Biological effects of nuclear radiation.

Introduction to elementary particles, Interaction in particle physics: strong, electromagnetic, weak and gravitational. .

Text Books :

1. A text book of Optics – Brij Lal and Subramanyam
2. Perspectives of Modern Physics - Arthur Beiser (TMH)
3. Modern Engineering Physics – A.S. Vasudeva (S. Chand)
4. Engineering Physics by R.K. Gaur and S.L. Gupta
5. Engineering Physics by H.K Malik and A.K. Singh (Tata McGraw Hill).
7. Engineering Physics by S.P. Taneja (Chand Pub.)

Reference Books:

1. Physics Vol-I & II – Resnick & Halliday (Wiley Eastern)
2. Heat and Thermodynamics – M.N. Saha & B.N. Srivastava
3. Nuclear Physics Principles and Applications by John Lilley(Wiley-India).

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

ME101B

MANUFACTURING PROCESSES

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Introduction:

Introduction to Manufacturing Processes and their Classification, automation in manufacturing, Industrial Safety; Introduction, Types of Accidents, Causes and Common Sources of Accidents, Methods of Safety, Electric Safety Measures, First Aid. Plant Layout, Principles of Plant Layout and Objectives of Layout, Types of Plant and shop layouts and their Advantages

UNIT-II

Engineering Materials:

General Properties and Applications of Engineering Materials, Mild Steel, Medium Carbon Steel, High Carbon Steel, High Speed Steel and Cast Iron, Non-Ferrous Materials, Shop's Tools Materials, Super Alloys or High Temperature Materials

Foundry:

Introduction to Casting Processes, Basic Steps in Casting Process, Pattern, Types of Patterns, Pattern allowances, Risers, Runners, Gates, Molding Sand and its composition, Sand Preparation, Molding Methods, Core Sands and Core Making, Core Assembly, Mold Assembly, Melting (Cupola) and Pouring, Fettling, Casting Defects and Remedies. Testing of Castings.

UNIT-III

Cold Working (Sheet Metal Work): Sheet Metal Operations, Measuring, Layout Marking, Shearing, Punching, Blanking, Piercing, Forming, Bending and Joining - Advantages and Limitations. Hot Working Processes: Introduction to Hot Working, Principles of Hot Working Processes, Forging, Rolling, Extrusion, Wire Drawing.

Introduction to Machine Tools: Specifications and Uses of commonly used Machine Tools in a Workshop such as Lathe, Shaper, Planer, Milling, Drilling, Slotter, Introduction to Metal Cutting. Nomenclature of a Single Points Cutting Tool and Tool Wear, Mechanics of Chips Formation, Type of Chips, Use of Coolants in machining.

UNIT-IV

Welding: Introduction to Welding, Classification of Welding Processes, Gas Welding: Oxy-Acetylene Welding, Resistance Welding; Spot and Seam Welding, Arc Welding: Metal Arc, TIG & MIG Welding, Welding Defects and Remedies, Soldering & Brazing, Comparisons among Welding, Brazing and Soldering
Surface Finishing Processes, Introduction to Heat Treatment Processes, Estimating of Manufacturing Cost

Text Books:

1. Workshop Technology Vol. I & II - Hazra & Chaudhary, Asian Book Comp., New Delhi.
2. Process and Materials of Manufacture -- Lindberg, R.A. Prentice Hall of India, New Delhi.
3. Principles of Manufacturing Materials and Processes - Campbell, J.S.- McGraw- Hill.

Reference Books:

1. Manufacturing Science - Amitabha Ghosh & Ashok Kumar Malik, - East-West Press.
2. Manufacturing Process and Systems - Ostwald, Munoz, John Wiley.
3. Workshop Technology, Vol. 1, 2 & 3 – Chapman, WAJ, Edward Arnold.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

EE101B

PRINCIPLES OF ELECTRICAL ENGINEERING

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

D.C. Circuit Analysis:

Basic concepts of electric circuits, Ohm's Law, Independent energy sources, Dependent energy sources, passive elements, circuit properties, Kirchoff's laws, applications of Kirchoff's laws, Nodal and Loop methods of Analysis, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Reciprocity Theorem, Maximum Power Transfer Theorem, Millman's Theorem, Star-Delta or delta-star transformation, Applications of network theorems P-spice for DC circuit analysis.

UNIT-II

A.C. Circuits:

Sinusoidal signal, Phasors, polar & rectangular, exponential & trigonometric representations, Resistance, Inductance & Capacitance components, behavior of these components in A.C. circuits, Phasor relationship for circuit elements, Impedance & Admittance, instantaneous & peak values, average and RMS values, active power, reactive power, apparent power, power factor, complex power, behavior of AC series, parallel circuits, RL, RC & RLC A.C. circuits (series and parallel), Resonance-series and parallel R-L-C Circuits, Q-factor, cut-off frequencies & bandwidth.

UNIT-III

Three Phase Circuits:

Phase and line voltages and currents, balanced star and delta circuits, power equation, measurement of power by two wattmeter method.

Measuring Instruments:

Principle, Construction & working of moving coil type voltmeter & ammeter, moving iron type voltmeter & ammeter, Electrodynamic type wattmeter, single-phase induction type energy meter.

UNIT-IV

Transformers:

Ampere's law, Mutual Inductance, Construction, Working principle and phasor diagrams of Single-phase Transformer, Emf equation, Equivalent circuit, testing, efficiency and regulation of single-phase transformer, Auto transformer.

Rotating Machines:

Construction and working principle of dc motor and generator and its characteristics. Construction and working principle of 3-phase Induction machines & 3-phase synchronous machines, torque-speed characteristics.

Text Books:

1. Basic Electrical Engg (2nd Edition) : Kothari & Nagarath, TMH
2. Electrical Technology (Vol-I): B.L Theraja & A K Theraja, S.Chand
3. Fundamental of electrical Engineering, Rajendra Prasad, PHI, Edition 2005.
4. Basic Electrical Engineering, V.N Mittle & Arvind Mittal, TMH, Second Edition
5. Basic Electrical Engineering, S.N. Singh, PHI

Reference Books:

1. Electrical Engineering Fundamentals: Deltoro, PHI
2. Basic Electrical Engineering (TMH WBUT Series), Abhijit Chakrabarti & Sudipta Nath, TMH
3. Basic Electrical Engineering, T.K. Nagsarkar & M.S. Sukhija, Oxford
4. Introduction to Electrical Engineering, M.S. Naidu & S, Kamakshaiah, TMH
5. Basic Electrical Engineering, J.J. Cathey & S.A Nasar, TMH, Second Edition.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

ME103B

ENGINEERING GRAPHICS AND DRAWING

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
1	-	4	3

Class Work	:	40 Marks
Theory	:	60 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Basics of Engineering Graphics and Drawing :

Drawing Papers, Minidrafter, Pencils. Drawing Paper Layout, Title Block, Types of Lines, Lettering, Dimensioning, types of Projections; First and Third Angle systems of Orthographic Projections. Projection of Points in different Quadrants.

Projections of Straight Lines:

Contained by both Reference Planes, Contained by one and inclined to other Reference Plane, Contained by one and Parallel to other Reference Plane, Parallel to both Reference Plane, Perpendicular to one of the Reference Planes, Inclined to one Plane but Parallel to the other Reference Planes, Inclined to both the Reference Planes, True Length of a Line and its Inclination with Reference Planes, Traces of a Line.

UNIT-II

Projections of Planes:

Parallel to one Reference Plane, Inclined to one Plane but Perpendicular to the other, Inclined to both Reference Planes.

Projections of Polyhedral Solids and Solids of Revolution:

In simple positions with axis perpendicular to a Reference Plane, with axis parallel to both Reference Planes, with axis parallel to one Reference Plane and inclined to the other Reference Plane, Projections of sections of Prisms, Pyramids, Cylinders and Cones. True Shape of Sections of Solids.

UNIT-III

Development :

Of Surfaces of various Solids objects.

Free Hand Sketching :

Orthographic Views from Isometric, Views of Simple Machine Components such as Brackets, Bearing Blocks, Guiding Blocks and Simple Couplings and Pipe Joints.

UNIT-IV

Isometric Projections :

Introduction, Isometric Scale, Isometric Views and Drawing of various Plane and Solids objects. Perspective drawing and oblique view.

Orthographic Drawings :

Threads, Bolts, Nuts and Washers, Bolted, Riveted and Welded Joints

Text Books:

1. Engineering Drawing: MB Shah and BC Rana, Pearsons
2. Engineering Graphics and Drafting: P.S. Gill, S.K. Kataria and Sons.

Reference Books:

1. A Text Book of Engineering Drawing: RK Dhawan, S Chand & Company
2. Engineering Drawing Plane and Solid Geometry: N.D. Bhatt, Charotar Publishing House.

Note:

1. For class work, the students shall be assigned to prepare at least ten drawing sheets covering all units and each topic of the syllabus.
2. For practical examination, the examiner will set a question paper containing total eight questions, two questions from each unit covering each topic of the syllabus; students are required to attempt five questions at least one from each unit.

PHY103B**PHYSICS LAB - I**

B. Tech. Semester – I (Common for all Branches)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To find the wavelength of sodium light by using Newton's rings experimental setup.
2. To find the wavelength of sodium light by Fresnel's biprism experimental setup
3. To find the wavelength of various colours of white light with the help of a plane transmission diffraction grating.
4. To find the refractive index and Cauchy's constants of a prism by using spectrometer.
5. To find the wavelength of sodium light by using Michelson interferometer.
6. To find the resolving power of a telescope.
7. To find the pitch of a screw using He-Ne laser.
8. To find the specific rotation of sugar solution by using a polarimeter.
9. To compare the capacitances of two capacitors by De'sauty bridge.
10. To find the flashing and quenching potentials of Argon and also to find the capacitance of unknown capacitor.
11. To study the photo conducting cell and hence to verify the inverse square law.
12. To find the temperature co-efficient of resistance by using platinum resistance thermometer and Callender and Griffith bridge.
13. To find the frequency of A.C. mains by using sonometer.
14. To find the velocity of ultrasonic waves in non-conducting medium by piezo-electric method.
15. To determine the value of Stefan's constant.
16. To find the coefficient of thermal conductivity of a good conductor by Searle's method.
17. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton method.

Recommended Books :

1. Advanced Practical Physics – B.L. Worshnop and H.T. Flint (KPH)
2. Practical Physics – S.L. Gupta & V. Kumar (Pragati Prakashan).
3. Advanced Practical Physics Vol.I & II – Chauhan & Singh (Pragati Prakashan).

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ME107B**WORKSHOP PRACTICE**
B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
-	-	4	2

Class Work	:	40 Marks
Practical	:	60 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS/ JOBS:

1. To study different types of measuring tools/instruments used in metrology and determine least counts of vernier calipers, micrometers and vernier height gauges.
2. To study different types of machine tools (lathe, shaper, planer, slotter, milling, drilling machines).
3. To prepare a job on a lathe involving facing, outside turning, taper turning, step turning, radius making and parting-off.
4. To study different types of fitting tools and marking tools used in fitting practice.
5. To prepare lay out on a metal sheet by making and prepare rectangular tray, pipe shaped components e.g. funnel.
6. To prepare joints for welding suitable for butt welding and lap welding.
7. To study various types of carpentry tools and prepare simple types of at least two wooden joints.
8. To prepare simple engineering components/ shapes by forging.
9. To prepare mold and core assembly, to put metal in the mold and fettle the casting.
10. To prepare horizontal surface/ vertical surface/ curved surface/ slots or V-grooves on a shaper/ planner.
11. To prepare a job involving side and face milling on a milling machine.
12. To study of CNC lathe, CNC Milling and EDM Machines.

Note:-

1. At least ten experiments/ jobs are to be performed/ prepared by students in the semester.
2. At least 8 experiments/ jobs should be performed / prepared from the above list, remaining two may either be performed/ prepared from the above list or designed and set as per the scope of the syllabus of Manufacturing Processes.

EE103B

PRINCIPLES OF ELECTRICAL ENGINEERING LAB

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To verify KCL and KVL.
2. To verify Thevenin's & Norton's Theorems.
3. To verify maximum power transfer theorem in D.C. Circuit.
4. To verify reciprocity theorem.
5. To verify Superposition theorem.
6. To study frequency response of a series R-L-C circuit and determine resonant frequency & Q- factor for various Values of R, L, C.
7. To study frequency response of a parallel R-L-C circuit and determine resonant frequency & Q -Factor for various values of R, L, C.
8. To perform direct load test of a transformer and plot efficiency Vs load characteristic.
9. To perform direct load test of a D.C. shunt generator and plot load voltage Vs load current curve.
10. To study various type of meters.
11. Measurement of power by three voltmeters / three ammeters method.
12. Measurement of power in a three phase system by two watt meter method.

Note:

1. At least 10 experiments are to be performed by students in the semester.
2. At least 8 experiments should be performed from the above list; remaining two experiments may either be performed from the above list or designed and set by the Dept. as per the scope of the syllabus of EE101B

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES & EXAMINATIONS
B.Tech. 1st YEAR (SEMESTER – II) (COMMON FOR ALL BRANCHES)
Credit Based Scheme w.e.f. 2012-13

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1.	MATH102B	MATHEMATICS-II	3	1	-	25	75	-	100	4	3
2	PHY102B	ENGINEERING PHYSICS-II	3	1	-	25	75	-	100	4	3
3	ME101B	MANUFACTURING PROCESSES (Gr-B)	3	1	-	25	75	-	100	4	3
	CH101B	ENGINEERING CHEMISTRY(Gr-A)	3	1	-	25	75	-			
4	EE101B	PRINCIPLES OF ELECTRICAL ENGINEERING (Gr-B)	3	1	-	25	75	-	100	4	3
	CSE101B	INTRODUCTION TO COMPUTERS & PROGRAMMING (Gr-A)	3	1	-	25	75	-			
5	ECE102B	BASICS OF ELECTRONICS ENGINEERING	3	1	-	25	75	-	100	4	3
	BT102B	BASICS OF BIO TECHNOLOGY									
	HUM102B	ORAL COMMUNICATION SKILLS									
	CE102B	BASICS OF CIVIL ENGINEERING									
6	ME103B	ENGINEERING GRAPHICS & DRAWING (Gr-B)	1	-	4	40	-	60	100	3	3
	ME105B	ELEMENTS OF MECHANICAL ENGINEERING (Gr-A)	3	1	-	25	75	-	100	4	
7	PHY104B	PHYSICS LAB-II	-	-	2	20	-	30	50	1	3
8	ME107B	WORKSHOP PRACTICE (Gr-B)	-	-	4	40	-	60	100	2	3
	CH103B	CHEMISTRY LAB (Gr-A)	-	-	2	20	-	30	50	1	
9	EE103B	PRINCIPLES OF ELECTRICAL ENGINEERING LAB (Gr-B)	-	-	2	20	-	30	50	1	3
	CSE103B	COMPUTER PROGRAMMING LAB (Gr-A)	-	-	2	20	-	30	50		
10	ME109B	ELEMENTS OF MECHANICAL ENGINEERING LAB (Gr-A)	-	-	2	20	-	30	50	1	3
11	GP102B	GENERAL PROFICIENCY & ETHICS	1			-		50	50	2	-
Total			17	5	12	245	375	230	850	29	
Gr-B			19	6	8	230	450	170	850	30	
Gr-A											

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- Each student has to undergo a workshop of at least 4 weeks (80-100 hours) at the end of II semester during summer vacations. Out of the four weeks, two weeks would be dedicated to general skills and two weeks training for specialized discipline/ department. The evaluation of this training shall be carried out in the III semester.
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic gadgets including Cellular phones are not allowed in the examination.
- The elective course HUM102B ORAL COMMUNICATION SKILLS is deleted with effect from session 2013-14.
- All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

3.

MATH102B

MATHEMATICS - II

B. Tech. Semester -II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Matrices & its Applications :

Rank of a matrix, elementary transformations, elementary matrices, inverse using elementary transformations, normal form of a matrix, linear dependence and independence of vectors, consistency of linear system of equations, linear and orthogonal transformations, eigen values and eigen vectors, properties of eigen values, Cayley - Hamilton theorem and its applications.

UNIT-II

Ordinary Differential Equations & its Applications :

Exact differential equations. Equations reducible to exact differential equations. Applications of Differential equations of first order & first degree to simple electric circuits, Newton's law of cooling, heat flow and orthogonal trajectories. Linear differential equations of second and higher order. Complete solution, complementary function and particular integral, method of variation of parameters to find particular Integral, Cauchy's and Legendre's linear equations, simultaneous linear equations with constant co-efficients. Applications of linear differential equations to simple pendulum, oscillatory electric circuits.

UNIT-III

Laplace Transforms and its Applications :

Laplace transforms of elementary functions, properties of Laplace transforms, existence conditions, transforms of derivatives, transforms of integrals, multiplication by tn , division by t . Evaluation of integrals by Laplace transforms. Laplace transform of Unit step function, unit impulse function and periodic function. Inverse transforms, convolution theorem, application to linear differential equations and simultaneous linear differential equations with constant coefficients.

UNIT-IV

Partial Differential Equations and Its Applications :

Formation of partial differential equations, Lagrange's linear partial differential equation, First order non-linear partial differential equation, Charpit's method. Method of separation of variables and its applications to wave equation and one dimensional heat equation, two dimensional heat flow, steady state solutions only.

Text Books :

1. Advanced Engg. Mathematics F Kreyszig
2. Higher Engg. Mathematics B.S. Grewal

Reference Books :

1. Differential Equations – H.T.H. Piaggio.
2. Elements of Partial Differential Equations – I.N. Sneddon.
3. Advanced Engineering Mathematics – R.K. Jain, S.R.K. Iyengar.
4. Advanced Engg. Mathematics – Michael D. Greenberg.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

PHY102B**ENGINEERING PHYSICS – II**
B. Tech. Semester -II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I**ELECTRODYNAMICS & QUANTUM PHYSICS :**

Introduction, Displacement current, Equation of continuity, Gauss's Law in dielectric, applications of Gauss's law, Maxwell's equations (both differential and integral form), plane e.m. wave equations in free space, dielectric and conducting medium; Poynting vector.

Difficulties with Classical physics, Introduction to quantum mechanics-simple concepts, Black Body radiations, Planck's Law of radiation and its limitations, Group velocity and phase velocity, Schrodinger wave equations, Application of Schrodinger Equations (Particle in a box).

UNIT-II**CRYSTAL STRUCTURE:**

Space Lattice, unit cell and translation vectors, Miller indices, Bravais lattice structure in 3D, simple crystal structure (NaCl, ZnS and CsCl₂), Elementary idea of reciprocal lattice, Ewald Construction, Experimental x-ray diffraction method, Laue method, powder Method.

FREE ELECTRON THEORY:

Elements of classical free electron theory, Drude's Theory of Conduction and its limitations, quantum theory of free electrons, Fermi level, Density of states, Fermi-Dirac distribution function, Thermionic emission, Richardson's equation.

UNIT-III**BAND THEORY OF SOLIDS :**

Origin of energy bands, Kronig, Penney Model (qualitative), E-K diagrams, Brillouin Zones, Concept of effective mass and holes, Classification of solids into metals, Semiconductors and insulators, Fermi energy and its variation with temperature, Conduction in Intrinsic and Extrinsic Semiconductors. Hall Effect and its Applications.

UNIT-IV**SUPERCONDUCTIVITY & NANOSCIENCE:**

Introduction to superconductivity, Critical temperature, Meissner Effect, Types of Superconductor, London Equations, penetration depth and coherence length, BCS Theory(qualitative ideas), High temperature superconductors.

Concept of Nano-materials, Size dependence of band gap, Top-down and bottom-up approach for preparing nano-materials, MEMS & NEMS, Properties and applications of Fullerene, Graphene, CNT, Nanowires, Nano-composites, Quantum dots.

Text Books :

1. Solid State Physics – S.O.Pillai (6th Edition, New Age).
2. Quantum Mechanics – Ghatak & Loknathan.
3. Fundamentals of Solid State Physics – B.S.Saxena, R.C.Gupta & P.N.Saxena (Pragati Prakashan).
4. Solid State Physics by H. Ibach & H. Luth, Springer, Berlin.
5. Engineering Physics by H.K Malik and A.K. Singh (Tata McGraw Hill).
6. Engineering Physics by S.P. Taneja (Chand Pub.)

Reference Books :

1. Introduction to Solid State Physics (VII Ed.) - Charles Kittel (John Wiley).
2. Quantum Mechanics – Powell and Crasemann (Oxford & IBH)
3. Classical Electrodynamics by S.P. Puri (Narosa)
4. Nano-technology- Molecularly Designed Materials: G. M. Chow & K. E. Gonsalves (American Chemical society).

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus.
2. The students will be required to attempt only 5 questions selecting at least one question from each unit.

CH101B

ENGINEERING CHEMISTRY B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Thermodynamics:

Second law, concept of entropy, entropy change for ideal gas, free energy and work functions, free energy change, chemical potential, Gibb's Helmholtz equation, Clausius –Clapeyron equation. Related numerical problems with above topics.

Phase-rule:

Terminology, Derivation of Gibb's Phase Rule equation, One component system (water system), Two components systems, system with Eutectic point (Pb-Ag), system with congruent melting point (Zn-Mg), system with incongruent melting point (Na-K), Applications of above systems. Elementary idea of Zone refining and Zone leveling.

UNIT-II

Water and its treatment:

Hardness of water and its determination, units of hardness, alkalinity of water and its determination, related numerical problems, water softening, Ion-exchange process, mixed bed demineralisation, desalination of water by using different methods.

Corrosion and its prevention:

Galvanic & concentration cell, dry and wet corrosion, Electrochemical theory of corrosion, Galvanic corrosion, Pitting corrosion, differential aeration corrosion, water line corrosion, stress corrosion, factor effecting corrosion, Preventing measures, electroless Plating of Ni and Cu.

UNIT-III

Polymers and Polymerization:

Organic polymers, polymerisation, various types of polymerisation, effect of structure on properties of polymers, preparation properties and technical applications of thermoplastics (PE, PVC, PVA, Teflon), thermosets (PF, UF & MF) and elastomers (Synthetic Rubber including SBR, Buna-S, Buna-N, Thiokol & Polyurethanes), Inorganic polymers (general properties), Glass transition temperature, silicones

Composite Materials & their application:

optical fibres, Fullerenes, organic electronic material, composite materials & their classification, constituents of composites, role of interface in composite performance and durability, fiber –Reinforced composite, advantage and applications of composites.

UNIT-IV

Lubricants and fuels:

Friction, mechanism of lubrication, classification and properties of lubricants and selection of Lubricants, Definition and classification of fuel, Calorific value and methods of its determination.

Analytical methods:

Thermal methods; Principle, method and application of TGA, DTA & DSC, interaction of E.M radiation with a molecule and origin of spectrum, Vibrational & electronic spectra (Experimental details are excluded), spectrophotometry, conductometric titrations, elementary discussion on Flame-photometry.

Text / Reference Books:

1. Physical Chemistry, P.W. Atkins (ELBS, Oxford Press).
2. Physical Chemistry, W.J. Moore (Orient-Longman).
3. Instrumental methods of Chemical Analysis, MERITT & WILLARD (East-West Press).
4. Chemistry in Engineering & Tech., Vol.I & II, Rajaram, Kuriacose (TMH)
5. Engineering Chemistry, ShashiChawla (DhanpatRai and co.)
6. Engineering Chemistry, P.C. Jain, Monica Jain (DhanpatRai & Co.).
7. Engineering chemistry, S.S Dara (S.chand&co.)

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

CSE101B

INTRODUCTION TO COMPUTERS AND PROGRAMMING

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

An introduction of Computer System:

Anatomy of a digital Computer, Different Units of Computer System, Classification of Computer Systems, Radix Number systems. Binary codes: BCD, Gray, EBCDIC, ASCII

Operating System:

Operating System Concepts, Operating System services, Types of Operating Systems.
Introduction to PC Operating Systems: Unix/Linux, DOS, Windows.

UNIT-II

Programming Languages and algorithms:

Machine, Assembly and High Level Language; Assembler, Linker, Loader, Compiler, Interpreter, debuggers, Programming fundamentals: problem definition, algorithms, flowcharts and their symbols

Computer Networks:

Basic concepts of Computer Networks, Working of Internet and its Major features. Network Topologies: Bus, Star, Ring, Hybrid, Tree, Complete, Irregular; Types of Networks: LAN, MAN and WAN.

Electronic Mail: advantages and disadvantages, e-mail addresses, message components, message composition, mailer features, E-mail inner workings, E-mail management, Newsgroups, mailing lists, chat rooms.

UNIT-III

Basics of 'C' Language :

C Fundamentals, Basic data types, local and external variables and scope, formatted input/ output, expressions, selection statements, loops and their applications; arrays, functions, recursive functions, pointers and arrays. Strings literals, arrays of strings; applications, Structures, Unions and Enumerations.

UNIT-IV

Advanced Features of 'C' Language

Preprocessor directives, macro definition, conditional compilation, storage classes, type's qualifiers, Low level programming (Bitwise operators, Bit fields in structures, other low level techniques), error handling, file operations(low level/high level).

Ampere's law, Mutual Inductance, Construction, Working principle and phasor diagrams of Single-phase Transformer, Emf equation, Equivalent circuit, testing, efficiency and regulation of single-phase transformer, Auto transformer.

Reference Books:

1. The C Programming Language by Dennis M Ritchie, Brian W. Kernigham, 1988, PHI.
2. Fundamentals of Computing and C Programming, R. B. Patel, Khanna Publications, 2010, New Delhi.
3. Information technology, Dennis P. Curtin, Kim Foley, Kunal Sen, Cathleen Morin, 1998, TMH
4. Theory and problem of programming with C, Byron C Gottfried, TMH
5. Using Computers and Information by Jack B. Rochester, 1996, Que Education & Training.
6. C Programming – A modern approach by K.N. King, 1996, WW Norton & Co.

Note:In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

ECE102B

BASICS OF ELECTRONICS ENGINEERING

B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Semiconductor Physics, Diodes and Applications:

Basic concepts, intrinsic and extrinsic semiconductors, diffusion and drift currents, Hall effect and its applications-pn junction under open circuit, reverse bias and forward bias conditions, p-n junction in the breakdown region, ideal diode, types of diodes –zener diode, varactor diode, LED and photodiode. Rectifier (half wave and full wave).

Amplifiers:

Introduction of different types of BJT amplifiers & their characteristics.

UNIT-II

Operational Amplifiers:

OP-amps, its characteristics, inverting, non-inverting, summing, averaging, scaling, difference, integrator and differentiator amplifiers. **Power**

Supplies:

Introduction and working of switched mode power supply (SMPS), voltage regulator.

UNIT-III

Digital Electronics:

Binary, Octal and Hexadecimal number system and conversion, Boolean algebra, truth tables of logic gates AND, OR, NOT, EX-OR, EX-NOR, NAND, NOR AND their implementation using diodes transistors, switches and lamps, Universal gates.

Electronic Instruments:

Transducers, Role, importance and applications of general purpose test instruments viz. multi meter (digital and analog), cathode ray oscilloscope (CRO), function/ signal generator.

UNIT-IV

Communication System:

Modulation, need of modulation, Block diagram of basic communication system, overview of AM, FM and PM.

Microprocessor:

Basics of 8085 & its architecture. Instruction set, Interrupts, Addressing modes.

Reference Books :

1. Sedra A S and Smith K C. "Microelectronic Circuits" New York. Oxford University Press, New York
2. Tocci R J and widner N S "Digital Systems" – Principles and Applications", Pearson Education India, New Delhi.
3. Cooper and Helfric, "Modern Electronic Instrumentation and Measuring Techniques". Prentice Hall of India, New Delhi.
4. Boylestad and Nashelesky, "Electronic Devices and Circuit Theory", Pearson Education India, New Delhi
5. Millman and Grabel, "Microelectronics", Tata McGraw Hill
6. Millman and Halkias, "Electronics Devices and Circuits". Tata McGraw Hill
7. Kennedy and Davis, "Electronic Communication Systems", Tata McGraw Hill
8. Ramesh S. Gaonkar, "Microprocessor Architecture, Programming, and Applications with the 8085", Penram International Publishing.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus.
2. The students will be required to attempt only 5 questions selecting at least one question from each unit.

BT102B

BASICS OF BIOTECHNOLOGY

B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Introduction:

Nature and scope of Biotechnology.

Cell Structure and Function:

Prokaryotes and Eukaryotes- cell wall, cell membrane, nucleus, mitochondria, chloroplast, ribosome, vacuoles, bacteria and viruses: brief descriptions.

Biomolecules: A brief account of structure and functions of carbohydrates, lipids, proteins.

UNIT– II

Cell Division:

Mitosis and meiosis

Genes and chromosomes:

Classical- Mendel's laws and chromosomes, nature of genetic material, DNA and RNA as genetic material, concept of organization of genetic material into chromosomes.

DNA replication: DNA polymerases, replication mechanism.

UNIT-III

Gene Expression:

Central dogma, genetic code, gene expression-a brief account of transcription and translation, housekeeping genes, mutations and their molecular basis.

Genetic Engineering:

An introduction to genetic engineering: cloning (vectors, enzymes), DNA and genomic libraries, transgenics, DNA fingerprinting, genomics.

UNIT – IV

Applications of Biotechnology :

Bioprocess and fermentation technology, cell culture, enzyme technology, biological fuel generation, single cell protein, sewage treatment, environmental biotechnology, biotechnology and medicine, biotechnology in agriculture & forestry industry, food and beverage technology, production of biological inventions, safety in biotechnology.

Text/ Reference Books:

1. Biotechnology, Smith, Cambridge Press.
2. Modern Concepts of Biotechnology, H. D. Kumar, Vikas Publishing House (P) Ltd.
3. Elements of Biotechnology, P. K. Gupta, Rastogi Publications.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

HUM102B

ORAL COMMUNICATION SKILLS

B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Essentials of Speaking Skills:

Familiarity with phonetic sound symbols; Transcription of simple words using International Phonetic Alphabet; Use of dictionary to cultivate standard pronunciation and develop phonetic discrimination

UNIT II

Speaking Skills:

Need and Significance of Effective Oral Communication; Practice of Conversation – Interpersonal and Telephonic Conversation; Formal Group Discussion

UNIT III

Non-Verbal Elements in Oral Communication Skills:

Reading Face, eyes, gesture and body posture, time, space and culture in communicative situations; practicing verbal and non-verbal communication (Body Language) to acquire effective Oral communication.

UNIT IV

Listening Skills:

Essentials of Good Listening, Types of Listening, Barriers in Effective listening, Exercises in Listening to Talk Shows, Speech Reviews; Practice in English Sounds and Speech using RP/MRP.

RECOMMENDED READING:

1. Buck, Gary. *Assessing Listening*. Delhi: Foundation Books (Cambridge University Press), 200.
2. Balasubramanian, T. *A Textbook of English Phonetics for Indian Students*. Chennai: MacMillan, 1981 (rpt 2007).
3. Gangal, J.K. *A Practical Course in Spoken English*. New Delhi: PHI, 2011
4. Raman, Meenakshi and Sangeeta Sharma. *Communication Skills*. Delhi: OUP, 2011
5. Ribbens, Geoff and Richard Thompson. *Body Language*. New York: Hodder & Stoughton, 2007.

Note:

In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

CE102B

BASICS OF CIVIL ENGINEERING

B. Tech. Semester – II (OPTIONAL- Common for all Branches)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

Materials for Construction:

Stones, Sands, Lime, Bricks, Timber, Steel their Classification and Properties. Different Types of Cement and their Properties, manufacturing of Cement, Concrete, and properties of Concrete, Ingredient of Concrete and Their Functions
Component parts of a Building, Foundation, Masonry Works, Doors and Windows, Floors, Roofs, DPC, Building Services

UNIT- II

Surveying , Introduction to Surveying:

Definition, importance, classification of surveys, Principle, Leveling: definitions of terms used in leveling, different types of levels, Contours, Definition, representation of reliefs, horizontal equivalent, contour interval, characteristics of contours, methods of contouring, contour gradient, uses of contour maps, Introduction to GIS, GPS and Remote sensing.

UNIT-III

Transportation:

Various modes and means of transportation, Different types of transport systems, Importance of road transport, History of Road Development, Indian Road Congress. Main features of 20 years road development plans in India, PMGSY
Sources of power, estimation of water power, water budget equation, necessity and importance of harnessing small hydro power plants, Dams, Types of Dams, Location and Impact assessment of a Dam project.

UNIT – IV

Geotechnical Engineering:

History and its applications, Soil Properties, Classification of Soil, Geotechnical and Geophysical investigation of Soil.
Irrigation Engineering: Necessity, advantages, disadvantages, impact of irrigation on human environment, need and development of irrigation in India.

Text Books:

1. Basic Civil Engineering, Satheesh Gopi, Pearson.
2. Basic Civil Engineering, Dr. B.C. Punmia, Ashok Kumar Jain, Arun Kr. Jain, Firewall Medi

Reference Books:

1. Surveying by Prof. N. Singh, Tata McGraw Hill, New Delhi
2. Basic Civil Engineering, Rakesh Beohar, Firewall Media
3. Highway Engg. by S. K. Khanna & C.e.G.Justo, Nem Chand & Bros,Roorkee
4. Water Resources Engineering by Linseley and Franzini
5. Basic Civil Engineering, L.G. Kulkarni A. D. Pawar S. P. Nitsure, Technical Publications.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

ME105B

ELEMENTS OF MECHANICAL ENGINEERING

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Thermodynamics:

definitions in thermodynamics, fundamentals of first and 2nd law of thermodynamic- concept of internal energy, enthalpy and entropy, heat pump and refrigerator, elementary numerical problems.

Properties of Steam & Boilers:

properties of steam, use of steam tables and mollier diagram, measurement of dryness fraction of steam, Carnot and Rankin cycle, elementary numerical problems. Classification of boilers, Comparison of water and fire tube boilers mounting and accessories with their functions, Constructional and operational details of Cochran and Babcock and Wilcox boilers, elementary numerical problems.

Steam Turbines and Condensers:

Classification of turbines and their working principles, Types of condensers and their uses.

UNIT-II

I.C. Engines and Gas Turbines:

Introduction, Classification, Constructional details and working of two-stroke and four-stroke diesel and petrol engines, Efficiency of Otto & Diesel cycles, Working principle of gas turbine, elementary numerical problems.

Refrigeration and air conditioning:

Rating of refrigeration machine, coefficient of performance, simple vapor compression cycle, fundamentals of air conditioning, use of Psychrometric charts.

UNIT-III

Water Turbines and Pumps : Introduction, Classification, Construction details and working principle of Pelton, Francis and Kaplan turbines, Classification of water pumps and construction detail & working principle of centrifugal pump.

Measuring Instruments:

Principle, Construction & working of moving coil type voltmeter & ammeter, moving iron type voltmeter & ammeter, Electrodynamic type wattmeter, single-phase induction type energy meter.

UNIT-IV

Introduction to Power transmission and Devices:

Belt drive, Rope drive, Chain drive, Types of gear and Gear train, Types and function of clutches, Types and function of brakes.

Stresses and Strains:

Introduction, Concept & types of Stresses and strains, Poisson's ratio, stresses and strains in simple and compound bars under axial loading, Stress-strain diagrams, Hooks law, Elastic constants & their relationships. Concept of shear force and bending moments in beams, elementary numerical problems.

Text Books:

1. Hydraulic and Fluid Mechanics – Modi and Seth, Pub. – Standard Book House, New Delhi
2. Engineering Thermodynamics – C.P. Arora, Pub. - TMH, New Delhi
3. Thermal Engineering – A.S. Sarad, Pub. - Satya Prakashan, New Delhi.
4. Engineering Mechanics – K.L. Kumar, Pub. - TMH, New Delhi.
5. Theory of Machines – S.S. Rattan, Pub. – TMH, New Delhi.

Reference Books:

1. Strength of Materials – Popov, Pub. - PHI, New Delhi.
2. Hydraulic Machines – Jagdish Lal, Pub.- Metropolitan, Allahbad.
3. Thermal Science and Engineering – D.S. Kumar, Pub. – Kateria & Sons, New Delhi.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

PHY104B**PHYSICS LAB. - II**
B. Tech. Semester – II (Common for all Branches)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To find the low resistance by Carey - Foster's bridge.
2. To find the resistance of a galvanometer by Thomson's constant deflection method using a post office box.
3. To find the value of high resistances by Substitution method.
4. To find the value of high resistances by Leakage method.
5. To study the characteristics of a solar cell and to find the fill factor.
6. To find the value of e/m for electrons by Helical method.
7. To find the ionisation potential of Argon/Mercury using a thyratron tube.
8. To study the variation of magnetic field with distance and to find the radius of coil by Stewart and Gee's apparatus.
9. To study the characteristics of (Cu-Fe, Cu-Constantan) thermo couple.
10. To find the value of Planck's constant by using a photoelectric cell.
11. To find the value of co-efficient of self-inductance by using a Rayleigh bridge.
12. To find the value of Hall Co-efficient of semi-conductor.
13. To study the V-I characteristics of a p-n diode.
14. To find the band gap of intrinsic semi-conductor using four probe method.
15. To calculate the hysteresis loss by tracing a B-H curve.
16. To verify the Truth Table of various Logic Gates.

Recommended Books :

1. Advanced Practical Physics – B.L. Worshnop and H.T. Flint (KPH)
2. Practical Physics – S.L.Gupta & V.Kumar (Pragati Prakashan).
3. Advanced Practical Physics Vol.I & II – Chauhan & Singh (Pragati Prakashan).

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

CH103B**CHEMISTRY LAB**
B. Tech. Semester – I/II (Common for all Branches)

L T P Credits
- - 2 1

Class Work : 20 Marks
Practical : 30 Marks
Total : 50 Marks
Duration of Exam. : 3 Hrs.

LIST OF EXPERIMENTS:

1. Determination of Ca⁺⁺ and Mg⁺⁺ hardness of water sample using EDTA solution.
2. Determination of alkalinity of water sample.
3. Determination of dissolved oxygen (DO) in the given water sample.
4. To find the melting and eutectic point for a two component system by using method of cooling curve.
5. Determination of viscosity of lubricant by red wood viscometer(No. 1 & No. 2).
6. To determine Flash point & Fire point of an oil by Pensky-Marten's flash point apparatus and by Abel's closed cup apparatus..
7. To prepare Phenol-formaldehyde and urea- formaldehyde resin.
8. To find out saponification No. of an oil..
9. Determination of concentration of KMnO₄ solution spectrophotometrically.
10. Determination of strength of HCl solution by titrating it against NaOH solution conductometrically.
11. To determine amount of sodium and potassium in a given water sample by flame photometer
12. Estimation of total iron in an iron alloy.

Recommended Books :

1. A Text book on Experiments and Calculation –Engineering Chemistry by S.S.Dara, S.Chand & Company Ltd.
2. Essential of Experimental Engineering chemistry, Shashi Chawla, Dhanpat Rai Publishing Co.
3. Theory & Practice Applied Chemistry – O.P.Virmani, A.K. Narula(New Age).

Note:-

The student will be required to perform 10 experiments/exercises from the above list and any other two experiments designed by the department based on the theory course (course code CH101B Course Name Chemistry).

CSE103B

COMPUTER PROGRAMMING LAB

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Write a program to find the largest of three numbers. (if-then-else)
2. Write a program to find the largest number out of ten numbers (for-statement)
3. Write a program to find the average male height & average female heights in the class (input is in form of sex code, height).
4. Write a program to find roots of quadratic equation using functions and switch statements.
5. Write a program using arrays to find the largest and second largest no. out of given 50 nos.
6. Write a program to multiply two matrices.
7. Write a program to sort numbers using the Quicksort Algorithm.
8. Represent a deck of playing cards using arrays.
9. Write a program to check that the input string is a palindrome or not.
10. Write a program to read a string and write it in reverse order.
11. Write a program to concatenate two strings.
12. Write a program which manipulates structures (write, read, and update records).
13. Write a program which creates a file and writes into it supplied input.
14. Write a program which manipulates structures into files (write, read, and update records).

Note:

1. At least 10 experiments are to be performed by students in the semester.
2. At least 8 experiments should be performed from the above list; remaining two experiments may be given by the teacher concerned.
3. At least 5 to 10 more exercises to be given by the teacher concerned.

ME109B**ELEMENTS OF MECHANICAL ENGINEERING LAB**

B. Tech. Semester – I/II (Common for all Branches)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To study Cochran & Babcock & Wilcox boilers.
2. To study the working & function of mountings & accessories in boilers.
3. To study 2-Stroke & 4-Stroke diesel engines.
4. To study 2-Stroke & 4-Stroke petrol engines.
5. To calculate the V.R., M.A. & efficiency of single, double & triple start worm & worm wheel.
6. To calculate the V.R., M.A. & efficiency of single & double purchase winch crabs.
7. To draw the SF & BM diagrams of a simply supported beam with concentrated loads.
8. To study the simple & compound screw jacks and find their MA, VR & efficiency.
9. To study the constructional features & working of Pelton Turbine.
10. To prepare stress-strain diagram for mild steel & cast iron specimens under tension and compression respectively on a Universal testing machine.

Note:

1. Total ten experiments are to be performed in the Semester.
2. At least eight experiments should be performed from the above list. Remaining three experiments should be performed as designed & set as per the scope of the syllabus of ME – 101: Elements of Mechanical Engineering.

GP102B**GENERAL PROFICIENCY & ETHICS**
B. Tech. Semester – II (Common for all Branches)

L	T	P	Credits
1	-	-	2

Examination	:	-
Practical	:	50 Marks
Total	:	50 Marks

The purpose of this course is to inculcate a sense of professionalism in a student along with personality development in terms of quality such as receiving, responding, temperament, attitude and outlook. The student efforts will be evaluated on the basis of his/ her performance / achievements in different walks of life.

A Faculty Counselor will be attached to a group of students which will remain associated with him /her during the entire period of the degree program in the University. Each faculty member will serve as a faculty counselor. They will act like a local guardian for the students associated with him / her and will help them in terms of career guidance, personal difficulties.

A. The student will present a written report before the committee with following in view:

The student will present before the committee his/her achievements during the current academic session in the form of a written report highlighting followings:

- | | | | |
|-----|--|-------|-------------------|
| I. | Academic Performance | ----- | |
| II. | Extra Curricular Activities / Community Service, Hostel Activities | | (8 Marks) |
| III | Technical Activities / Industrial, Educational tour | | (8 Marks) |
| IV | Sports/games | | (4 Marks) |
| V | Moral values & Ethics | | (10 Marks) |

NOTE: Report submitted by the students should be typed on both sides of the paper.

B. A student will support his/her achievement and verbal & communicative skill through presentation before the committee.
(20 Marks)

C. Moral values & Ethics

Syllabus - Introduction to Value Education. Understanding ethics, value system, happiness, prosperity

A minor test / Quiz will be conducted and It will be the duty of the concerned teacher assigned to teach Moral values & Ethics to submit the awards to respective chairman of the department / Director/Principal.

The evaluation of this course will be made by the following Committee.

University Departments:

1	Chairperson of the Department	Chairman
2	Senior Most Faculty Counselor	Member
3	Vice- Chancellor's Nominee	Member

Affiliated Colleges:

1	Director/Principal	Chairman
2	Head of the Department/Sr. Faculty	Member
3	External Examiner to be appointed by the University	Member

Note: Remuneration will be paid to the external examiner only (at par with the other practical examinations).

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. II YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER III
Credit Based Scheme w.e.f. 2013-2014

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	MGT201B	ENGINEERING ECONOMICS (Common for all branches Except BT& BME) (Gr-A)	4	-	-	25	75	-	100	4	3
	GES201B	ENVIRONMENTAL STUDIES(Common for all branches) (Gr-B)	3	-	-	-	75	-	75	-	3
2	ECE201B	DIGITAL ELECTRONICS(EE, ECE, CSE,IC,EEE,common with BME,AEI in 4 th Sem.)	3	1	-	25	75	-	100	4	3
3	EE211B	NETWORK ANALYSIS AND SYNTHESIS (ECE,AEI)	3	1	-	25	75	-	100	4	3
4	ECE203B	ANALOG ELECTRONICS (BME,ECE,common with 4 TH Sem. AEI)	3	1	-	25	75	-	100	4	3
5	ECE207B	SIGNALS & SYSTEMS	3	1	-	25	75	-	100	4	3
6	CSE201B	DATA STRUCTURES (CSE,ECE,AEI)	3	1	-	25	75	-	100	4	3
7	ECE221B	DIGITAL ELECTRONICS LAB (EE, ECE, CSE,IC,EEE,common with BME,AEI in 4 th Sem.)	-	-	2	20	-	30	50	1	3
8	ECE223B	ANALOG ELECTRONICS LAB (BME,ECE, common with 4 th Sem. AEI)	-	-	2	20	-	30	50	1	3
9	EE241B	NETWORK ANALYSIS AND SYNTHESIS LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
10	CSE221B	DATA STRUCTURES LAB (CSE,ECE,AEI)	-	-	2	20	-	30	50	1	3
11	GES203B	ENVIRONMENTAL STUDIES FIELD WORK(Gr-B)	-	-	-	-	-	25	25	-	-
12	ME217B	WORKSHOP TRAINING (Common for all branches Except BT & AE)	-	-	2	50	-	-	50	2	-
Total			18	5	10	255	375	120	750	26	
Gr-B			19	5	10	280	450	120	850	30	
Gr-A											

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic Gadgets including Cellular Phones are not allowed in the examination.
- Assessment of Workshop Training (ME217B) will be based on seminar, viva-voce, report and certificate of professional training obtained by the student from in-house workshop.
- All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

MGT201B**ENGINEERING ECONOMICS**

B. Tech. Semester – III (Common for all Branches Except BT& BME)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Definition of economics: Various definitions, nature of Economic problem, Micro and macro economics- their feature and scope, production possibility curve, Economic laws and their nature. Relation between Science, Engineering Technology and Economics. Concept and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility – its practical application and importance.

UNIT II

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve. Elasticity of demand, measurement of elasticity of demand, factors effecting elasticity of demand, practical importance & application of the concept of elasticity of demand. Various concepts of cost-Fixed cost, variable cost, average cost, marginal cost, money cost, real cost, opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

UNIT III

Meaning of production and factors of production; Law of variable proportions, Law of Return to Scale, Internal and External economics and diseconomies of scale. Meaning of Market, Type of Market– perfect Competition, Monopoly, Oligopoly, Monopolistic competition (Main features of these markets).

UNIT IV

Supply and Law of Supply, Role of Demand & Supply in Price Determination and effect of changes in demand and supply on prices . Nature and characteristics of Indian economy, privatization – meaning, merits and demerits. Globalisation of India economy – merits and demerits. Elementary Concept of WTO & TRIPS agreement, Monetary Policy & Fiscal Policy.

Text Books:

1. Ahuja H.L."Micro Economic Theory" S. Chand Publication, New Delhi
2. Dewett K.K "Modern Economic Theory" S. Chand Publication, New Delhi
3. Jain T.R, Grover M.L, Ohri V.K Khanna O.P,"Economics for engineers" V.K .Publication ,New Delhi

Reference Books:

1. Jhingan M.L"Micro Economic Theory" S.Chand Publication ,New Delhi
2. Chopra P.N "Principle of Economics" Kalyani Publishers, Delhi
3. Mishra S.K "Modern Micro Economics" Pragati Publication Mumbai.
4. Dwivedi D.N "Micro Economics " Pearson Education, New Delhi.

NOTE:

1. In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.
2. The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator are prohibited in the examination.

ECE201B**DIGITAL ELECTRONICS**

B. Tech. Semester –III (EE, ECE, CSE, EEE, IC, common with BME, AEI in 4th Sem.)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I**FUNDAMENTALS OF DIGITAL TECHNIQUES :**

Digital signal, logic gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR, Boolean algebra. Review of Number systems. Binary codes: BCD, Excess-3, Gray, EBCDIC, ASCII, Error detection and correction codes.

COMBINATIONAL DESIGN USING GATES:

Design using gates, Simplifications of SOP and POS Boolean Expressions, Karnaugh map up to four variables.

UNIT II**COMBINATIONAL DESIGN USING MSI DEVICES :**

Multiplexers and Demultiplexers and their use as logic elements, Decoders, Adders / Subtractors, BCD arithmetic circuits, Encoders, Code Converters, Decoders / Drivers for display devices.

SEQUENTIAL CIRCUITS:

Flip Flops : S-R, J-K, T, D, master-slave, edge triggered, shift registers, sequence generators, Counters, Asynchronous and Synchronous Ring counters and Johnson Counter, Design of Synchronous and Asynchronous sequential circuits.

UNIT III**DIGITAL LOGIC FAMILIES:**

Switching mode operation of p-n junction, bipolar and MOS. devices. Bipolar logic families:RTL, DTL, DCTL, HTL, TTL, ECL, MOS, and CMOS logic families. Tristate logic, Interfacing of CMOS and TTL families.

SEMICONDUCTORS MEMORY DEVICES:

Memory organizations, Characteristics of memory devices, Classifications of semiconductors memories.

UNIT IV**A/D AND D/A CONVERTERS:**

Sample and hold circuit, weighted resistor and R-2R ladder D/A Converters, specifications for D/A converters.

A/D converters : Quantization, parallel-comparator, successive approximation, counting type, dual-slope ADC, specifications of ADCs.

PROGRAMMABLE LOGIC DEVICES:

PLA, PAL, FPGA and CPLDs.

Text Books :

1. Modern Digital Electronics(Edition III) : R. P. Jain; TMH
2. Digital Electronics :Green; Pearson

Reference Books:

1. Digital Integrated Electronics : Taub & Schilling; MGH
2. Digital Principles and Applications : Malvino & Leach; McGraw Hill.
3. Digital Design : Morris Mano; PHI.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

EE211B

NETWORK ANALYSIS & SYNTHESIS

B. Tech. Semester –III (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

TRANSIENT RESPONSE:

Laplace Transform: Review of properties and applications of Laplace transform of complex waveform. Transient Response of RC, RL, RLC series, parallel, series-parallel circuits to various excitation signals such as step, ramp, impulse and sinusoidal excitations using Laplace transform.

UNIT II

TWO-PORT NETWORKS:

Characteristics and parameters of two port networks, Network Configurations, short-circuit Admittance parameters, open-circuit impedance parameters, Transmission parameters, hybrid parameters, condition for reciprocity & symmetry of two-port networks in different parameters representations. Inter-relationships between parameters of two-port network sets, Inter-connection of two port networks.

UNIT III

FILTERS:

Filter fundamentals, classification of Filter, Analysis & design of prototype high-pass, prototype low-pass, prototype band-pass, and prototype band-reject Filter, m-derived low-pass & high-pass filters.

TOPOLOGY: Principles of network topology, graph matrices, network analysis using graph theory

UNIT IV

NETWORK SYNTHESIS:

Network functions, concept of poles and zeros in Network functions, Time domain behavior from the pole-zero plot., Hurwitz polynomials, Positive real functions, procedure of testing of PR functions, concept and procedure of network synthesis, properties of expressions of driving point immittances of LC networks. LC Network synthesis: Foster's I & II Form, Cauer's I & II form.

TEXT BOOKS:

1. Network Theory Analysis & Synthesis: Smarajit Ghosh; PHI.
2. Network Analysis & Synthesis: F.F.Kuo; John Wiley & Sons Inc.

REFERENCE BOOKS:

1. Introduction to modern Network Synthesis: Van Valkenburg; John Wiley
2. Network Analysis: Van Valkenburg; PHI
3. Basic circuit theory:Dasoer Kuh; McGraw Hill.
4. A Course in Electrical Circuit Analysis by Soni & Gupta; Dhanpat Rai Publication.
5. Circuit Analysis: G.K. Mithal; Khanna Publication.
6. Networks and Systems: D.Roy Choudhury; New Age International
7. Engineering Circuit Analysis; Hayat & Kemmerley TMH.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE203B

ANALOG ELECTRONICS

B. Tech. Semester –III (BME, ECE, common with 4th Sem. AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

BASIC SEMICONDUCTOR AND PN-JUNCTION THEORY:

Introduction, Atomic Structure, Covalent Bond, Metals, Insulators & Semiconductors, Effect of Temperature on Conduction, Drift Current, Donor & Acceptor Impurities in Semiconductor, Law Of Mass Action, Hall's Effect, Hall Coefficient & Mobility, Numerical.

CHARACTERISTICS OF DIODE:

PN-Junction, Construction Types, Unbiased Junction, Biased Junction, Space Charge Region, Diode Characteristics & Parameters, Diode Capacitance, Diode Resistance, DC And AC Load Lines, Diode Testing, Zener And Avalanche Breakdown Diodes, Tunnel Diode, Temperature Characteristics of Diode, Reverse Recovery Time, Switching Characteristics of Diode.

UNIT II

DIODE APPLICATIONS:

Half Wave, Full Wave Center Tapped, Full Wave Bridge(Rectification), Series Clipping Circuit, Shunt Clipping Circuit, Clamping Circuit, Bridge Voltage Doubler, Filtering Circuit Using Capacitor & Inductor.

JUNCTION TRANSISTOR:

Introduction, Construction Of Junction Transistor, Circuit Symbols, Transistor Operation, Unbiased Transistor, Operation Of Biased Transistor, Transistor Current Components, DC & AC Load Line, Operating Point, Transistor Configuration CB, CE, CC, Input/Output Characteristics, Early Effect(Base Width Modulation), Eber's-Moll-Model of Transistor, Maximum Rating of Transistor, Transistor Testing, Transistor as an Amplifier, Transistor as Oscillator.

UNIT III

BJT BIASING:

Bias Stability, Instability Due To β , Thermal Stability, Stability Factor, Fixed Biased Circuits, Effect of Emitter Resistor, Collector to Base Bias, Voltage Divide Biasing, Advantage & drawbacks of Biasing Techniques, Stability Factor calculation of Biasing Techniques, Bias Compensation by various device, Thermal Runway, Transistor Dissipation, Thermal Resistance, Condition of Thermal Stability

SMALL SIGNAL CIRCUIT:

Two Port Network, Hybrid(H-Parameter)Model, Typical Values of H-Parameter Model, Conversion of CE, CB, CC Configuration to Equivalent Hybrid Model, CB Circuit Analysis, CE circuit with & without R_E analysis, CC circuit analysis, Analysis of CE, CB & CC Configuration with approximate Hybrid Model, Miller's Theorem, Dual of Miller Theorem.

UNIT IV

HIGH FREQUENCY ANALYSIS:

Hybrid Pi Model, CE Short Circuit Gain, Frequency Response, Alpha Cut off Frequency, Gain Bandwidth Product, Emitter Follower at High Frequencies.

FET:

Introduction, The Junction FET, Basic Construction, Operation, P- Channel FET, N-Channel FET, High Frequency Model of FET, Low Frequency FET Amplifiers, Transfer Characteristics of FET, MOSFET, Enhancement Mode, Depletion Mode of FET, Circuit Symbol of MOSFET, V-MOSFET.

Reference Books:

1. Basic Electronics By Debashion DE. -- Pearson.
2. Electronics Device & Circuit, By Robert Boylestad ,Louis Nashelsky.
3. Electronics Device Circuit By David.A.Bell -- Oxford
4. Integrated Electronics By Millman Halkias -- TMH.
5. Electronics Device & Circuit By Dharam Raj Cheruku -- Pearson.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE207B

SIGNALS & SYSTEMS

B. Tech. Semester –III

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION TO SIGNAL:

Signal Definition, Classification with examples: Continuous –Time & Discrete –Time, Continuous –valued & Discrete –valued, Analog & Digital, Deterministic & Random, One Dimensional & Multi Dimensional, Single-channel & Multi Channel, Even/Symmetric & Odd/Anti symmetric signals, Causal, Non causal & Anti causal; Real & Complex, Periodic & Aperiodic, Energy & Power signals; Representation of Discrete –Time signals, Elementary Discrete Time Signals.

INTRODUCTION TO SIGNAL PROCESSING:

Design Signal Processing, Analog Signal Processing (ASP), Digital Signal Processing (DSP), Comparison of ASP & DSP, Discrete –Time Processing of Continuous –Time Signals, Basic Sampling & Reconstruction Theorem, Effect of Under sampling: Aliasing.

UNIT II

INTRODUCTION TO DISCRETE-TIME SYSTEM AND THEIR PROPERTIES:

Systems & Their Representation, Independent variable transformations: Time Shifting, Time Reversal, Time Scaling; classification of Systems: Hardware, Software & Mixed Systems; Linear & Nonlinear Systems; Static/without memory & Dynamic/ with memory Systems, Causal & Noncausal System; Invertible & Noninvertible; Stable & Unstable System, Time variant & Time Invariant Systems.

LINEAR-TIME INVARIANT(LTI) SYSTEMS AND THEIR ADVANTAGES:

Linear Time-Invariant Systems, Discrete –time Signal representation in terms of impulses, Impulse Response of Discrete Time LTI Systems, Finite Impulse Response System, Infinite Impulse Response System, LTI Systems Properties, LTI systems representation by Constant – Coefficient Difference Equation, Block Diagram Representation of First order systems described by difference equations, LTI System Characterization, Cascade & Parallel Connection of LTI Systems.

UNIT III

FOURIER SERIES REPRESENTATION FOR PERIODIC SIGNALS:

Introduction to Frequency domain Representation, Concept of frequency for analog signals and discrete –time signals, Fourier Series Representation of Periodic Signals, Convergence of the Fourier Series, Properties of Discrete-Time Fourier Series, I/P O/P Relationship for LTI Systems using Fourier Series, Filtering Concept.

DISCRETE-TIME FOURIER TRANSFORM:

Fourier Transform representation for Discrete –Time Aperiodic & Periodic Signals, Properties of Discrete –Time Fourier Transform, Basic Fourier Transform Pairs, Duality Between Time & Frequency Domains, Systems Characterized by Linear Constant Coefficient Difference Equations.

UNIT IV

Z-TRANSFORM AND ITS INVERSE:

Introduction to Z-Transform, Region of Convergence (ROC) for Z-Transform, ROC for: Finite & Infinite Duration; Causal, Anti causal & Noncausal signals; Z-Transform Properties, Inverse Z-Transform By: Contour integration, Power series expansion, Partial –Fraction Expansion, Common Z-Transform Pairs, Rational Z –Transforms: Poles & Zeros of Signals & Systems, Pole Location and Time Domain behaviour for Causal Signals.

APPLICATION OF Z-TRANSFORM:

System Function of an LTI System, Response of LTI System with Rational System Functions, Transient & Steady –State Responses, Causality & Stability of LTI Systems, Pole Zero Cancellation.

Text Books:

1. A. V. Oppenheim, A. S. Willsky, with S. Nawab "Signals & Systems", Prentice –Hall India.
2. Ghosh,"Signal & Systems",Pearson.
3. Nagrath & R. Ranjan, "Signals & Systems", TMH.

Reference Books:

1. S. Salivahanan, A. Vallavraj, C. Gnanapriya, " Digital Signal Processing", Tata McGraw Hill.
2. J. G. Proakis, D. G. Manolakis, "Digital Signal Processing, Principles, Algorithms, & Applications", Prentice –Hall India.
3. Haykin, Van Veen,"Signal & Systems",Wiley.
4. Schaum Series, "Signals & Systems",Sue & Ranjan.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

CSE201B

DATA STRUCTURES

B. Tech. Semester –III (CSE, ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Basic Terminology: Elementary Data Organization, Data Structure Operations.

Arrays: Array Definition and Analysis, Representation of Linear Arrays in Memory, Traversing of Linear Arrays, Insertion and Deletion, Single Dimensional Arrays, Two Dimensional Arrays, Multidimensional Arrays, Sparse Matrix.

Stacks and Queues: Operations on Stacks- Push, Pop, Peep, Representation of stacks. Application of stacks - polish expression and their compilation conversion of infix expression to prefix and postfix expression, Tower of Hanoi problem, Representation of Queues, Operations on queues: Create, Add, Delete, Priority Queues, Dequeues, Circular Queue.

UNIT II

Linked Lists: Singly linked lists: Representation of linked lists in memory, Traversing, Searching, Insertion into, Deletion from linked list, Polynomial Addition, Header Linked List, Doubly linked list, generalized list.

UNIT III

Trees: Basic Terminology, Binary Trees and their representation, expression evaluation, Complete Binary trees, Extended binary trees, Traversing binary trees, Searching, Insertion and Deletion in binary search trees(with and without recursion), AVL trees, Threaded trees, B trees.

Graphs: Terminology and Representations, Graphs &Multigraphs, Directed Graphs, Sequential representation of graphs, Adjacency matrices, Transversal Connected Component and Spanning trees, Shortest path

UNIT IV

Searching, Sorting methodologies: Array- Bubble sort, Selection Sort, Insertion Sort, Linear Search, Binary Search. Stack -Quick Sort, Merge Sort. Two way Merge Sort. Queue- Radix Sort.Tree – Heap Sort.

Reference Books:

1. An introduction to data structures and application by Jean Paul Tremblay & Pal G. Sorenson (McGraw Hill)
2. R.L. Kruse, B.P. Leary, C.L. Tondo, Data structure and program design in C , PHI
3. R. B. Patel, Expert Data Structures With C, Khanna Publications, Delhi, India, 3rd Edition 2008.
4. Data Structures using C by A. M. Tenenbaum, Langsam, Moshe J. Augentem, PHI Pub.
5. Data Structures and Algorithms by A. V. Aho, J. E. Hopcroft and T. D. Ullman, Original edition, Addison-Wesley, 1999, Low Price Edition.
6. Fundamentals of Data Structure by Ellis Horowitz &SartajSahni, Pub, 1983. AW
7. Data Structure and Program design in C by Robert Kruse, PHI
8. Theory and Problems of Data Structures by Jr. SeymourLipschetz, Schaum's outline by TMH.
9. Introduction to Computer Science- An algorithms approach, Jean Paul Tremblay, Richard B. Bunt, 2002, TMH.
10. Data Structure and Standard Template Library- Willam J. Collins, 2003, T.M.H

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE221B**DIGITAL ELECTRONICS LAB**

B. Tech. Semester –III (EE, ECE, CSE, IC, EEE, common with BME, AEI in 4th Sem.)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

- 1 Study of TTL gates –AND,OR,NOT,NAND,NOR,EX-OR,EX-NOR
- 2 To realize the universal property of NAND gate
- 3 To realize the universal property of NOR gate
- 4 Design & realize a given function using K-maps and verify its performance.
- 5 To verify the operation of Multiplexer & De-multiplexer.
- 6 To verify the operation of Comparators.
- 7 To perform Half adder and Full adder
- 8 To perform Half Subtractor and Full subtractor.
- 9 To verify the truth table of S-R,J-K,T & D Type flip flop .
- 10 To verify the operation of bi-directional shift register.
- 11 To study analog to digital and digital to analog converter
- 12 To design & verify the operation of 3 bit synchronous counter.
- 13 To design & verify the operation of synchronous UP/DOWN decade counter using JK flip flop & derive a seven segment display using the same.
- 14 To design & verify the operation of asynchronous UP/DOWN decade counter using JK flip flop & derive a seven segment display using the same.
- 15 Design a 4- bit shift register ,verify its operation and verify the operation of a ring counter and a Johnson counter.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE223B

ANALOG ELECTRONICS LAB

B. Tech. Semester –III (BME, ECE,common with 4th Sem. AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

- 1 Study of half wave and full wave rectifiers
- 2 Study of power supply filter.
- 3 Study of diode as a clipper and clamper.
- 4 Study of zener diode as a voltage regulator.
- 5 Study of CE amplifier for voltage,current and Power gains input,output impedances.
- 6 Study of CC amplifier as a buffer.
- 7 To study the frequency response of RC coupled amplifier.
- 8 Study of transistor as a constant current source in CE configuration .
- 9 To study characteristics of FET.
- 10 Study of FET common source amplifier.
- 11 Study of FET common drain amplifier.
- 12 Graphical determination of small signal hybrid parameter of bipolar junction transistor.
- 13 Study and design of a DC voltage doubler.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

EE241B

NETWORK ANALYSIS & SYNTHESIS LAB

B. Tech. Semester –III (ECE, AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Transient response of RC circuit.
2. Transient response of RL circuit.
3. To find the resonance frequency and Band width of RLC series circuit.
4. To calculate and verify "Z" parameters of a two port network.
5. To calculate and verify "Y" parameters of a two port network.
6. To determine equivalent parameter of parallel connections of two port network.
7. To plot the frequency response of low pass filter and determine half-power frequency.
8. To plot the frequency response of high pass filter and determine the half-power frequency.
9. To plot the frequency response of band-pass filter and determine the band-width.
10. To calculate and verify "ABCD" parameters of a two port network.
11. To synthesize a network of a given network function and verify its response.
12. Introduction of P-Spice.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

CSE221B**DATA STRUCTURES LAB**
B. Tech. Semester –III (CSE, ECE,AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Write a program to perform binary search in an array.
2. Write a program to perform binary search in an array.
3. Write a program to perform binary search in an array.
4. Write a program to perform various operations on matrices.
5. Write a program to swap two nos. using calls by value and reference.
6. Write a program to implement bubble sort.
7. Write a program to implement insertion sort.
8. Write a program to implement selection sort.
9. Write a program of link list implementation of a stack.
10. Write a program of link list implementation of a queue.
11. Write a program of array implementation of a stack.
12. Write a program of array implementation of a queue.
13. Write a program to search an element in a link list.
14. Write a program to maintain a link list.
15. Write a program to implement BST.

Note : Teacher may give 5 to 10 more exercises based on course CSE 201B

ME217B**WORKSHOP TRAINING**

B. Tech. Semester –III (Common for all branches except BT & AE)

L	T	P	Credits		Class Work	:	50 Marks
-	-	2	2	Practical	:	-	
				Total	:		50 Marks

Each student has to undergo a workshop atleast 4 weeks (80-100 hours) at the end of II semester during summer vacations. **Out of the four weeks, two weeks would be dedicated to general skills and two weeks training for specialized discipline/department.** The evaluation of this training shall be carried out in the III semester

LIST OF JOBS TO BE CARRIED OUT DURING THIS PERIOD

1. To study and prepare different types of jobs on machine tools (lathe, shaper, planer, slotter, milling, drilling machines).
2. To prepare lay out on a metal sheet by making and prepare rectangular tray, pipe shaped components e.g. funnel.
3. To prepare joints for welding suitable for butt welding and lap welding.
4. To study various types of carpentry tools and prepare simple types of wooden joints.
5. To prepare simple engineering components/ shapes by forging.
6. To prepare mold and core assembly, to put metal in the mold and fettle the casting.
7. To study of CNC lathe, CNC Milling and EDM Machines.
8. Any work assigned in electrical workshop, computer hardware/language lab, electronics workshop, biomedical hardware, automobile workshop etc.

This student will prepare job(s)/project as an individual or in a group using workshop in house infrastructure.

The student shall submit a typed report.

Training will be evaluated on the spot out of 20 marks.

The report will be evaluated in the III Semester by a Committee consisting of two teachers.

The student will interact with the committee through presentation to demonstrate his/her learning. The basis of evaluation will primarily be the knowledge and exposure of students on different kinds of Machines/instruments/tools/skills etc. The committee will evaluate out of 30 marks.

The committee shall submit the awards out of 50 marks.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. II YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER IV
Credit Based Scheme w.e.f. 2013-2014

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	MGT201B	ENGINEERING ECONOMICS (Common for all branches Except BT& BME) (Gr-B)	4	-	-	25	75	-	100	4	3
	GES201B	ENVIRONMENTAL STUDIES(Common for all branches) (Gr-A)	3	-	-	-	75	-	75	-	3
2	CSE210B	COMPUTER ARCHITECTURE & ORGANIZATION(ECE,CSE, common with 5 th Sem. AEI)	3	1	-	25	75	-	100	4	3
3	ECE204B	DIGITAL CIRCUIT AND SYSTEM	3	1	-	25	75	-	100	4	3
4	ECE206B	ANALOG ELECTRONIC CIRCUITS (BME,ECE,common with 5 th Sem. AEI)	3	1	-	25	75	-	100	4	3
5	ECE208B	POWER ELECTRONICS (ECE,common with 6 th Sem. AEI)	3	1	-	25	75	-	100	4	3
6	ECE210B	COMMUNICATION SYSTEMS(ECE,common with 3 rd Sem. CSE,6 th Sem. AEI)	3	1	-	25	75	-	100	4	3
7	ECE212B	FIELD AND WAVES(ECE,common with 3 rd Sem. AEI)	3	1	-	25	75	-	100	4	3
8	ECE224B	DIGITAL CIRCUIT AND SYSTEM LAB	-	-	2	20	-	30	50	1	3
9	ECE226B	ANALOG ELECTRONIC CIRCUITS LAB(BME,ECE,common with 5 th Sem. AEI)	-	-	2	20	-	30	50	1	3
10	ECE228B	POWER ELECTRONICS LAB (ECE,common with 6 th Sem. AEI)	-	-	2	20	-	30	50	1	3
11	ECE230B	COMMUNICATION SYSTEMS LAB(ECE,6 th Sem. AEI)	-	-	2	20	-	30	50	1	3
12	GES203B	ENVIRONMENTAL STUDIES FIELD WORK(Gr-A)	-	-	-	-	-	25	25	-	-
13	GPEC202B	GENERAL PROFICIENCY & ETHICS	1	-	-	-	-	75	75	2	-
Total			23	6	8	255	525	195	975	34	
			22	6	8	230	450	195	875	30	

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of is given in General Proficiency Syllabus.
- The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic Gadgets including Cellular Phones are not allowed in the examination.
- At the end of 4th semester each student has to undergo four weeks Professional Training of 4 weeks in an Industry/ Institute/ Professional Organization/ Research Laboratory/ training centre etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization & its evaluation shall be carried out in the 5th Semester.
- The ENVIRONMENTAL STUDIES (GES201B) & ENVIRONMENTAL STUDIES FIELD WORK (GES203B) are compulsory & qualifying courses.
- All the branches are to be divided into group A and B as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.

GES201B

ENVIRONMENTAL STUDIES

B. Tech. Semester –III/IV (Common for all Branches)

L	T	P	Credits
3	-	-	-

Class Work	:	-
Theory	:	75 Marks
Total	:	75 Marks
Duration of Exam.	:	3 Hrs.

UNIT – I

The Multidisciplinary nature of environmental studies, Definition, scope and importance. Need for Public awareness.

Natural Resources:

Renewable and non-renewable resources:

Natural resources and associated problems.

- Forest resources: Use and over-exploitation: deforestation, case studies, Timber exploitation, mining, dams and their effects and forests tribal people.
 - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
 - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - Food resources: World food problems, changes, caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
 - Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources; case studies.
 - Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

UNIT- II

Ecosystems:

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following eco-system: a) Forest ecosystem.
- b) Grassland ecosystem.
- c) Desert ecosystem.
- d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Biodiversity and its conservations:

- Introduction – Definition: Genetic, species and ecosystem diversity.
- Biogeographically classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.

UNIT – III

Environmental Pollution:

Definition, causes, effects and control, measures of:

- Air pollution
 - Water pollution
 - Soil pollution
 - Marine pollution
 - Noise pollution
 - Thermal Pollution
 - Nuclear hazards • Solid waste management: Causes effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
 - Pollution case studies.
 - Disaster management: Floods, earthquake, cyclone and landslides.

UNIT – IV

Social issues and the Environment:

- a) From unsustainable to sustainable development
- b) Urban problems related to energy
- c) Water conservation, rain water harvesting, watershed management
- d) Resettlement and rehabilitation of people; its problems and concerns, case studies
- e) Environmental ethics: Issues and possible solutions
- f) Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Case studies
- g) Wasteland reclamation
- h) Consumerism and waste products
- i) Environment Protection Act
- j) Air (Prevention and Control of Pollution) Act
- k) Water (Prevention and Control of Pollution) Act
- l) Wildlife Protection Act
- m) Forest Conservation Act
- n) Issues involved in enforcement of environmental legislation
- o) Public awareness

Human population and the Environment.

Population growth, variation among nations.

Population explosion – Family Welfare Programme.

Environment and human health.

Human Rights.

Value Education.

HIV/ AIDS.

Woman and Child Welfare.

Role of Information Technology in Environment and human health.

Case Studies.

REFERENCES:

1. Agarwal, K.C. 2001, Environmental Biology, Nidi Pub. Ltd. Bikaner.
2. Bharucha, Franch, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380013, India .
3. Brunner R.C. 1989, Hazardous Waste Incineration, Mc. Graw Hill Inc. 480p.
4. Clark R.S., Marine Pollution, Slanderson Press Oxford (TB).
5. Cunningham, W.P. Cooper, T.H. Gorchani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Pub. House, Mumbai. 1195p.
6. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
7. Down to Earth, Centre for Science and Environment @.
8. Gleick, H.P., 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute, Oxford Univ., Press 473p.
9. Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R).
10. Heywood, V.H. & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
11. Jadhav, H & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, Helhi 284p.
12. Mckinney, M.L. & Schoch, RM 1996, Environmental Sciences Systems & Solutions, Web enhanced Edition 639p.
13. Mhaskar A.K., Mater Hazardous, Tekchno-Sciences Publications (TB).
14. Miller T.G. Jr. Environmental Science, Wadsoworth Publishing Co. (TB).
15. Odum, E.P. 1971, Fundamentals of Ecology, W.B. Saunders Co. USA, 574p.
16. Rao M.N. & Dutta, A.K. 1987, Waste Water Treatment. Oxford & IBH Publ. Co. Pvt. Ltd., 345p
17. Sharma, B.K., 2001, Environmental Chemistry, Goel Publ. House, Meerut.
18. Survey of the Environment, The Hindu (M).
19. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Sciences (TB).
20. Trivedi, R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II Enviro Mdiea (R).
21. Trividi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol I and II Enviro Media (R).
22. Trividi R.K. and P.K. Goel, Introduction to air pollution, Techno Sciences Pub. (TB).
23. Wagner K.D., 1998, Environmental Management, W.B. Saunders Co. Philadelophia, USA 499p.
24. A text bok environmental education G.V.S. Publishers by Dr. J.P. Yadav.

(M) Magazine (R) Reference (TB) Textbook

Note:

1. In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.
2. The awards of this paper shall not be counted in the award of the Degree/DMC.

CSE210B

COMPUTER ARCHITECTURE & ORGANIZATION

B. Tech. Semester – IV (ECE,CSE,common with 5th Sem. AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

General System Architecture:

Classification of computers (Based on Computation methodology(Analog, digital, hybrid), based on generations, based on size & capability, based on Flynn's criteria); Multilevel viewpoint of a machine: digital logic, micro architecture, ISA, operating systems, high level language ; Register Transfer language; Computer Buses (basic design using multiplexers), Bus width, Bus clocking(synchronous , asynchronous), bus arbitration, Bus examples(ISA bus, PCI bus, Universal serial bus) ; Computer Arithmetic ,Addition , subtraction (signed magnitude , signed 2's complement , Multiplication (Booth's algorithm).

UNIT II

CPU Organization:

CPU Architecture types (accumulator, register, stack, memory/ register) Instruction cycle (Fetch-Decode-Execute); Instruction set based classification of processors (RISC, CISC, and their comparison); Addressing modes(register, immediate, direct, indirect, indexed); Operations in the instruction set; Arithmetic and Logical, Data Transfer, Control Flow; Instruction set formats (fixed, variable, hybrid) .

UNIT III

Input /Output & Control Unit:

Input Output Interface , Asynchronous data transfer (Strobe control, handshaking , serial transfer); Serial Vs parallel data transmission;Modes of data transfer(Programmed I/O, Interrupt driven, Direct Memory access (DMA)).

Control Unit design:- Control unit design methods (hardwired & microprogrammed) Control Memory, Address Sequencing, Micro instructions.

UNIT IV

Memory Organization:

Memory device characteristics(access/ cycle time, cost per bit, volatility , storage density) ;Memory hierarchy ;Main memory Design (Semiconductor RAM & ROM organization, memory expansion, Static & dynamic memory types , their comparison); Associative memory Design ,Match logic ,Locality of reference principle(Temporal & Spatial),Cache mapping(Direct , associative , set associative); Cache writing policies (Copy-Back , Write-through); Virtual Memory(Address space , memory space , Address mapping using pages , Page replacement).

Text Books:

1. Computer System Architecture by M. Mano, Prentice-Hall.
2. Structured Computer Organisation by A.S. Tanenbaum, 6th edition, Prentice-Hall of India, Eastern Economic Edition

Reference Books:

1. Computer Organization, 5th Edi, by Carl Hamacher, Zvonko Vranesic,2002, SafwatZaky.
2. Computer Organization and Design, 2nd Ed., by David A. Patterson and John L. Hennessy, Morgan 1997, Kauffmann.
3. Computer Architecture and Organization, 3rd Edi, by John P. Hayes, 1998, TMH
4. Computer Organisation& Architecture: Designing for performance by W. Stallings, 4th edition, 1996, Prentice-Hall International edition.

Note:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE204B

DIGITAL CIRCUIT & SYSTEMS

B. Tech. Semester –IV

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

NUMBER SYSTEM AND CODES:

Number System, Binary Codes, Boolean Algebras, Sets, Relations and Lattices.

MINIMISATION OF SWITCHING FUNCTIONS:

Five and Six variable Karnaugh map, Quine McCluskey and VEM Methods of Simplifications

UNIT II

LOGICAL DESIGN:

Design with Basic logical Gates, logic Design with Integrated Circuits, NAND and NOR Circuits, Design of High- Speed Adders

FUNCTIONAL DECOMPOSITION AND SYMMETRIC FUNCTIONS:

Functional Decomposition, Symmetric Networks, Identification of Symmetric Functions, Introduction to Threshold logic, Synthesis of Threshold Networks.

UNIT III

SYNCHRONOUS SEQUENTIAL CIRCUITS:

Sequential Circuits, The Finite State Model-Basic Definitions, Memory Elements and Their Excitations Functions, Synthesis of Synchronous Sequential Circuits.

CAPABILITIES, MINIMISATION. AND TRANSFORMATION OF SEQUENTIAL MACHINES:

The Finite State Model-Further Definitions, Capabilities and limitations of Finite State Machines, State Equivalence, and Machine Minimization, Simplification of Incompletely Specified Machines.

UNIT IV

ASYNCHRONOUS SEQUENTIAL CIRCUITS:

Fundamental- Mode Circuits, Synthesis, State Assignment in Asynchronous Sequential Circuits.

STRUCTURE OF SEQUENTIAL CIRCUITS:

State Assignments using Partitions, The Lattice of Closed Partitions, and Reduction of the output Dependency.

Text Books :

1. Modern Digital Electronics (Edition III): R. P. Jain; TMH
2. Switching and Finite Automation Theory: Z.Kohavi; TMH

Reference Books:

1. Introduction to Logic Design: MARKOVITZ ; TMH
2. Digital Design: Morris Mano; PHI.
3. Digital Electronics:Green; Pearson

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE206B**ANALOG ELECTRONICS CIRCUITS**B. Tech. Semester –IV (BME, ECE, common with 5th Sem. AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I**MULTISTAGE AMPLIFIER:**

RC Coupled Transistor Amplifier, Lower & Upper Cut off Frequency, Frequency Response curve & Bandwidth, Transformer Coupled Amplifier, Direct Coupled Amplifier, Cascode Amplifier, Darlington Pair Amplifier, Distortion In Amplifiers.

FEEDBACK AMPLIFIERS:

Feedback concept , Transfer Gain with Feedback, General Characteristics of Negative Feedback, Advantages & disadvantages, Input And Output Resistance, Voltage Series Feedback topology, Voltage Shunt, Current Series & Current Shunt topology ,Equivalent circuit for each topology, Effects of Negative Feedback.

UNIT II**OSILLATORS:**

Introduction, Barkhausen Criterion, Oscillator with RC Feedback circuit (RC Phase Shift, Wien Bridge), Tuned Collector, Tuned Base Oscillator, LC Feedback circuits (Hartley, Colpitts), Condition for Sustained Oscillations & Frequency of Oscillations, Crystal Oscillator.

POWER AMPLIFIER:

Definition, Application & Types of Power Amplifiers, Amplifier Classes of Efficiency (Class - A, B, AB, C), Push Pull Amplifiers, Distortion in Simple & Push Pull Amplifier, Complementary Push Pull Amplifier, Integrated Circuit Power Amplifier , Introduction to MOSFET & CLASS D Power Amplifier.

UNIT III**VOLTAGE REGULATORS:**

Voltage Regulation, Basic Series Regulators, Basic Shunt Regulators, Power Supply Parameters, Basic Switching Regulators, Step up Configuration, Step down Configuration, IC Voltage Regulator, SMPS.

SWITCHING CIRCUIT:

Switching action & Characteristics of a Transistor, Switching Times in Transistor, Multivibrators, Astable Multivibrator, Monostable Multivibrator, Bistable Multivibrator, 555 Timer, Monostable & Astable Operation with 555 Timer.

UNIT IV**A/D CONVERTERS:**

Basic Principle of DAC & ADC, Types of DAC Circuits: Resistor Divider, R/2R Ladder network, Types of ADC circuits: Parallel Comparator, Counter type, Successive approximation & Dual Slope, Specifications.

SPECIAL SEMICONDUCTOR DEVICES:

Optoelectronic Devices, Photoconductors, Photo Diode, Photo Transistor, Photo Voltaic Sensor, Photo Emission, LED, LCD, Laser Diode, Schottky Diode, SCR, TRIAC, DIAC, UJT, Single Electron Transistor. Infrared LEDs, IGBT, Opto Coupler.

Reference Books:

- | | | |
|----|------------------------------|---|
| 1. | Electronics Device & Circuit | By David.A. Bell - Oxford University Press. |
| 2. | Electronics Device & Circuit | By Theodore F. Bogart, Jeffrey.S.Bealey,Guillermo Rico - Pearson. |
| 3. | Electronics Device & Circuit | By Robert Boylestad ,Louis Nashelsky. |
| 4. | Electronics Device | By Floyd , Pearson. |
| 5. | Integrated Electronics | By Millman Halkias - TMH. |
| 6. | Electronics Device & Circuit | By Sanjeev Gupta. |
| 7. | Electronics Device & Circuit | By I. J. Nagrath - PHI |
| 8. | Electronic Principles | By Albert Malvino. |

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE208B

POWER ELECTRONICS

B. Tech. Semester –IV (ECE, common with 6th Sem. AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Power Semiconductor Diodes and Transistors:

Characteristics of Power Diodes, Types of Power Diodes, Power Transistors, Power MOSFET, Insulated Gate Bipolar Transistors (IGBT), MOS Controlled Thyristors.

Thyristors:

Terminal Characteristics of Thyristors, Thyristor Turn ON Methods, Switching Characteristics of Thyristors, Thyristors Gate Characteristics, Two Transistor Model of a Thyristor, Thyristor Ratings, Thyristors Protection, Heating Cooling and Mounting of Thyristors, Series and Parallel Operation of Thyristors, Programmable Unijunction Transistors(PUT), Silicon Unilateral Switch(SUS), Silicon Controlled Switch(SCS), Light Activated Thyristors, Static Induction Thyristors, Diac, Triac, Asymmetric Thyristors, Reverse Conducting Thyristors, Firing Circuits for Thyristors, Pulse Transformer in Firing Circuits, Triac Firing Circuit

UNIT II

Thyristors Commutation Techniques:

Class A Commutation (Load Commutation), Class B Commutation (Resonant Pulse Commutation), Class C Commutation (Complementary Commutation), Class D Commutation (Impulse Commutation), Class E Commutation (External Pulse Commutation), Class F Commutation (Line Commutation)

Phase Controlled Rectifier:

Principle of Phase Control, Full Wave Controlled Converters, Single Phase Full Wave Converter, Single Phase Two Pulse Converter with Discontinuous Load Current, Three Phase Converter Systems Using Diodes, Three Phase Thyristor Converter Circuits, Effect of Source Impedance on Performance of Converter, Dual Converters.

UNIT III

Choppers:

Principle of Chopper Operation, Control Strategies, Step Up Choppers, Types of Chopper Circuits, Steady State Time Domain Analysis of Type A Chopper, Thyristor Chopper Circuits, Multiphase Choppers.

Inverters:

Single Phase Voltage Source Inverter: Operating Principle, Force Commutated Thyristor Inverters, Three Phase Bridge Inverter, Voltage Control in Single Phase Inverter, Pulse Width Modulated Inverter, Reduction of Harmonics in the Inverter Output Voltage, Current Source Inverters, Series Inverters, Single Phase Parallel Inverter.

UNIT IV

AC Voltage Controller and Cycloconverters:

Types of AC Voltage Controller, Integral Cycle Control, Single Phase Voltage Controllers, Sequence Control of AC Voltage Controller. Principle of Cycloconverter Operation, Three Phase Half Wave Cycloconverter, Output Voltage Equation for Cycloconverter, Load Commutated Cycloconverter.

Applications:

Switched Mode Power Supply(SMPS), Uninterruptible Power Supplies, High Voltage DC Transmission, Static Switches, Static Circuit Breakers, Solid State Relays.

Text Books:

- 1.P.S Bimbhra : Power Electronics, Khanna Publisher
2. Muhamed H.Rashid : Power Electronics Circuits, Devices and Applications, PHI.
3. Singh And Kanchandani : Power Electronics, TMH.1.

Reference Books:

1. Sen : Power Electronics, TMH .
2. Dubey : Thyristorised Power Controllers, Wiley Eastern .
3. Vithayathil : Power Electronics – Principles And Applications, McGraw-Hill.
4. Lander : Power Electronics, McGraw-Hill.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE210B

COMMUNICATION SYSTEMS

B. Tech. Semester –IV (ECE, common with 3rd Sem. CSE, 6th Sem. AEI)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION TO COMMUNICATION SYSTEM:

Modulation, Demodulation, Radio Frequency Spectrum, Signals & their classification, Limitations & Advantages of a Communication System, Comparison of Analog & Digital Communication Systems, Historical Perspective, Modes & Medias of Communication.

NOISE:

Sources of Noise, External & Internal Noise, Noise Calculations, Noise Figure, Noise Figure Calculation, Noise Temperature, Noise in Communication Systems, Band Pass Noise Model, Cascaded Stages & its Noise Figure Calculation, Signal in presence of Noise, Pre-Emphasis & De-Emphasis, Noise Quieting Effect, Capture Effect, Noise in Modulation Systems.

UNIT II

LINEAR MODULATION:

(AM) Basic definition & derivation for Modulation & Modulation Index, Modulation & Demodulation of AM, Suppressed Carrier Modulation, Quadrature Amplitude Modulation, SSB-SC, DSB-SC, VSB Modulation & Demodulation, Comparison of various AM Systems, Generation of AM waves.

ANGLE MODULATION:

Basic definition & derivation for Modulation & Modulation Index, Generation of FM waves, Comparison between PM & FM, Frequency Spectrum of FM, B.W. & required spectra, Types of FM, vector representation of FM, Universal Curve, Multiple FM, Demodulation of FM waves, Demodulation of PM waves, Comparison between AM & FM.

UNIT III

TRANSMITTERS & RECEIVERS:

Classification of Radio Transmitters, Basic Block Diagram of Radio Transmitter, Effect of Feedback on operation of Transmitter, Radio Telephone Transmitters, Privacy Device in Radio Telephony, FM Transmitter using Reactance Modulator, Armstrong FM Transmitter, Radio Receivers, Classification, TRF Receiver, Super Heterodyne Receiver, Image Rejection & Double Spotting, Choice of IF, Tracking & Alignment of Receivers, AGC.

PROBABILITY THEORY & RANDOM PROCESSES:

Probability, Properties, Conditional Probability, Random Variables, CDF, PDF, Uniform Distribution, Random or Stochastic Process, Ergodic Process, PSD, Properties of PSD, Correlation Function.

UNIT IV

PULSE ANALOG MODULATION:

Sampling theory, TDM, FDM, PAM, PWM, PPM, Modulation & Demodulation techniques of above all.

PULSE DIGITAL MODULATION:

Elements of Pulse Code Modulation, Noise in PCM Systems, Bandwidth of PCM Systems, Measure of Information, Channel Capacity, Channel Capacity of PCM System, Differential Pulse Code Modulation (DPCM). Delta Modulation (DM)

Reference Books:

1. Communication Systems By Manoj Duhan – I. K. International
2. Electronic Communication Systems By Kennedy – TMH
3. Communication Systems By Singh & Sapre – TMH
4. Electronic Communication, By Roody Coolen – Pearson
5. Analog Communication By P. Chakarbarti – DR & Co.
6. Communication Systems By Simon Haykins – Wiley

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE212B**FIELD AND WAVES**
B. Tech. Semester –IV (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Coulomb's Law of Electrostatic Force, Electric Field Intensity, Electric Potential, Electric Charge Density, Field of A Finite Line Of Charge, Field Potential of an Infinite Line Of Charge, Electric Potential Difference, Electric Dipole, Electric Flux Density
Gauss Law, Application of Gauss Law, Laplace Equation, Solution of Laplace Equation in Rectangular And Cartesian Coordinates, Uniqueness Theorem of Electrostatic Field Solutions, Methods of Electrostatic Images, Electrostatic Energy, Capacitance.

UNIT II

Introduction, Faraday Induction Law, Magnetic Effect on Current Carrying Conductor, Magnetic Flux, Magnetic Flux Density, Biot-Savart's Law, Ampere's Law of Force,
Magnetic Field of A Solenoid, Magnetic Field In Vector Notations, Magnetic Field Intensity, Magnetic Flux Density outside and inside an Infinitely Long Cylinder Containing Uniform Current Density, Magnetic Vector Potential, Energy Stored In A Magnetic Field, Energy Density In A Magnetic Field.

UNIT III

Introduction, Displacement Current Maxwell's Equations: In Free Space, Differential Form And Integra Form, Physical Interpretations Of Maxwell's Field Equations, Boundary Conditions
Electromagnetic Wave In Homogeneous Medium, Wave Equation, Plane Wave And Uniform Plane Wave, Electromagnetic Wave Equations, Wave Propagation In Conducting Medium, Polarization

UNIT IV

Introduction, Basic Principles Of Transmission Lines, Equivalent Circuit Representation, General Transmission Line Equation, Wave Characteristics on Finite Transmission Lines, Transients on Transmission lines, Primary Constant, Voltage And Current Calculations, Characteristic Impedance, Open And Short Circuit Lines, Reflection Coefficient, VSWR, Smith's Chart And Its Applications.

Text Books:

1. Electro-magnetic Waves and Radiating System : Jordan & Balmain, PHI.
2. Antenna & Wave Propagation: K.D Prasad, Satya Prakashan.
3. Field and Wave Electromagnetics: David K.Cheng, Pearson, Second edition

Reference Books:

1. Engineering Electromagnetics: Umran S.Inan & Aziz S. Inan, Pearson
2. Engineering Electromagnetics : Hayt; TMH
3. Electro-Magnetics : Krauss J.DF; Mc Graw Hill.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE224B

DIGITAL CIRCUIT AND SYSTEM LAB

B. Tech. Semester –IV

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To study & design basic gates.
2. To realize and minimize five & six variables using K-Map method
3. To realize and minimize five & six variables using Quine Meluskey method
4. To study conversion of S-R Flip Flop to J-K.
5. To study conversion of J-K flip flop to T flip flop.
6. To study conversion of D flip flop to T flip flop.
7. To design and implement a ckt to detect a Count Sequence.
8. To design and implement a Asynchronous sequential ckt.
9. To design and implement a Synchronus Counter with Count Sequence.
10. To design an Asynchronous Counted for a Count Sequence.
11. Conversion of state digram to the state table and implement it using logical ckt.
12. To design and implement a Melay Machine.
13. To design and implement a Moorey Machine.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE226B**ANALOG ELECTRONICS CIRCUITS LAB**B. Tech. Semester –IV (BME, ECE, common with 5th Sem. AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

- 1 To Study frequency response of RC coupled amplifier.
- 2 To Study different types of feedback topology.
- 3 To Study RC phase shift oscillator.
- 4 To study wein bridge oscillator.
- 5 To Study three terminal IC voltage regulator.
- 6 To draw characteristics of a transistor.
- 7 To study CE amplifier and calculate its gain.
- 8 To study 555 timer as a square wave generator.
- 9 To study SMPS power supply.
- 10 To study characteristics of SCR.
- 11 To study characteristics of DIAC.
- 12 To study UJT as a relaxation oscillator.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE228B

POWER ELECTRONICS LAB
B. Tech. Semester –IV (ECE, common with 6th Sem. AEI)

L T P Credits
- - 2 1

Class Work : 20Marks
Practical : 30Marks
Total : 50Marks
Duration of Exam. : 3 Hrs.

LIST OF EXPERIMENTS:

1. To study Steady-state characteristics of SCR by plotting graph between voltage and current of Thyristers.
2. To Study R and RC Triggering Circuit for SCR.
3. To study UJT as Relaxation Oscillator.
4. To study SCR Half Wave and Full Wave Bridge Controlled Rectifier-Output characteristics.
5. To study 1-Phase Full Wave Bridge Controlled Rectifier using SCR and UJT with R and R-L Load and observe its input/output characteristics with and without free wheeling (commutating) diode.
- 6 To study three Phase Full-Wave Uncontrolled Rectifier Operation with R and R-L Load and Observe its input/output Characteristics.
7. To study single Phase Cycloconvener output characteristics.
8. To study Series operation of SCR's.
9. To study Parallel operation of SCR's.
10. To study Speed Control of DC motor using SCR's.
11. To study Lamp-Dimmer Using Diac & Triac With Lamp Load.

Note:-

- 1 Total ten experiments are to be performed in the semester
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE230B**COMMUNICATION SYSTEMS LAB**
B. Tech. Semester –IV (ECE, 6th Sem. AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20Marks
Practical	:	30Marks
Total	:	50Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To study and waveform analysis of amplitude modulation and determine the modulation index of amplitude modulation.
2. To study and waveform analysis of amplitude demodulation by any method.
3. To study and waveform analysis of frequency modulation and determine the modulation index of frequency modulation.
4. To study and waveform analysis of frequency demodulation by any method.
5. To study Amplitude Shift Keying (ASK) modulation.
6. To study Frequency Shift Keying (FSK) modulation.
7. To study Phase Shift Keying (PSK) modulation.
8. To study and waveform analysis of phase modulation.
9. To study Phase demodulation.
10. To study Pulse code modulation.
11. To study Pulse amplitude modulation and demodulation.
12. To study Pulse width modulation.
13. To study Pulse position modulation.
14. To study delta modulation.
15. To deliver a seminar by each student on ADVANCE COMMUNICATION SYSTEM.

Note:-

- 1 Total ten experiments are to be performed in the semester
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

GES203B

ENVIRONMENTAL STUDIES FIELD WORK
B. Tech. Semester –III/IV (Common for all Branches)

L	T	P	Credits
-	-	-	-

Class Work	:	-
Practical	:	25 Marks
Total	:	25 Marks

FIELD WORK:

- Visit to a local area to document environmental assets – river/ forest/ grassland/ hill/ mountain.
- Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems – pond, river, hill slopes, etc. (Field work equal to 5 lectures hours).

Note:

The awards of this paper shall not be counted in the award of the Degree/DMC.

GPEC202B**GENERAL PROFICIENCY & ETHICS**
B. Tech. Semester – IV (Common for all Branches)

L	T	P	Credits
1	-	-	2

Examination	:	-
Practical	:	75 Marks
Total	:	75 Marks

The purpose of this course is to inculcate a sense of professionalism in a student along with personality development in terms of quality such as receiving, responding, temperament, attitude and outlook. The student efforts will be evaluated on the basis of his/ her performance / achievements in different walks of life.

A Faculty Counselor will be attached to a group of students which will remain associated with him /her during the entire period of the degree program in the University. Each faculty member will serve as a faculty counselor. They will act like a local guardian for the students associated with him / her and will help them in terms of career guidance, personal difficulties.

A. The student will present a written report before the committee with following in view:

The student will present before the committee his/her achievements during the current academic session in the form of a written report highlighting followings:

I.	Academic Performance	-----
II.	Extra Curricular Activities / Community Service, Hostel Activities	(8 Marks)
III	Technical Activities / Industrial, Educational tour	(8 Marks)
IV	Sports/games	(14 Marks)
V	Moral values & Ethics	(15 Marks)

NOTE: Report submitted by the students should be typed on both sides of the paper.

B.. A student will support his/her achievement and verbal & communicative skill through presentation before the committee.
(30 Marks)

C. Moral values & Ethics

Syllabus - Process for Value Education, self-evaluation concept and process.

A minor test will be conducted during the semester and It will be the duty of the concerned teacher assigned to teach Moral values & Ethics to submit the awards to respective chairman of the department / Director/Principal.

The evaluation of this course will be made by the following Committee.

University Departments:

1	Chairperson of the Department	Chairman
2	Senior Most Faculty Counselor	Member
3	Vice- Chancellor's Nominee	Member

Affiliated Colleges:

1	Director/Principal	Chairman
2	Head of the Department/Sr. Faculty	Member
3	External Examiner to be appointed by the University	Member

Note: Remuneration will be paid to the external examiner only (at par with the other practical examinations).

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. III YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER V
Credit Based Scheme w.e.f. 2014-2015

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	ECE301B	COMMUNICATION ENGINEERING	3	1	-	25	75	-	100	4	3
2	ECE303B	ELECTRONIC MEASUREMENT AND INSTRUMENTATION (ECE,AEI & 6 th Sem. IC)	3	1	-	25	75	-	100	4	3
3	ECE305B	CONSUMER ELECTRONICS	3	1	-	25	75	-	100	4	3
4	ECE307B	LINEAR INTEGRATED CIRCUIT (ECE,BME)	3	1	-	25	75	-	100	4	3
5	ECE309B	MICROPROCESSORS AND INTERFACING (BME,CSE ,ECE,AEI)	3	1	-	25	75	-	100	4	3
6	CSE204B	OBJECT ORIENTED PROGRAMMING(ECE,common with 4 th Sem. CSE,AEI)	3	1	-	25	75	-	100	4	3
7	CSE224B	OBJECT ORIENTED PROGRAMMING LAB(ECE,common with 4 th Sem. CSE,AEI)	-	-	2	20	-	30	50	1	3
8	ECE323B	ELECTRONIC MEASUREMENT AND INSTRUMENTATION LAB(ECE,AEI,common with 6 th Sem. IC)	-	-	2	20	-	30	50	1	3
9	ECE325B	CONSUMER ELECTRONIC LAB	-	-	2	20	-	30	50	1	-
10	ECE327B	LINEAR INTEGRATED CIRCUIT LAB	-	-	2	20	-	30	50	1	3
11	ECE329B	MICROPROCESSORS & INTERFACING LAB (BME,CSE ,ECE,AEI)	-	-	2	20	-	30	50	1	3
12	ECE335B	PROFESSIONAL TRAINING-I	-	-	2	50	-	-	50	2	-
Total			18	6	12	300	450	150	900	31	

Note:

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
2. The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic Gadgets including Cellular Phones are not allowed in the examination.
4. Assessment of Professional training. I (ECE335B) will be based on seminar, viva-voce, report and certificate of professional training obtained by the student from the industry / institute / research lab / training centre etc.

ECE301B**COMMUNICATION ENGINEERING**

B. Tech Semester –V

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I**SPECTRAL ANALYSIS:**

Fourier series, Fourier Transform & its properties, Convolution & Correlation, Autocorrelation & Cross Correlation.

ELEMENTS OF DIGITAL COMMUNICATION:

Introduction, Channels for Digital Communication, Model of Digital Communication, Geometric Interpretation of Signal, Gram Schmidt Orthogonalization procedure, Matched Filters, Estimation: Concept & Criteria, Maximum Likelihood Estimation, Adaptive Filters.

UNIT II**INTRODUCTION TO INFORMATION THEORY:**

Measure of Information, Entropy, Rate of Information, Source Coding Theorem, Huffman Coding, Shannon Fano Coding, Discrete Memoryless Channels, Mutual Information, Channel Capacity, Channel Coding Theorem, Channel Capacity Theorem.

ERROR CONTROL CODING:

Types Of Codes, Block Code: Coding And Decoding, Hadamard Codes, Hamming Codes, Cyclic Codes, Convolution Codes: Coding And Decoding, Trellis Code.

UNIT III**DIGITAL CARRIER MODULATION AND DEMODULATION TECHNIQUES**

Digital Modulation Formats, Coherent Binary Modulation & Demodulation: ASK, BPSK, BFSK, Coherent Quadrature Modulation & Demodulation Techniques: QPSK, MSK.

NON-COHERENT BINARY MODULATION TECHNIQUES:

Non Coherent BFSK, Differential PSK, M-Ary Modulation & Demodulation Techniques: M-Ary PSK, M-Ary QAM, M-Ary FSK, Synchronization: Carrier & Symbol Synchronization.

UNIT IV**BASE BAND SHAPING FOR DATA TRANSMISSION:**

Discrete PAM Signal, Power Spectra for Digital PAM Signal, Inter Symbol Interference, Nyquist Criterion for Distortionless Baseband Binary Transmission, Correlation Coding, Eye Pattern, Base Band M-Ary PAM System, Adaptive Equalization for Data Transmission.

SPREAD SPECTRUM MODULATION:

PN Sequences, A Notion of Spread Spectrum, Direct Sequence Spread Spectrum, Frequency Hopping Spread Spectrum, Application.

Reference Books:

- | | |
|---------------------------------------|--------------------------------------|
| 1. Digital Communication | By Simon Haykins – Wile |
| 2. Digital Communicatin | By Sklar Ray- Pearson |
| 3. Principle of Communication Systems | By Taub & Schilling – TMH |
| 4. Electronics Communication Systems | By Tomasi – Pearson |
| 5. Communication System | By Haykin & Moher- Wiley |
| 6. Digital Communication | By J. G. Proakis |
| 7. Digital Communication | By B. P. Lathi |
| 8. Communication Systems | By Manoj Duhan – I. K. International |

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE303B

ELECTRONICS MEASUREMENT AND INSTRUMENTATION

B. Tech Semester –V (ECE, AEI & 6th Sem. IC)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Oscilloscope:

Block diagram, study of various stages in brief, high frequency CRO considerations, Sampling and storage oscilloscope, Measurements of Phase and Frequency (Lissajous Patterns)

Electronic Instruments:

DC and AC voltage measurements, DC and AC current measurements, Multimeter, Ohmmeter, Bolometer, Calorimeter, Power meter, Introduction to digital meters

UNIT II

Generation and Analysis of waveforms:

Block Diagram of pulse generators, signal generators, function generators, wave analyzers, distortion analyzers, spectrum analyzer, Harmonic analyzer, introduction to power analyzer.

Frequency and Time Measurements:

Study of Decade Counting Assembly(DCA), frequency measurements, period measurements, universal counters, Introduction to digital meters

UNIT III

Display Devices:

Nixie Tubes, LED's, LCD's, Discharge Devices

Recorders:

Strip charts recorder, single point recorder, UV recorder, Magnetic tape recorder.

UNIT IV

Transducers:

Classification, Transducers of types: RLC Photocell, thermocouple, etc., Basic schemes of measurements of displacement, velocity, acceleration, strain, pressure, liquid level & temperature.

Introduction to signal conditioning:

DC signal conditioning systems, AC signal conditioning systems, Data acquisition and conversion system, characteristics of modern digital data acquisition system, Filter, Settling time, Amplifier Characteristics.

Text Books :

1. A course in Electrical and Electronics Measurements and Instrumentation by A.K.Sawhney; Dhanpat Rai & sons

Reference Books:

1. Electronics Measurements and Instrumentation Techniques By H. Cooper; PHI
2. Electronics Instrumentation by Kalsi; TMH

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE305B

CONSUMER ELECTRONICS

B. Tech Semester –V

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Monochrome TV (Introduction):

Elements of a TV System, Picture transmission, Sound transmission, Picture reception, Sound reception, Synchronization, Receiver control, Image continuity, Scanning Process, Aspect Ratio, Flicker, Composite Video Signal, Picture Elements, Kell factor, Vertical Resolution, Horizontal Resolution, Video bandwidth, Interlacing, 625 Line System, Bandwidths for TV Transmission, Vertical and horizontal synch detail, Vestigial Side Band transmission (Advantages and Disadvantages)

Monochrome TV (Picture and Camera Tubes):

Monochrome picture tube, beam reflection, Beam focussing, Screen Phosphor, Face plate, Picture tube characteristics, picture tube circuit controls, Monochrome Camera Tubes: Basic principle, Image Orthicon, Vidicon, Plumbicon

UNIT II

Colour TV Essentials:

Compatibility, Colour perception, Three Colour theory, Luminance, Hue and Saturation, Dispersion and Recombination of light, Primary and secondary colours, luminance signal, Chrominance Signal, Colour picture tube, colour TV Camera, Colour TV display Tubes, colour Signal Transmission, Bandwidth for colour signal transmission, Colour TV controls. Cable TV, Block Diagram and principle of working of cable TV.

Plasma and LCD:

Introduction, liquid crystals, types of LCD's, TN, STN, TFT, Power requirements, LCD working, Principle of operation of TN display, Construction of TN display, Behaviour of TN liquid crystals, Viewing angle, colour balance, colour TN display, limitations, advantages, disadvantages, applications.

UNIT III

LED and DMD :

Introduction to LED Television, comparison with LCD and Plasma TV's, schematic of DMD, introduction to Digital MicroMirror device, Diagram of DMD, principle of working, emerging applications of DMD.

Microwave Ovens and Air Conditioners:

Microwaves, Transit Time, Magnetron, Waveguides, Microwave Oven, Microwave Cooking. Air conditioning, Components of air conditioning systems, all water Air conditioning systems, all air air conditioning Systems, Split air conditioner.

UNIT IV

Microphones:

Introduction, characteristics of microphones, types of microphone: carbon, moving coil, wireless, crystal, introduction to tape recorder.

Loudspeaker:

Introduction to ideal and basic loudspeaker, loudspeaker construction types of loudspeaker: Dynamic and permanent magnet, woofers, tweeters, brief introduction to baffles, equalisers.

Text Books :

1. Consumer Electronics by S. P. Bali (Pearson Education)
2. Complete Satellite and Cable T.V by R.R Gulati (New Age International Publishers)

Reference Books:

1. Monochrome and Colour Television by R. R. Gulati

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE307B

LINEAR INTEGRATED CIRCUIT

B. Tech Semester –V (ECE, BME)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

DIFFERENTIAL AMPLIFIER FUNDAMENTALS:

Differential Amplifier, Differential Amplifier Circuit Configuration: DC and AC Analysis of all Four Types of Configurations, FET Differential Amplifiers, Differential Amplifier with Swamping Resistor, Constant Current Bias, Current Mirror, Cascaded Differential Amplifier, Cascode Configurations.

OPERATIONAL AMPLIFIER FUNDAMENTALS:

Amplifier Fundamentals, the Operational Amplifier, Block Diagram Representation, Ideal OP-AMP, OP-AMP Equivalent Circuit, Ideal Voltage Transfer Curve, Open Loop OP-AMP Configurations, OP-AMP with Negative Feedback: voltage series & voltage shunt feedback amplifiers, Current feedback Amplifiers.

UNIT II

CHARACTERISTICS OF OP-AMP:

Input Offset Voltage, Input Bias Current, Input Offset Current, Output Offset Voltage, Thermal Drift, Effect of Variation in Power Supply Voltages on Offset Voltage, Common Mode Configuration and CMRR, Frequency Response of OP-AMP: Open Loop Response, Close Loop Response, Input and Output Impedances, Effect of Finite Gain Bandwidth Product, Slew Rate.

LINEAR APPLICATIONS:

DC and AC Amplifier, Peaking Amplifier, Summing, Scaling And Averaging Amplifiers, Instrumentation Amplifier, Voltage to Current Converter, Current to Voltage Converter, Difference Amplifier, Integrator, Differentiator, very high input impedance circuit.

UNIT III

NOISE AND STABILITY:

Noise Properties, Sources of Noise, OP-AMP Noise, Stability Problems, Stability in Constant GBP OP-AMP Circuits, Internal Frequency Compensation, External Frequency Compensation, Stability In CFA Circuits.

ACTIVE FILTERS AND OSCILLATORS:

Transfer Function, Active Filters, First Order LP & HP Butterworth Filters, Second Order LP & HP Butterworth Filters, Higher Order Filters, Band Pass Filters, Band Rejection Filters, Oscillators: Phase Shift, Wein Bridge Oscillator, quadrature oscillator, Square Wave Generator, Triangular Wave Generator, saw tooth wave generator, Voltage Controlled Oscillator.

UNIT IV

NON LINEAR CIRCUITS:

Voltage Comparator, Zero Crossing Defector, Schmitt Trigger, Peak Detector, Sample and Hold Circuit, Voltage To Frequency and Frequency To Voltage Converter, ADC and DAC, clippers and clampers, absolute value output circuit.

SPECIALIZED IC APPLICATION:

Switched Capacitor Filter, 555 Timer: As Monostable Multivibrator, Astable Multivibrator. Phase-Locked Loops, Voltage Regulators: Fixed and Adjustable Voltage Regulator, power amplifiers, Switching Regulators.

Reference Books:

1. OPAMPS and Linear Integrated Circuit
2. Design with Operational Amplifiers and Analog Integrated Circuits
3. Integrated Circuits
4. Linear Integrated Circuits

By Ramakant A Gayakwad – PHI
By Sergio Franco – MGH
By K .R. Botker –Khanna pub.
By D.Roy Choudhary & S.Jain—New Age

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE309B

MICROPROCESSOR AND INTERFACING

B. Tech Semester –V (BME, CSE, ECE, AEI)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

THE 8086 MICROPROCESSOR ARCHITECTURE:

Architecture, block diagram of 8086, details of sub-blocks such as EU, BIU; memory segmentation and physical address computations, program relocation, addressing modes, instruction formats, pin diagram and description of various signals.

INSTRUCTION SET OF 8086 & PROGRAMMING:

Instruction execution timing, assembler instruction format, data transfer instructions, arithmetic instructions, branch instructions, looping instructions, NOP and HLT instructions, flag manipulation instructions, logical instructions, shift and rotate instructions, directives and operators, programming examples.

UNIT II

THE X86 FAMILY (80186, 80286, 80386, 80486) MICROPROCESSOR ARCHITECTURE AND PROGRAMMING:

Architecture, block diagram, details of sub-blocks, hardware features and description of various signals, interrupts, multitasking, addressing modes, instruction set and programming example.

THE PENTIUM PROCESSOR AND OTHER ADVANCED PROCESSORS:

Enhanced features of Pentium, Pentium Pro, Pentium-II, Pentium-III, Pentium-IV, Multi-core Technology, Mobile Processor.

UNIT III

INTERFACING DEVICE:

The 8255 PPI chip: Architecture, control words, modes and examples..

PERIPHERAL DEVICES:

Introduction to DMA process, 8237 DMA controller, 8259 Programmable interrupt controller, Programmable interval timer chips.

UNIT IV

COMMUNICATION INTERFACE:

Parallel interface, serial interface, PCI interface, PCMCIA, USB interface.

PERSONAL COMPUTER:

Modern PC, motherboard, chipset, expansion buses, memory-SIMM and DIMM.

Reference Books:

1. "The Intel Microprocessors 8086- Pentium Processor", Brey, 4th Edition, 2005.
2. "Microprocessors and interfacing", D. V. Hall, Tata McGraw-Hill, 2nd Edition, 2006.
3. "Microcomputer Systems: The 8086/8088 Family: Architecture, Programming and Design", Liu Yu-Chang and Gibson Glenn A., Prentice Hall of India, 2003.
4. "Advanced Microprocessors and Peripherals Architectures, Programming and Interfacing", Ray A. K. and Burchandi, Tata McGraw Hill, 2002.
5. "Microprocessor based System Design UBS", Rafiqzaman, Wiley-Interscience, 5th Edition, 2005.
6. "The X86 PC: Assembly Language, Design and interfacing", M. A. Mazidi, J. P. Maizidi and Danny Causey, Pearson, 5th Edition, 2011.
7. "The X86 Microprocessor (Architecture, Programming and Interfacing)", L. B. Das, Pearson, 2010.
8. "Advanced Microprocessor", Daniel Tabak, Tata McGraw-Hill, 2nd Edition, 2012.
9. "Fundamentals of Microprocessor and Microcomputers", B. Ram, Dhanpat Rai Publications, 5th edition, 2008.
10. "Microprocessor & Interfacing", Singh & Singh, Satya Parakashan.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

CSE204B

OBJECT ORIENTED PROGRAMMING

B. Tech Semester –V (ECE), (common with IC, EEE 5th Sem., CSE, IT, AEI 4th Sem.)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

C++ Standard Library, Preprocessor Directives, illustrative Simple C++ Programs.Header Files and Namespaces, library files.Concept of objects, Object Oriented Analysis & Object Modeling techniques.

Object Oriented Concepts: Introduction to Objects and Object Oriented Programming, Encapsulation (Information Hiding), Access Modifiers: Controlling access to a class, method, or variable (public, protected, private, package), Other Modifiers, Polymorphism: Overloading, Inheritance, Overriding, Abstract Classes, Reusability

Classes and Data Abstraction: Introduction, Structure Definitions, Accessing Members of Structures, Class Scope and Accessing Class Members, Controlling Access Function And Utility Functions, Initializing Class Objects: Constructors.

UNIT II

Using Destructors, Classes: Const(Constant) Object And Const Member Functions, Object as Member of Classes, Friend Function and Friend Classes, Using This Pointer, Dynamic Memory Allocation with New and Delete, Static Class Members, Container Classes and iterators, Function overloading.

Operator Overloading: Introduction, Fundamentals of Operator Overloading, Restrictions On Operators Overloading, Operator Functions as Class Members vs. as Friend Functions, Overloading

UNIT III

Inheritance: Introduction, Inheritance: Base Classes And Derived Classes, Protected Members, Casting Base Class Pointers to Derived-Class Pointers, Using Member Functions, Overriding Base -Class Members in a Derived Class, Public, Protected and Private Inheritance, Using Constructors and Destructors in derived Classes, Implicit Derived -Class Object To Base- Class Object Conversion, Composition Vs. Inheritance.

Introduction to Virtual Functions, Abstract ,Base Classes And Concrete Classes, Polymorphism, New Classes And Dynamic Binding, Virtual Destructors, Polymorphism, Dynamic Binding.

UNIT IV

Files and I/O Streams and various operation on files. Stream Input/Output Classes and Objects, Stream Output, Stream Input, Unformatted I/O (with read and write), Stream Manipulators, StreamFormatStates, StreamErrorStates.

Templates & Exception Handling: Function Templates, Overloading Template Functions, Class Template, Class Templates and Non-Type Parameters, Templates and Inheritance, Templates and Friends.

Templates and Static Members: Introduction, Basics of C++ Exception Handling: Try Throw, Catch, Throwing an Exception;- Catching an Exception, Re-throwing an Exception, Exception specifications, Processing Unexpected Exceptions, Constructors, Destructors and Exception Handling, Exceptions and Inheritance.

Text Books:

1. Object Oriented Programming in Turbo C++ by Robert Lafore ,1994, The WAITE Group Press.
2. Programming with C++ By D Ravichandran, 2003, T.M.H
3. Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill

Reference Books:

1. C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
2. Computing Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
3. The Complete Reference in C++ By Herbert Schildt, 2002, TMH.
4. C++ Programming Fundamentals by Chuck Easttom, Firewall Media

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

CSE224B**OBJECT ORIENTED PROGRAMMING LAB**B. Tech Semester –V (ECE, common with 4th Sem. CSE, AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called `power ()` that takes a double value for n and an int value for p , and returns the result as double value Use a default argument of 2 for p . so that if this argument is omitted, the number will be squared. Write a main () function that gets values from the user to test this function.
2. A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinates
Write a program that uses a structure called `point` to model a point Define three points, and have the user input values to two of them Then set the third point equal to the sum of the other two. and display the value of the new point Interaction with the program might look like this:

Enter coordinates for P1 :	3	4
Enter coordinates for P2:	5	7
Coordinates of P1 + P2 are:	8	11
3. Create the equivalent of a four function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out the specified arithmetical operation: adding, subtracting, multiplying, or dividing the two numbers. (It should use a switch statement to select the operation). Finally it should display the result.
When it finishes the calculation, the program should ask if the user wants to do another calculation. The response can be 'Y' or 'N'. Some sample interaction with the program might look like this.
Enter first number. Operator, second number: 10/3
Answer = 3.333333
Do another (Y|N)? Y
Enter first number. Operator, second number 12 + 100
Answer = 112
Do another (Y|N)? N
4. Create two classes DM and DB which store the value of distances. DM stores distances in metres and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB.
Use a friend function to carry out the addition operation. The object that stores the results maybe DM object or DB object. depending on the units in which the results are required. The display should be in the format of feet and inches or metres and centimetres depending on object on display.
5. Create a class `rational` which represents a numerical value by two double values- NUMERATOR & DENOMINATOR Include the following public member Functions:
 - constructor with no arguments (default).
 - constructor with two arguments.
 - void `reduce()` that reduces the rational number by eliminating the highest common factor between the numerator and denominator.
 - Overload + operator to add two rational number
 - Overload » operator to enable input through cin
 - Overload « operator to enable output through cout.
 - Write a main () to test all the functions in the class.
6. Create a program that creates a binary file by reading the data for the students from the terminal. The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.
7. A hospital wants to create a database regarding its indoor patients. The information to store include
Name of the patient
Date of admission
Disease
Date of discharge
Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter information and display a list of all the patients in the database. Create a derived

class to store the age of the patients List the information about all the to store the age of the patients. List the information about pediatric patients (less than twelve years in age).

8. Make a class Employee with a name and salary. Make a class Manager inherit from Employee. Add an instance variable, named department, of type string. Supply a method to String that prints the manager's name, department and salary. Make a class Executive inherit from Manager Supply a method to String that prints the string Executive followed by the information stored in the Manager superclass object. Supply a test program that tests these classes and methods.
9. Imagine a tollbooth with a class called toll Booth. The two data items of a type unsigned int to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both these to 0. A member function called payingCar () increments the car total and adds 0.50 to the cash total. Another function, called nopayCar (). increments the car total but adds nothing to the cash total. Finally, a member function called displays the two totals.

Note:-

At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE323B**ELECTRONICS MEASUREMENT AND INSTRUMENTATION LAB**B. Tech Semester –V (ECE, AEI, common with 6th Sem. IC)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Speed measurement of DC Motor with the help of Magnetic Pick-up.
2. To measure temperature using thermocouple.
3. To measure temperature using Thermister
4. To measure temperature using RTD
5. To measure displacement using LDR.
6. To measure displacement using L.V.D
7. To measure Pressure using Pressure Transducer.
8. To measure Frequency & Time period of given wave form using frequency Meter
9. To study the operation of Spectrum Analyzer.
10. To measure phase & frequency of a given wave-form using Lissajous patterns
11. To measure weight using Strain Gauge
12. To measure displacement using Inductive and Capacitive Pick-up.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE325B

CONSUMER ELECTRONICS LAB

B. Tech Semester –V

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

- 1 To plot frequency response of different type of loudspeaker.
- 2 To study different section Monochrome T.V
- 3 To study different section Colour T.V
- 4 To study working principle of digital camera.
- 5 To study functional block diagram & front panel control of Microwave Oven.
- 6 To study functional block diagram & front panel control of Washing Machine.
- 7 To study display devices like Plasma, LCD, LED, DMD.
- 8 To demonstrate the working of all type of air conditioner like water air conditioning, split air conditioners etc.
- 9 To demonstrate the working of domestic refrigerators.
- 10 To plot the frequency response of a microphone.
- 11 To study the block diagram of Transmitter & Receiver.

Note:-

1. Total ten experiments are to be performed in the semester.
2. At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus

ECE327B

LINEAR INTEGRATED CIRCUITS LAB

B. Tech Semester –V

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Design & realize inverting amplifier, non-inverting and buffer amplifier using 741 Op Amp.
2. Verify the operation of a differentiator circuit using 741 op amp and show that it acts as a high pass filter.
3. Verify the operation of an integrator circuit using 741 op amp and show that it acts as a low pass filter.
4. Design and verify the operations of op amp adder and subtractor circuits.
5. Design & realize using op amp 741, Wein -bridge oscillator.
6. To design & realize using op amp 741, square wave generator.
7. To design & realize using op amp 741, logarithmic amplifier & VCCS.
8. To design & realize using op amp 741, Triangular wave generator.
9. To design & realize using op amp 741 as a Comparator.
10. To design & realize using op amp 741 as a Schmitt trigger.
11. To design & realize differential Amplifier.
12. To design & realize using op amp 741, as a Clipper.
13. To design & realize using op amp 741, as a Clamper

Note:-

1. Total ten experiments are to be performed in the semester.
2. At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE329B**MICROPROCESSOR AND INTERFACING LAB**

B. Tech Semester –V (BME, CSE, ECE, AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To study the architecture of 8086 microprocessor and 8086 microprocessor kit.
2. Write a program to add the contents of the memory location 3000:0400 H to the content of 4000:0700 H and store the result in 6000:0900 H
3. Write a program to add 16 bit number using 8086 instruction set.
4. Write a multiplication of two 16 bit number using 8086 instruction set.
5. Write a program for division of two 16 bit numbers using 8086 instruction set.
6. Write a program factorial of a number.
7. Write a Program to transfer a block of data without overlap.
8. Write a Program to transfer a block of data with overlap.
9. Write a program to find the average of two numbers.
10. Write a Program to check whether data byte is odd or even
11. Write a program to find maximum number in the array of 10 numbers.
12. Write a program to find the sum of the first 'n' integers.
13. Write a program to generate a square wave.
14. Write a program to generate a rectangular wave.
15. Write a program to generate a triangular wave.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE335B**PROFESSIONAL TRAINING-I**
B. Tech Semester –V

L	T	P	Credits
-	-	2	2

Class Work	:	50Marks
Practical	:	-
Total	:	50Marks

At the end of 4th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional Organization/ Research Laboratory etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

The typed report should be in a prescribed format.

The report will be evaluated in the V Semester by a Committee consisting of three teachers from different specialization to be constituted by the Chairperson of the department. The basis of evaluation will primarily be the knowledge and exposure of the student towards different processes and the functioning of the organization.

The student will interact with the committee through presentation to demonstrate his/her learning.

Teachers associated with evaluation work will be assigned 2 periods per week load.

DEENBANDHUCHHOTURAMUNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. III YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VI
Credit Based Scheme w.e.f. 2014-2015

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	HUM302B	REPORT WRITING SKILLS (common for all branches)	1	-	-	25	50	-	75	1	2
2	ECE302B	MICROWAVE AND RADAR ENGINEERING(ECE,EEE)	3	1	-	25	75	-	100	4	3
3	EE312B	CONTROL SYSTEM ENGINEERING(ECE, BME, common with 5 th Sem. AEI)	3	1	-	25	75	-	100	4	3
4	ECE304B	ANTENNA AND WAVE PROPAGATION	3	1	-	25	75	-	100	4	3
5	ECE306B	HDL BASED SYSTEM DESIGN(ECE,AEI)	3	1	-	25	75	-	100	4	3
6	ECE308B	MICROELECTRONICS(ECE, AEI)	3	1	-	25	75	-	100	4	3
7	ECE310B	MICROCONTROLLER BASED SYSTEM DESIGN (ECE,common with BME)	3	1	-	25	75	-	100	4	3
8	ECE322B	MICROWAVE AND RADAR ENGINEERING LAB(ECE,EEE)	-	-	2	20	-	30	50	1	3
9	EE332B	CONTROL SYSTEM ENGINEERING LAB(ECE, common with 5 th Sem. AEI)	-	-	2	20	-	30	50	1	3
10	ECE326B	HDL BASED SYSTEM DESIGN LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
11	ECE330B	MICROCONTROLLER LAB(ECE,common with BME)	-	-	2	20	-	30	50	1	3
12	GPEC302B	GENERAL PROFICIENCY & ETHICS	1	-	-	-	-	75	75	2	-
13	HUM304B	ORAL PRESENTATION SKILLS (common for all branches)	-	-	2	20	-	30	50	1	2
Total			20	6	10	275	500	225	1000	32	

Note:

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
2. The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic Gadgets including Cellular Phones are not allowed in the examination.
4. At the end of 6th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional / Organization/ Research Laboratory / training centre etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

HUM302B

REPORT WRITING SKILLS
B. Tech. Semester – VI (Common for all branches)

L	T	P	Credits
1	-	-	1

Class Work	:	25 Marks
Theory	:	50 Marks
Total	:	75 Marks
Duration of Exam.	:	2Hrs.

UNIT I

Report Writing:

Reports: meaning, their importance and types, Structure of reports, Formats of reports, Use of illustrations

UNIT II

Writing of Business and Technical Reports:

Preliminary steps and procedure of writing report, writing various types of reports on technical, business related topics.

Recommended Reading:

1. Borowick, Jerome. N. Technical Communication and its Applications. New Delhi: PHI, 2000.
2. Guffey, Mary Ellen. Business Communication: Process & Product. USA: South western College Publishing, 2000.
3. Kumar, Sanjay and Pushp Lata. Communication Skills. Delhi: OUP, 2011.

SCHEME OF END-TERM EXAMINATION (MAJOR TEST) AND INSTRUCTIONS FOR EXAMINER

Theory

1. The duration of the exam will 2 hours.
2. The Question Paper for this theory course shall have three questions in all covering both the units. All will be compulsory with internal choice.
3. Question no. 1 will be of 10 marks. The question may have two/three parts with enough internal choice, covering various components of both the Units.
4. Question no 2 with internal choice will be of 10 marks covering contents of the Unit I. It will be theoretical in nature.
5. Question no 3 will have two parts of 15 marks each. The student will be asked to write reports on business and technical subject/ issue covering contents of Unit II. The emphasis would be on testing the actual report writing on a given business and technical situation/ subject in letter format.

ECE302B

MICROWAVE AND RADAR ENGINEERING

B. Tech Semester –VI (ECE, EEE)

L	T	P	Credits
3	1	-	4

Class Work	:	25Marks
Theory	:	75Marks
Total	:	100Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION TO MICROWAVES:

Characteristic features- advantages and applications, Waveguides- Basic concepts and properties, Comparison of Waveguide with transmission lines, Propagation in TE & TM mode, Rectangular waveguide, TEM mode in rectangular waveguide, Introduction to circular waveguides and planar transmission lines.

MICROWAVE COMPONENTS:

Directional Couplers, Tees, Hybrid Ring, Attenuators, Cavity resonators, Mixers & detectors, Matched load, Phase shifter, Isolators, Circulators.

UNIT II

MICROWAVE TUBES:

Limitations of conventional tubes, Construction, operation , properties and applications of Klystron amplifier, Reflex Klystron, Magnetron, TWT, BWO, Crossed field amplifiers.

MICROWAVE SOLID STATE DEVICES:

Principle of operation and applications of Varactor diode, Tunnel diode, Schottky diode, GUNN diode, IMPATT, TRAPATT and PIN diodes. MASER, Parametric amplifiers.

UNIT III

MICROWAVE MEASUREMENTS:

Measurement of Frequency, Power, VSWR, Wavelength & Impedance.

RADAR FUNDAMENTALS:

Introduction, RADAR principles, development, frequencies, block diagram and operation and applications.

UNIT IV

RADAR EQUATION:

Simple form of RADAR equation, Prediction of Range Performance, Minimum detectable signal, Pulse repetition frequency & range ambiguities, system losses, propagation effects.

RADAR SYSTEMS:

Block Diagram and operation of CW , Frequency Modulated RADAR, MTI & Pulsed Doppler RADAR, The Doppler effect, blind speed, Applications.

Text Books :

1. Foundations for Microwave Engineering: R.E.Collin, MGH
2. Introduction to Radar Systems: Merrill I. Skolnik, MGH

Reference Books:

1. Radar Principles, Technology, Applications: Byron Edde, Pearson Education
2. Microwave Devices and Circuit: Samuel Liao, PHI.
3. Elements of Microwave Engineering : R.Chatterjee, EWP

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

EE312B

CONTROL SYSTEM ENGINEERING

B.Tech Semester-VI (ECE, BME, common with 5th Sem. AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25Marks
Theory	:	75Marks
Total	:	100Marks
Duration of Exam.	:	3 Hrs.

UNIT1

INPUT / OUTPUT RELATIONSHIP:

System / Plant model, illustrative examples of plants & their inputs and outputs, open loop & closed loop control system & their illustrative examples, Mathematical modeling and representation of physical systems, Concept of transfer function, relationship between transfer function and impulse response, order of a system, block diagram algebra, signal flow graphs: Mason's gain formula & its application, characteristic equation, derivation of transfer functions of electrical and electromechanical systems.

UNIT 2

TIME DOMAIN ANALYSIS:

Typical test signals, time response of first order systems to various standard inputs, time response of 2nd order system to step input, time domain specifications, steady state error and error constants, concept of stability, pole-zero configuration and stability, necessary and sufficient conditions for stability, Hurwitz stability criterion, Routh stability criterion and relative stability. Root locus concept, development of root loci for various systems, stability considerations.

UNIT3

FREQUENCY DOMAIN ANALYSIS:

Relationship between frequency response and time-response for 2nd order system, polar, Nyquist, Bode plots, stability, Gain-margin and Phase Margin, relative stability, frequency response specifications.

UNIT4

COMPENSATION:

Necessity of compensation, compensation networks, application of lag and lead compensation, basic modes of feedback control, proportional, integral and derivative controllers.

CONTROL COMPONENTS:

Synchros, servomotors, stepper motors, magnetic amplifier.

TEXT BOOK:

1. Control System Engineering: I.J. Nagrath & M. Gopal; New Age Publishers.

REFERENCE BOOKS:

1. Automatic Control Systems: B.C. Kuo, PHI. Publishers.
2. Modern Control Engg: K. Ogata; PHI. Publishers.
3. Control Systems - Principles & Design: Madan Gopal; Tata Mc Graw Hill. Publishers.
4. Modern Control Engineering, R.C. Dorf & Bishop; Addison-Wesley Publishers.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE304B

ANTENNA AND WAVE PROPAGATION

B. Tech Semester –VI

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION TO EM WAVES:

Introduction, Electromagnetic Wave Equations, Poynting Theorem & Electromagnetic Power, Short Electric Dipoles, Retarded Vector Potential, Radiation from a Small Current Element

CURRENT ELEMENT CHARACTERISTICS:

Power Radiated by a Current Element and Its Radiation Resistance, Radiation from a Half Wave Dipole, Radiation Patterns, Radiation Power Density, Radiation Intensity

UNIT II

ANTENNA PATTERN:

Antenna Pattern, Antenna Parameters: Front To Back Ratio, Gain, Directivity, Radiation Resistance, Efficiency, Aperture Area, Impedance, Effective Length and Beam width, Reciprocity Theorem for Antenna and Its Applications

ANTENNA PARAMETERS:

Impedance Measurements, Radiation Pattern Measurement, Beam width Measurement, Phase And Current, Radiation Resistance, Directivity And Polarisation Measurement

UNIT III

TYPES OF ANTENNAS:

Introduction, Isotropic, Yagi-Uda, Biconical, Helical, Horn, Slot, Parabolic Feeds, Conical, Log Periodic, Microwave and Patch Antenna.

ANTENNA ARRAYS:

Types of Antenna Array: Broadside Array, End Fire Array, Collinear Array and Parasitic Array, array of point sources, pattern multiplication, Linear Array, Phased Array, Tapering of Arrays, Binomials Arrays, Continuous Arrays and Superdirective Array, effect of ground on antennas.

UNIT IV

TRANSMISSION PARAMETERS:

Reflection and refraction of plane waves at the surface of a perfect conductor & perfect dielectric (both normal incidence as well as oblique incidence), Brewster's angle and total internal reflection, reflection at the surfaces of a conductive medium, surface impedance, transmission-line analogy, Poynting theorem, interpretation of $E \times H$, power loss in a plane conductor.

RADIO WAVE PROPAGATION:

Introduction, Ground Wave, Sky Wave, Space Waves and Tropospheric Abnormalities, Multi-Hop Propagation, Effect of Earth, Skip Distance, Ionospheric Abnormalities, Mechanism of Ionospheric propagation, critical frequency, MUF, Duct Propagation.

Text Books :

1. Antennas by J.D.Kraus, TMH.
2. Antenna & Wave Propagation by Raju
3. Antenna & Wave Propagation by K.D Prasad.

Reference Books:

1. Antenna & Radiowave Propagation by Collin, TMH
2. Antenna Theory Analysis & Design by Balanis, Wiley.
3. Electromagnetic Waves & Radiating Systems by Jordan & Balman, PHI.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE306B

HDL BASED SYSTEM DESIGN

B. Tech Semester –VI (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION:

System: definition, introduction to digital system, design issues of digital system, computer-aided design tools for designing of digital systems, hardware description languages, simulation and synthesis.

HARDWARE FOR DIGITAL SYSTEM DESIGN:

PLA, PAL, ROM, CPLDs and FPGA.

UNIT II

VHDL BASICS:

Introduction to VHDL, entity and architecture declaration, data objects, classes and data types, operators, overloading, logical operators, types of delays, behavioural, dataflow and structural models.

VHDL STATEMENTS:

Assignment statements; sequential statements and process; conditional statements; Generate statement; case statement, array and loops, resolution functions, concurrent statements.

UNIT III

ADVANCE VHDL TOPICS:

Packages and libraries; subprograms: application of functions and procedures, structural modelling, component declaration, structural layout and generics, configuration statement, Test Benches, ALIAS, Generate statement.

COMBINATIONAL CIRCUIT DESIGN:

VHDL models and simulation of combinational circuits such as multiplexers, demultiplexers, encoders, decoders, code converters, comparators, implementation of boolean functions etc.

UNIT IV

SEQUENTIAL CIRCUITS DESIGN:

VHDL models and simulation of sequential circuits flip flops, shift registers, counters etc., introduction to FSM, VHDL models and simulation of FSM.

DESIGN OF DIGITAL SYSTEM:

Basic components of a computer, specifications, architecture of a simple computer system, design of ALU, memory unit, design implementation using CPLDs and FPGAs.

Reference Books:

1. "IEEE Standard VHDL Language Reference Manual (1993)".
2. "Digital design", Ashenden, Elsevier.
3. "Digital Design and Modelling with VHDL and Synthesis", K. C. Chang; IEEE Computer Society Press.
4. "A VHDL Primer", J. Bhasker, Prentice Hall 1995.
5. "Digital System Design using VHDL", Charles. H. Roth, PWS (1998).
6. "VHDL-Analysis & Modelling of Digital Systems", Z. Navabi, McGraw Hill.
7. "VHDL", Perry, TMH (2002).
8. "Introduction to Digital Systems", Ercegovic. Lang & Moreno, John Wiley (1999).
9. "Fundamentals of Digital Logic with VHDL", Brown and Vranesic; TMH (2000)
10. "Modern Digital Electronics", R. P. Jain, TMH (2003).
11. "Digital system Design using FPGA & CPLD'S", Grout, Elsevier.
12. "VHDL", Kaur, Pearson.
13. "Circuit Design & Simulation with VHDL", Volnei A. Pedroni, PHI.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE308B

MICROELECTRONICS

B. Tech Semester –VI (ECE, AEI)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

CRYSTAL GROWTH AND WAFER PREPARATION:

Clean room concept, safety requirements, crystal growth techniques: czochralski and gradient freeze techniques, physics involved in CZ growth, Energy flow balance, pull rate- considerations, problems and solutions , defects involved in CZ method, effects due to carbon and oxygen impurities, modeling of dopant incorporation, float zone growth for high purity silicon, liquid encapsulated growth for GaAs, material characterization- wafer shaping, crystal characterization, wafer cleaning.

CURRENT ELEMENT CHARACTERISTICS:

Growth mechanism and kinetic oxidation, thin oxides, oxidation techniques and systems, oxide properties, characterization of oxide films, growth and properties of dry and wet oxidation, charge distribution during oxidation, oxide characterization, anomalies with thin oxide regime.

UNIT II

DIFFUSION:

The nature of diffusion, diffusion mechanisms – interstitial, substitution, interstitial-substitution combined, interstitialcy and grain boundary, Fick's law of diffusion, limited and constant source diffusion, models of diffusion in solid, diffusion equation, atomic diffusion mechanisms, diffusion system for silicon and gallium arsenide. Measurement techniques, experimental analysis of diffused profiles.

ION IMPLANTATION:

Introduction, physics of implantation, range theory, projected range, ion stopping mechanisms- channeling, nuclear stopping, electronic stopping, implantation damage, implantation equipment, annealing, shallow junction, application to silicon and gallium arsenide, RTA mechanism.

UNIT III

LITHOGRAPHY:

Pattern generation and mask making, exposure sources, photolithography, photoresists, optical lithography, electron lithography, X-ray lithography, ion lithography, mask defects, atomic force microscopy based lithography system, dip pen lithography system.

DEPOSITION:

Need for film deposition, film deposition methods- physical and chemical, deposition processes, CVD techniques for deposition of polysilicon, silicon dioxide, silicon nitride and metal films, sputter deposition, sputter unit, Epitaxy –types, techniques, advantages, vapor phase epitaxy, molecular beam epitaxy.

UNIT IV

ETCHING:

Directionality and selectivity issues, wet chemical etching, wet etchants, dry physical etching, dry etchants, plasma etching, advantages and disadvantages, issues involved, dry etching systems, dry chemical etching, reactive ion etching, etching induced damage, cleaning.

METALLIZATION:

Introduction, metallization applications, metallization choices, physical vapor deposition, patterning, metallization problems.

Text Books :

1. S.M.Sze, "VLSI Technology" TMH
2. S.K.Gandhi, "VLSI Fabrication Principles"

Reference Books:

1. S.M.Sze, "Semiconductor Devices Physics and Technology"
2. K.R.Botkar, "Integrated Circuits".

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks

ECE310B

MICROCONTROLLER BASED SYSTEM DESIGN

B. Tech Semester –VI (ECE, common with BME)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION OF EMBEDDED SYSTEMS:

Definition, ingredients of embedded system, requirements & challenges of embedded system design, different types of microcontrollers: Embedded microcontrollers, external memory microcontrollers etc., processor architectures: Harvard V/S Princeton, CISC V/S RISC, microcontrollers memory types, microcontrollers features: clocking, i/o pins, interrupts, timers, and peripherals.

SOFTWARE FOR EMBEDDED SYSTEM DESIGN:

Development tools/ environments, Assembly language programming style, Interpreters, High level languages, Intel hex format object files, Debugging.

UNIT II

8051 MICROCONTROLLER:

Pin diagram explanation, internal diagram 8051, Instruction Set, Addressing mode, data transfer instruction, logical, arithmetic instruction, bit instruction, branching instruction.

TIMERS, SERIAL INTERFACE & INTERRUPTS OF 8051 MICROCONTROLLER:

Timer: Control Word, mode of timers, simple programming, generation of square wave, Serial interface: Introduction, Control Word, mode of serial interface, simple programming, Interrupts: Introduction, Control word Simple Programming, generation of waveforms using interrupt, serial interface using interrupt.

UNIT III

PIC MICROCONTROLLER:

Introduction to PIC microcontrollers, features of PIC family microcontrollers, architecture and pipelining, program memory considerations, addressing modes, CPU registers, Instruction set, and simple operations.

FEATURES OF PIC MICROCONTROLLER:

Timer: Control Word, mode of timers, simple programming, generation of square wave, Watch-dog timer, Serial interface: Introduction, Control Word, mode of serial interface, simple programming, Interrupts: Introduction, Control word Simple Programming, generation of waveforms using interrupt, serial interface using interrupt.

UNIT IV

APPLICATIONS BASED ON 8051 MICROCONTROLLER:

Interfacing of memory, intelligent LCD, 8255, ADC, DAC, LED display, Memory Card, Bio-metric system.

APPLICATION BASED ON PIC MICROCONTROLLERS: Interfacing of Graphical Display, Memory Card, Bio-metric system Music box, Applications like Mouse wheel turning, PWM motor control, ultra sonic distance measuring, Temperature Sensor, Pressure Sensor, Magnetic Field Sensor.

Reference Books:

1. 8051, Scott Mackenzie, PHI, Englewood Cliffs, New Jersey.
2. Programming & Customizing the 8051 Microcontroller, Myke Predko, Tata McGraw-Hill Pub. Co. Ltd., New Delhi.
3. 8051 Architecture Programming & Applications, K. J. Ayala, Penram International Publishers, India.
4. Programming & Customizing the PIC Microcontroller, Myke Predko, Tata McGraw-Hill Pub. Co. Ltd., New Delhi.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE322B

MICROWAVE AND RADAR ENGINEERING LAB

B. Tech Semester –VI (ECE, EEE)

L T P Credits
- - 2 1

Class Work : 20Marks
Practical : 30Marks
Total : 50Marks
Duration of Exam. : 3 Hrs.

LIST OF EXPERIMENTS:

- 1 To study of Wave guide Components.
- 2 Generation of Microwave Power & Basic set-up.
- 3 To Study the characteristic of reflex klystron.
- 4 To measure frequency of Microwave source and demonstrate relationship among frequency, free space wavelength and guide wave length.
- 5 To measure VSWR of an unknown load.
- 6 To measure large standing wave ratio of a unmatched load.
- 7 To match impedance for maximum power transfer using slide screw tuner.
- 8 To measure VSWR, insertion loss and attenuation of a fixed and variable attenuator.
- 9 To measure coupling factor and directivity of Directional coupler.
- 10 To determine the insertion loss, isolation of three port circulator
- 11 To determine the insertion loss, isolation of a isolator.
- 12 To study the characteristics of Gunn Diode.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

EE332B

CONTROL SYSTEM ENGINEERING LAB
B.Tech. Semester-VI (ECE, common with 5th Sem. AEI)

L T P Credits
- - 2 1

Class Work : 20Marks
Practical : 30Marks
Total : 50Marks
Duration of Exam. : 3 Hrs.

LIST OF EXPERIMENTS:

1. To study A.C. servo motor and to plot its torque-speed characteristics.
2. To study D.C. servo motor and to plot its torque speed characteristics.
3. To study the magnetic amplifier and to plot its load current v/s control current characteristics for:
(a) series connected mode
(b) parallel connected mode.
4. To plot the load current v/s control current characteristics for self excited mode of the magnetic amplifier.
5. To study the synchro & to:
(a) Use the synchro pair (synchro transmitter & control transformer) as an error detector.
(b) Plot stator voltage v/s rotor angle for synchro transmitter i.e. to use the synchro transmitter as position transducer.
6. To use the synchro pair (synchro transmitter & synchro motor) as a torque transmitter.
7. (a) To demonstrate simple motor-driven closed-loop position control system.
(b) To study and demonstrate simple closed-loop speed control system.
8. To study the lead, lag, lead-lag compensators and to draw their magnitude and phase plots.
9. To study a stepper motor & to execute microprocessor or computer-based control of the same by changing number of steps, direction of rotation & speed.
10. To implement a PID controller for level control of a pilot plant.
11. To implement a PID controller for temperature control of a pilot plant.
12. To study the MATLAB package for simulation of control system design.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE326B

HDL BASED SYSTEM DESIGN LAB

B. Tech Semester –VI (ECE, AEI)

L T P Credits
- - 2 1

Class Work : 20 Marks
Practical : 30 Marks
Total : 50 Marks
Duration of Exam. : 3 Hrs.

LIST OF EXPERIMENTS:

1. Design all Basic gates using HDL.
2. Design Universal gates using HDL.
3. Write VHDL programs for half adder and full adder circuits, check the wave forms and the hardware generated.
4. Write VHDL programs for multiplexer & demultiplexer circuits, check the wave forms and the hardware generated.
5. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
 - a. decoder
 - b. encode
6. Write a VHDL program for a comparator and check the wave forms and the hardware generated.
7. Write a VHDL program for a code converter and check the wave forms and the hardware generated.
8. Write a VHDL program for a FLIP-FLOP and check the wave forms and the hardware generated.
9. Write a VHDL program for a counter and check the wave forms and the hardware generated.
10. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
 - (a) Register
 - (b) Shift register
11. Implement any three (given above) on FPGA kit.
12. Implement any three (given above) on CPLD kit.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE330B

MICROCONTROLLER LAB

B. Tech Semester –VI (ECE, common with BME)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Study Architecture of 8051 Microcontroller & Power on reset circuit.
2. (a) Write an assembly language program to add eight 8-bit numbers.
(b) Write an assembly language program to find average of eight 8-bit numbers.
3. (a) Write an assembly language program to find a maximum number from a given 8-bit ten numbers.
(b) Write an assembly language program to find a minimum number from a given 8-bit ten numbers.
4. Arrange the given ten 8-bit numbers in ascending order.
5. Generate a square wave of 10kHz at P1.0 Crystal frequency is XXXX.
6. Write a program to transfer data from given memory block B1 to block B2.
7. Interface LED and switch with microcontroller 8051 or PIC.
8. Interface seven segment display with microcontroller 8051 or PIC.
9. Interface LCD with microcontroller 8051 or PIC.
10. Write an assembly language program for External program and test on hardware.
11. Interface stepper motor with microcontroller 8051 or PIC.
12. Interface DC motor with microcontroller 8051 or PIC and control speed using PWM.
13. Write an assembly language program to transfer message serially.
14. Write an assembly language program using interrupts to simultaneously create 7kHz and 500kHz square wave on P1.0 and P1.1 respectively.
15. Design a mini project based on microcontroller.

Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

GPEC302B**GENERAL PROFICIENCY & ETHICS**
B. Tech. Semester – VI (Common for all Branches)

L	T	P	Credits
1	-	-	2

Examination	:	-
Practical	:	75Marks
Total	:	75Marks

The purpose of this course is to inculcate a sense of professionalism in a student along with personality development in terms of quality such as receiving, responding, temperament, attitude and outlook. The student efforts will be evaluated on the basis of his/ her performance / achievements in different walks of life.

A Faculty Counselor will be attached to a group of students which will remain associated with him /her during the entire period of the degree program in the University. Each faculty member will serve as a faculty counselor. They will act like a local guardian for the students associated with him / her and will help them in terms of career guidance, personal difficulties.

A. The student will present a written report before the committee with following in view:

The student will present before the committee his/her achievements during the current academic session in the form of a written report highlighting followings:

I.	Academic Performance	-----
II.	Extra Curricular Activities / Community Service, Hostel Activities	(8 Marks)
III.	Technical Activities / Industrial, Educational tour	(8 Marks)
IV.	Sports/games	(14 Marks)
V.	Moral values & Ethics	(15 Marks)

NOTE: Report submitted by the students should be typed on both sides of the paper.

B. A student will support his/her achievement and verbal & communicative skill through presentation before the committee.
(30 Marks)

C. Moral values & Ethics

Syllabus - A few topics from the below mentioned books

1. R.R.Gaur, R. Sangal and G.P. Bagaria, " Bagaria, " A foundation course in Human Values and Professional Ethics", Pub: Excel Books, New Delhi-110028.
2. M. Govindrajan, S Natrajan & V.S. Senthil Kumar, " Engineering Ethics (including Human Values)" Eastern Economy Edition, Prentics Hall of India Ltd.

A minor test/Quiz will be conducted during the semester and It will be the duty of the concerned teacher assigned to teach Moral values & Ethics to submit the awards to respective chairman of the department / Director/Principal.

The evaluation of this course will be made by the following Committee.

University Departments:

1	Chairperson of the Department	Chairman
2	Senior Most Faculty Counselor	Member
3	Vice- Chancellor's Nominee	Member

Affiliated Colleges:

1	Director/Principal	Chairman
2	Head of the Department/Sr. Faculty	Member
3	External Examiner to be appointed by the University	Member

Note: Remuneration will be paid to the external examiner only (at par with the other practical examinations).

HUM304B

ORAL PRESENTATION SKILLS
B. Tech. Semester – VI (Common for all branches)

L	T	P	Credits
1	-	-	1

Class Work	:	20 Marks
Theory	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	2Hrs.

Oral Presentations:

Group Discussion; Mock interviews

Note for the Teacher:

The teacher concerned, by devising her/his method, must preview and review the student's spoken proficiency at the beginning and end of the semester respectively to find the efficacy of the course and degree of improvement in the student.

Recommended Reading:

1. Konar, Nira. English Language Laboratories: A Comprehensive Manual. Delhi: PHI, 2011.
2. Kumar, Sanjay and Pushp Lata. Communication Skills. Delhi: OUP, 2011

SCHEME OF END SEMESTER EXAMINATION (Practical)

An external Practical exam of 25 marks of 2 hour duration for the course will be conducted by an external examiner appointed by the university's Controller of Exams.

NOTE:

Students will be tested for their oral communication competence making them participate in Group discussion, mock situations for interview. Students may also be evaluated through a viva conducted by an external examiner.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. IV YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VII
Credit Based Scheme w.e.f. 2015-2016

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	ECE401B	INDUSTRIAL PROCESS CONTROL AND INSTRUMENTATION(ECE,AEI)	3	1	-	25	75	-	100	4	3
2	ECE403B	DIGITAL SIGNAL PROCESSING(ECE,AEI)	3	1	-	25	75	-	100	4	3
3	ECE405B	SATELLITE COMMUNICATION	3	1	-	25	75	-	100	4	3
4	ECE407B	VLSI DESIGN(ECE,AEI,EEE)	3	1	-	25	75	-	100	4	3
5		*OPEN ELECTIVE	4	-	-	25	75	-	100	4	3
6	ECE421B	PROGRAMMABLE LOGIC CONTROLLERS LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
7	ECE423B	DIGITAL SIGNAL PROCESSING LAB using MATLAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
8	ECE425B	SATELLITE COMMUNICATION LAB	-	-	2	20	-	30	50	1	3
9	ECE427B	VLSI DESIGN LAB(ECE,AEI)	-	-	2	20	-	30	50	1	3
10	ECE431B	PROJECT	-	-	4	100	-	-	100	4	-
11	ECE435B	PROFESSIONAL TRAINING . II	-	-	2	50	-	-	50	2	-
		Total	16	4	14	355	375	120	850	30	

LIST OF OPEN ELECTIVES:

1	MEI 623B	ENTREPRENEURSHIP	6	BT401B	BIOINFORMATICS
2	BME451B	MEDICAL INSTRUMENTATION	7	AE417B	MODERN VEHICLE TECHNOLOGY
3	ECE305B	CONSUMER ELECTRONICS	8	CE451B	POLLUTION & CONTROL
4	EE451B	ENERGY AUDIT	9	CSE411B	MANAGEMENT INFORMATION SYSTEM
5	EEE457B	ENERGY RESOURCES & TECHNOLOGY	10	IT413B	CYBER SECURITY

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- Students will be permitted to opt for any one elective run by the other department. However, the department shall offer those elective for which they have expertise. The choice of the students for any elective shall not be binding for the department to offer, if the department does not have expertise. The minimum strength of the students should be 20 to run an elective course.
- Assessment of Professional Training-II, undergone at the end of VI semester, will be based on seminar, viva-voce, report and certificate of Professional Training obtained by the student from the industry, institute, research lab, training center etc
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Assessment Electronics gadgets including Cellular phones are not allowed in the examination.

ECE401B

INDUSTRIAL PROCESS CONTROL AND INSTRUMENTATION

B. Tech Semester –VII (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25Marks
Theory	:	75Marks
Total	:	100Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Introduction:

Instruments for measurements of voltage, current and other circuit parameters, digital meters.

Pressure measurements:

Introduction, Basic Terms, Pressure measurements, Pressure Formulas, Measuring Instruments, Application considerations.

UNIT II

Level Measurements:

Introduction, Level Formulas, Level sensing devices, Application considerations.

Flow Measurements:

Introduction, Basic Terms, Flow Formulas, Flow measurement Instruments, Application considerations.

UNIT III

Temperature and Heat Measurements:

Introduction, Basic Terms, Temperature and Heat Formulas, Temperature measuring devices, Application considerations.

Humidity, Density and Specific Gravity Measurements:

Viscosity and pH measurements: Basic Terms, Measuring devices, application considerations.

UNIT IV

Actuators and control:

Pressure controllers, Flow control actuators, power controls

Automatic Process Control Systems and Controllers:

Introduction, automatic controllers, classification of controllers, introduction to computer aided measurement and control system, Introduction to programmable logic controllers.

Text Books :

1. Principles of Industrial Instrumentation by D. Patranabis TMH
2. Industrial Instrumentation and Control by S.K.Singh TMH

Reference Books:

1. Elements of Electronic Instrumentation and Measurement by Joseph c. Carr Pearson

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE403B

DIGITAL SIGNAL PROCESSING

B. Tech Semester –VII (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Discrete Fourier Transform (DFT):

Frequency Domain Sampling and Reconstruction of Discrete –Time signals, Discrete Fourier Transform, DFT as a Linear Transformation, Relationship of the DFT to other transforms, Properties of DFT, Use of DFT in Linear filtering methods: linear filtering, Filtering of long data sequences.

Fast Fourier Transform (FFT):

Efficient computation of the DFT: Fast Fourier Transform Algorithms, Radix-2 FFT Algorithms, Applications of FFT Algorithms: Efficient Computation of the DFT of Two Real Sequences, Efficient Computation of the DFT of a $2N$ –Point Real Sequence, Quantization effects in the computation of the DFT.

UNIT II

Structures for FIR Systems:

Direct –Form Structures, Cascade –Form Structures, Frequency Sampling Structures, Lattice Structure.

Structures for IIR Systems:

Direct –Form Structures, Signal Flow graphs & Transposed Structures, Cascade –Form Structures, Parallel –Form Structures; Lattice & Lattice-Ladder Structures for IIR Systems. Comparison of Different structures.

UNIT III

Frequency Domain Characterization of LTI Systems:

Response to Complex Exponential & Sinusoidal Signals, Steady –state and Transient response with Input as a sinusoidal signal, Steady state response to periodic input signals, response to Aperiodic Input Signals, magnitude and phase response from pole & zeros, measuring the impulse response of an unknown system by correlation.

Frequency Selective Filters

Ideal Filters: lowpass, Highpass, Bandpass, Digital Resonators, Notch, Comb, All-pass filters, Digital Sinusoidal Oscillators pole –zero pattern for lowpass and highpass filters, lowpass to highpass filter transformation, Invertibility of systems & Deconvolution: LTI systems invertibility, maximum, minimum phase, and mixed phase systems; System identification through Crosscorrelation, Spectrum.

UNIT IV

Considerations for Practical Realization, Comparison of FIR & IIR, FIR Filter Design :

Testing the Frequency response for practical realization: Paley –Wiener Theorem, characteristics of Practical Frequency –selective filters, FIR and IIR filters properties, Design of FIR filters: importance of Linear Phase response, Zero locations for a linear phase FIR filter, Design of linear phase FIR filters using Windows, Desirable Window function properties for FIR filter design, Frequency Sampling method for Linear Phase FIR Filter Design.

IIR Filter Design

Design steps for IIR Filter design, Design of IIR lowpass analog filters: Butterworth, Chebyshev, Elliptic; Conversion of analog system to digital system by: Approximation of Derivatives, Impulse Invariance, Bilinear Transformation, Analog Domain Frequency Transformations, Digital Domain Frequency Transformations.

Text Books :

1. J. G. Proakis, D. G. Manolakis, "Digital Signal Processing, Principles, Algorithms, & Applications", Prentice –Hall India.

Reference Books:

1. L. R. Rabiner & B. Gold, "Theory and Application of Digital Signal Processing", Prentice –Hall India.
2. A. V. Oppenheim, R. W. Schaffer, J. R. Buck, "Discrete –Time Signal Processing", Prentice –Hall India.
3. A. V. Oppenheim, R. W. Schaffer, "Digital Signal Processing", Prentice –Hall India.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE405B

SATELLITE COMMUNICATION

B. Tech Semester –VII

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

FUNDAMENTALS OF SATELLITE COMMUNICATION :

Basic principles of Satellite Communication, Evolution of Satellite Communications, Basic Concepts of Satellite Communications, Type of satellites, Frequency allocations for Satellite Services, Comparison of Satellite communication over other modes of communication, Satellite applications, Future Trends of Satellite Communications.

SATELLITE ORBITS:

Kepler's Laws, equation of orbit, Types of orbits, Locating the satellite in the orbit, locating the satellite with respect to the earth, Orbital parameters, Orbital perturbations, Orbit determination, Look Angle determination, Earth coverage and slant range, Mechanism of launching a satellite, Station keeping, Satellite stabilization, Orbital effects in communication systems performance.

UNIT II

SPACECRAFT AND ITS SUBSYSTEMS:

Attitude and orbit control system (AOCS), Telemetry, tracking, Command and monitoring, Power supply system, Communication subsystems-transponder, Satellite antenna subsystem.

SATELLITE LINK DESIGN:

General Link design equation, System noise temperature, C/N and G/T ratio, Design of down links, up link design, Effects of rain, complete link design, Interference effect on complete link design.

UNIT III

EARTH STATION TECHNOLOGY:

Classification of earth station, Earth station parameters, Earth station design requirements, Earth station antenna design, Earth station subsystem-transmitter, receiver, low noise amplifier, high power amplifier, antenna system, tracking systems, Terrestrial interface.

ANALOG and DIGITAL SATELLITE DIGITAL COMMUNICATION:

Elements of Digital Satellite Communication systems, Baseband Signals, Frequency Division Multiplexing technique, Time Division Multiplexing Digital Modulation Techniques-ASK, BPSK, QPSK, BFSK, MSK and QAM.

UNIT IV

MULTIPLE ACCES:

Introduction, Frequency division multiple access (FDMA), Time division Multiple Access (TDMA)-frame structure, burst structure, frame efficiency, super frame, burst time plan, Satellite Switched TDMA, SPADE system, Code Division Multiple access (CDMA), Spread spectrum transmission and reception.

SPECIAL PURPOSE COMMUNICATION SATELLITE :

Satellite for earth observation, Satellite for weather forecast, Satellite for scientific studies, Satellite for military applications, Satellite television, telephone services via satellite, Data communication services, Very small aperture terminal (VSAT), RADARSET, Mobile satellite communication system (MSAT), GPS systems, Satellite signal acquisition, GPS Navigation Message, GPS signal levels, GPS receiver operation, Differential GPS.

Text Books:

1. Satellite Communications : Dennis Roddy, TMH
2. Satellite Communication : Monojit Mitra, PHI

Reference Books:

1. Satellite Communication: T. Pratt and C.W. Boston, John Willey and sons
2. Introduction to Satellite Communication: Bruce R. Elbert, Artech House
3. Fundamentals of satellite Communication: K.N.Raja Rao, PHI
4. Satellite Communication Systems Engineering : Wilbur L. Pritchard, Henri G. Suyderhoud and Robert A. Nelson, Pearson

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE407B

VLSI DESIGN

B. Tech Semester –VII (ECE, AEI, EEE)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION:

Evolution of VLSI, Moore's Law, MOS transistor theory – MOS structure, enhancement & depletion transistor, Threshold voltage, MOS device design equations, Body Effect, Channel length modulation, Mos Transistor Trans conductance and output conductance.

MOS FABRICATION:

Crystal Growth, wafer preparation, epitaxy, oxidation, lithography, etching, diffusion, deposition, ion-implantation, metallization, Fabrication Process: nMOS, CMOS (n-well, p-well, twin-tub, silicon on insulator, 3-D CMOS, MOS capacitance dynamic behavior, sub-micron MOS transistors- related effects.

UNIT II

MOS INVERTER:

Introduction, nMOS inverter: resistive load, enhancement load, depletion load, determination of pull-up to pull-down ratio for an nMOS inverter driven by another nMOS inverter. CMOS inverter: DC characteristics, circuit model, latch up.

CMOS DESIGN:

Gate Logic: inverter, nand gate, nor gate. Ratioed logic, pseudo NMOS logic, DCVSL Logic, Switch Logic: pass transistor and transmission gate, dynamic logic, charge sharing logic, domino logic. Combination logic: Parity generator, multiplexer. Sequential logic: two phase clocking, memory-latches and registers, setup and hold time violations, causes ,effects and remedies.

UNIT III

MOS circuit Design :

MOS layer, stick diagram: nMOS Design style, CMOS design style, design rules and layout: lambda based design rule, layer representation, contact cuts, double metal MOS process rules, CMOS lambda based design rules.

SCALING OF MOS CIRCUITS:

Scaling models and scaling factors for device parameters, limitations of scaling: substrate doping, limits of miniaturization, limit of interconnect and contact resistance.

UNIT IV

CIRCUIT CHARACTERIZATION AND PERFORMANCE ESTIMATION:

Sheet resistance, resistance estimation, capacitance estimation, inductance, switching characteristic, propagation delays, CMOS gate transistor sizing, power dissipation: static and dynamics.

SUB-DESIGN PROCESS:

Design of an ALU subsystem: 4-bit shifter, barrel shifters, logarithmic shifters. Adders – ripple carry, Manchester carry, carry bypass, carry select linear, carry select square root, carry look ahead, tree and domino adder .Multiplier – binary , array, carry save, Wallace tree, Programmable logic array, random access memory, binary counter.

Text Books :

1. D.A.Pucknell and K. Eshraghian, "Basic VLSI Design"
2. Weste and Eshraghian, "Principle of CMOS VLSI Design" Pearson Education, 2001

Reference Books:

1. S. M. Kang, Y. Leblebici, "CMOS digital integrated circuits analysis & design" TMH, 3rd Edition.
2. Rabaey, "Introduction of digital integration circuit".

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE421B**PROGRAMMABLE LOGIC CONTROLLERS LAB**

B. Tech Semester –VII (ECE, AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To study of PLC based Process control systems in a semi-automatic Bottling plant.
2. To study of PLC based Process control systems in a fully-automatic Bottling plant.
3. To Study of PLC based car parking.
4. To study of PLC based tank level control (high level,medium level,low level,empty level)
5. To study of PLC based step sequence.(use of time at different time interval)
6. How to create delay in PLC system.(off delays,pulse,extended pulse)
7. To study of PLC based light intensity variation.(intensity variation with help of digital processing)
8. To study of PLC based motor control (stepper motor clockwise,anticlockwise dectional control
9. To study of PLC based digital electronic design (combinational,sequentional and control logic ckt.)
10. To study of PLC based traffic light interface.

Note:-

1. Total ten experiments are to be performed in the semester
2. At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE423B**DIGITAL SIGNAL PROCESSING LAB USING MATLAB**

B. Tech Semester –VII (ECE, AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20Marks
Practical	:	30Marks
Total	:	50Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Introduction to MatLab.
2. Matrix operations :- Addition,Subtraction,Multiplication,Transepose,Inverse.
3. Solution of a Linear Equation.
4. To find Eigen value of matrix.
5. To find statistical properties :- Mean, Median, Standard Deviation and energy of a set of signals.
 - Plotting.
 - Single signal in a single graph.
 - Multiple signal in single graph.
 - Multiple signal in multiple graphs but in single window.
6. To sort a matrix.
 - Row wise – in reference to a particular row.
 - Column wise – in reference to a particular column.
7. To practice different kind of loop and conditional statement and to make a program using the same.
8. To save workspace variables in a file.
9. To make a simulink model of feedback system using second order transfer function and utility feedback.
10. To find the convolution of two number.
11. To represent basic signals (Unit step, unit impulse, ramp, exponential, sine and cosine).
12. To develop program for discrete convolution & discrete correlation.
13. To understand stability test.
14. To develop program for computing FFT & IDFT.
15. To design analog filter (low-pass, high pass, band-pass, band-stop).
16. To design digital IIR filters (low-pass, high pass, band-pass, band-stop).
17. To design FIR filters using windows technique.
18. To design a program to compare direct realization values of IIR digital filter
19. To develop a program for computing parallel realization values of IIR digital filter.
20. To develop a program for computing cascade realization values of IIR digital filter
21. To develop a program for computing inverse Z-transform of a rational transfer function.
22. To design equiripple FIR filter for given specifications and plot its magnitude & Phase Response.
23. To plot pole zero diagram for given FIR and IIR system.

Note:-

- 1 Total fifteen experiments are to be performed in the semester
- 2 At least Ten experiments should be performed from the above list. Remaining Five experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.
- 3 All above experiments should be performed using MATLAB.

ECE425B

SATELLITE COMMUNICATION LAB

B. Tech Semester –VII

L	T	P	Credits
-	-	2	1

Class Work	:	20Marks
Practical	:	30Marks
Total	:	50Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To set up a active and passive satellite communication link and study their difference.
2. To measure the base-band analog (voice) signal parameters in the satellite link.
3. To measure C/N ratio.
4. To transmit and receive the function generator waveforms through a Sat.Com. link.
5. To measure the digital baseband signal parameters in Sat.Com. link.
6. To send telecommand and receive the telemetry data.
7. To set a PC to PC Sat. Com. Link using RS-232 ports.
8. To measure the propagation delay of signal in a Sat. Com. Link.
9. To measure fading of a received signal.
10. To measure the parameters in an analog FM/FDM TV Sat.Com. link.
11. To measure the S/N ratio.
12. To calculate the figure of merit and FM deviation.

Note:-

- 1 Total ten experiments are to be performed in the semester
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE427B

VLSI DESIGN LAB
B. Tech Semester –VII (ECE, AEI)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. Design the schematic for CMOS inverter .
2. Design the schematic for CMOS nand gate
3. Design the schematic for CMOS nor gate .
4. Design the schematic for a d- latch with clk time period =6ns using nand gates
5. Design the schematic for a half adder using nand gates .
6. Design a full adder using half adder designed above.
7. Design the layout for PMOS in layout editor.
8. Design the layout for NMOS in layout editor.
9. Design the layout for CMOS inverter with equal rise and fall time in layout editor.
10. Design the layout for 2-Input and 3-Input NAND gate.
11. Design the layout for 2-Input and 3-Input NOR gate.
12. Design the layout for clocked S-R flip-flop.

Note:-

- 1 Total ten experiments are to be performed in the semester
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE431B**PROJECT**
B. Tech Semester –VII

L	T	P	Credits
-	-	4	4

Class Work	:	100 Marks
Practical	:	-
Total	:	100 Marks

The project started in VII Semester will be completed in VIII Semester and will be evaluated through a panel of examiners consisting of the following:

Head/ Chairperson of Department	:	Chairperson
Project coordinator	:	Member
External examiner	:	To be appointed by the University

The student will be required to submit two copies of his/her project report to the department for record (one copy each for the department and participating teacher).

Project coordinator will be assigned the project load of, maximum of 2 hrs. per week including his own guiding load of one hr. However, the guiding teacher will be assigned maximum of one period of teaching load irrespective of number of students/groups under him/her.

The format of the cover page and the organization of the body of the report for all the B.Tech. will be finalized and circulated by the Dean, Faculty of Engineering and Technology.

ECE435B

PROFESSIONAL TRAINING – II

B. Tech Semester –VII

L	T	P	Credits
-	-	2	2

Class Work	:	50 Marks
Practical	:	-
Total	:	50 Marks

At the end of 6th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional / Organization/ Research Laboratory etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

The typed report should be in a prescribed format.

The report will be evaluated in the VII Semester by a Committee consisting of three teachers from different specialization to be constituted by the Chairperson of the department. The basis of evaluation will primarily be the knowledge and exposure of the student towards different processes and the functioning of the organization.

The student will interact with the committee through presentation to demonstrate his/her learning.

Teachers associated with evaluation work will be assigned 2 periods per week load.

MEI623B

ENTREPRENEURSHIP
B. Tech Semester –VII (Open Elective)

L T P Credits
4 - - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

ENTREPRENEURIAL DEVELOPMENT PERSPECTIVE: Concepts of Entrepreneurship Development, Evolution of the concept of Entrepreneur, Entrepreneur Vs. Intrapreneur, Entrepreneur Vs. Entrepreneurship, Entrepreneur Vs. Manager, Attributes and Characteristics of a successful Entrepreneur, Role of Entrepreneur in Indian economy and developing economies with reference to Self-Employment Development, Entrepreneurial Culture.

UNIT II

CREATING ENTREPRENEURIAL VENTURE: Business Planning Process, Environmental Analysis - Search and Scanning, Identifying problems and opportunities, Defining Business Idea, Basic Government Procedures to be complied with.

UNIT III

ENTREPRENEURSHIP DEVELOPMENT AND GOVERNMENT: Role of Central Government and State Government in promoting Entrepreneurship - Introduction to various incentives, subsidies and grants - Export Oriented Units - Fiscal and Tax concessions available; Role of Central/State agencies in the Entrepreneurship Development - District Industries Centers (DIC), Small Industries Service Institute (SISI), Entrepreneurship Development Institute of India (EDII), National Institute of Entrepreneurship & Small Business Development (NIESBUD), National Entrepreneurship Development Board (NEDB).

UNIT IV

PROJECT MANAGEMENT AND CASE STUDIES: Technical, Financial, Marketing, Personnel and Management Feasibility, Estimating and Financing funds requirement - Schemes offered by various commercial banks and financial institutions like IDBI, ICICI, SIDBI, SFCs, Venture Capital Funding, Why do Entrepreneurs fail - The Four Entrepreneurial Pitfalls (Peter Drucker), Case studies of Successful Entrepreneurial Ventures, Failed Entrepreneurial Ventures and Turnaround Ventures.

Text & Reference Books:

1. Entrepreneurship - Hisrich Peters.
2. Entrepreneurship: New Venture Creation - David H. Holt.
3. The Culture of Entrepreneurship - Brigitte Berger.
4. Project Management - K. Nagarajan.
5. Dynamics of Entrepreneurship Development - Vasant Desai.
6. Entrepreneurship Development - Dr. P.C.Shejwalkar.
7. Thought Leaders - Shrinivas Pandit.
8. Entrepreneurship, 3rd Ed. - Steven Brandt.
9. Business Gurus Speak - S.N.Char.
10. The Entrepreneurial Connection - Gurmit Narula.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

BME451B

MEDICAL INSTRUMENTATION B. Tech Semester –VII (Open Elective)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

PHYSIOLOGY AND TRANSDUCERS: Cell and its structure – Action and resting – Potential propagation of action potential – Sodium pump – Nervous system – CNS – PNS – Nerve cell – Synapse – Cardio pulmonary system – Physiology of heart and lungs – Circulation and respiration – Transducers – Different types – Piezo-electric, ultrasonic, resistive, capacitive, inductive transducers – Selection criteria.

UNIT II

ELECTRO – PHYSIOLOGICAL AND NON-ELECTRICAL PARAMETER MEASUREMENTS: Basic components of a biomedical system – Electrodes – Micro, needle and surface electrodes – Amplifiers – Preamplifiers, differential amplifiers, chopper amplifiers – Isolation amplifier. ECG – EEG – EMG – ERG – Lead systems and recording methods – Typical waveforms. Measurement of blood pressure – Cardiac output – Cardiac rate – Heart sound – Respiratory rate – Gas volume – Flow rate of CO₂, O₂ in exhaust air - PH of blood, ESR, GSR measurements – Plethysmography.

UNIT III

MEDICAL IMAGING AND PATIENT MONITORING SYSTEMS: X-ray machine - Radio graphic and fluoroscopic techniques – Computer tomography – MRI – Ultrasonography – Endoscopy – Thermography – Different types of biotelemetry systems and patient monitoring – Electrical safety. Biological effects of X-rays and precautions.

UNIT IV

ASSISTING AND THERAPEUTIC EQUIPMENTS: Pacemakers – Defibrillators – Ventilators – Nerve and muscle stimulators – Diathermy – Heart – Lung machine – Audio meters – Dialyzers. Respiratory Instrumentation - Mechanism of respiration, Spirometry, Pnemuotachograph Ventilators.

Text Books:

1. Biomedical Instrumentation and Measurements – Leslie Cromwell and F.J. Weibell, E.A. Pfeiffer, PHI, 2nd Ed, 1980.
2. Medical Instrumentation, Application and Design – John G. Webster, John Wiley, 3rd Ed., 1998.

Reference Books:

1. Principles of Applied Biomedical Instrumentation – L.A. Geoddes and L.E. Baker, John Wiley, 1975.
2. Hand-book of Biomedical Instrumentation – R.S. Khandpur, TMH, 2nd Ed., 2003.
3. Biomedical Telemetry – Mackay, Stuart R., John Wiley, 1

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE305B

CONSUMER ELECTRONICS
B. Tech Semester –VII (Open Elective)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

MONOCHROME TV (INTRODUCTION):Elements of a TV System,Picture transmission,Sound transmission,Picture reception,Sound reception,Synchronization,Receiver control,Image continuity, Scanning Process, Aspect Ratio, Flicker, Composite Video Signal, Picture Elements,Kell factor, Vertical Resolution,Horizontal Resolution,Video bandwidth,Interlacing, 625 Line System,Bandwidths for TV Transmission,Vertical and horizontal synch detail,Vestigial Side Band transmission(Advantages and Disadvantages)

Monochrome TV (Picture and Camera Tubes):Monochrome picture tube,beam reflection,Beam focussing,Screen Phosphor,Face plate,Picture tube characteristics,picture tube circuit controls,Monochrome Camera Tubes:Basic principle,Image Orthicon, Vidicon,Plumbicon

UNIT II

Colour TV Essentials:Compatibility , Colour perception,Three Colour theory,Luminance,Hue and Saturation, Dispersion and Recombination of light,Primary and secondary colours,luminance signal,Chrominance Signal, Colour picture tube,colour TV Camera,Colour TV display Tubes,colour Signal Transmission,Bandwidth for colour signal transmission,Colour TV controls. Cable TV,Block Diagram and principle of working of cable TV.

Plasma and LCD:Introduction,liquid crystals,types of LCD's,TN,STN,TFT,Power requirements,LCD working,Principle of operation of TN display,Construction of TN display,Behaviour of TN liquid crystals,Viewing angle,colour balance, colour TN display, limitations, advantages, disadvantages, applications.

UNIT III

LED and DMD:Introduction to LED Television , comparison with LCD and Plasma TV's, schematic of DMD, introduction to Digital MicroMirror device, Diagram of DMD, principle of working, emerging applications of DMD.

Microwave Ovens and Air Conditioners:Microwaves,Transit Time,Magnetron,Waveguides,Microwave Oven,Microwave Cooking. Air conditioning,Components of air conditioning systems,all water Air conditioning systems,all air air conditioning Systems,Split air conditioner.

UNIT IV

Microphones:Introduction, characteristics of microphones,types of microphone:carbon,moving coil,wireless,crystal,introduction to tape recorder.

Loudspeaker:Introduction to ideal and basic loudspeaker,loudspeaker construction types of loudspeaker: Dynamic and permanent magnet,woofers,tweeters,brief introduction to baffles,equalisers.

Text Books:

1. Consumer Electronics by S. P. Bali(Pearson Education)
2. Complete Satellite and Cable T.V by R.R Gulati(New Age International Publishers)

Reference Books:

1. Monochrome and Colour Television by R. R. Gulati

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

EE451B**ENERGY AUDIT**
B. Tech Semester –VII (Open Elective)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION TO THE POWER DISTRIBUTION SYSTEM: Description of the power distribution system- voltage levels, Components of the distribution system- Substation, Transformer, feeders, distribution system planning, operation & maintenance objectives, activities involved in O&M, grid management, load scheduling & dispatch, load balancing, 66-33/11 KV substation equipment, 11/0.4 KV substation equipment, Distribution transformers- reasons for DT failures.

UNIT II

ENERGY ACCOUNTING & ENERGY AUDIT: Need for energy accounting, objectives & functions of energy accounting, Energy flow diagram in power distribution system, energy accounting procedure- Energy measurement, and problems in energy accounting & overcoming these problems in energy accounting, Definition, need and types of energy audit, energy audit instruments, procedure for conducting an energy audit.

UNIT III

AT&C LOSS REDUCTION & EFFICIENCY IMPROVEMENT: Concepts and principles of distribution losses- transmission & distribution losses, AT&C losses in power distribution network, factors contributing to high technical & commercial losses. Technical loss reduction- Short term measures for technical loss reduction, long term plans for technical loss reduction, Commercial loss reduction- reasons for commercial losses, measures for commercial loss reduction.

UNIT IV

DEMAND SIDE MANAGEMENT: An introduction, Why DSM?, Benefits of DSM, DSM in power systems: load management, DSM techniques and emerging trends, EC Act 2001, DSM on consumer side – the industrial sector, the agricultural sector, the domestic & commercial sectors, ESCO-a route for DSM.

Text Books:

1. Handbook of Energy Engineering, The Fairmont Press, INC.-Albert Thumann & Paul Mehta.
2. Energy Management Supply & Conservation, Butterworth Heinemann, 2002-dr. Clive Beggs.

Reference Books:

1. Handbook on energy audit & environment management by ISBN 81-1993.0920 TERI.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

EEE457B

ENERGY RESOURCES & TECHNOLOGY

B. Tech Semester –VII (Open Elective)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

ENERGY SOURCES & AVAILABILITY: World energy situation. Indian energy scenario. Comparative study of thermal, hydro, nuclear and gas power plants. Impact of thermal, gas, hydro and nuclear power stations on environment, air and water pollution, green house effect (global warming), Plasma confinement - magnetic confinement and inertial confinement, geothermal, hydrogen energy, fuel cells, Alkaline fuel cells (AFC), Solid oxide fuel cell (SOFC), Molten carbonate fuel cells (MCFC), thermo-electric power, MHD power generation OTEC & tidal waves.

UNIT II

SOLAR ENERGY: Solar constant, solar radiation geometry, local solar time, day length, solar radiation measurement, radiation on inclined surface, solar radiation data & solar charts. Flat plate collectors, liquid and air type. Theory of flat plate collectors, advanced collectors, optical design of concentrators, selective coatings, solar water heating, solar dryers, solar stills, solar cooling and refrigeration. Thermal storage. Conversion of heat into mechanical energy. Active and passive heating of buildings. Solar cells.

UNIT III

WIND ENERGY: Wind as a Source of Energy, Characteristics of wind, wind data. Horizontal & Vertical axis wind Mills, Wind Energy: Wind energy potential measurement, general theories of wind machines, basic laws and concepts of aerodynamics, wind mill and wind electric generator. Basic electric generation schemes- constant speed constant frequency, variable speed constant frequency and variable speed variable frequency schemes. Applications of wind energy.

UNIT IV

BIOMASS ENERGY: Introduction to biomass, biofuels & their heat content, biomass conversion technologies. Aerobic & anaerobic digester, Factors affecting biogas production, biogas plants - types & description. Utilisation of biogas - Gasifiers, direct thermal application of Gasifiers. Advantages & problems in development of Gasifiers, use in I.C. engines, Energy plantation. Pyrolysis scheme. Alternative liquid fuels –ethanol and methanol. Ethanol production.

Text Books:

1. Electric Power Generation, B.R. Gupta.
2. Power Generation, Operation and Control, Wood and Wollenberg, John Wiley & Sons, 1984.
3. Power Plant Engg: G.D. Rai.

Reference Books:

1. Renewable Energy Resources: John Twidell and Tony Weir.
2. Renewable Energy Resources Conventional & Non- Conventional: M.V.R Koteswara Rao.
3. Science & Technology of Photovoltaics: Jayarama Reddy P.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

BT401B

BIOINFORMATICS
B. Tech Semester –VII (Open Elective)

L T P Credits
4 - - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION: Internet, intranet and extranet, networking, protocols, genomic data, organization, representation, data base management systems.

SEQUENCING DATA BANK: Introduction, collecting and storing sequence in laboratory, Nucleic acid data bank – Gen Bank, EMBL, AIDS and RNA, protein data bank (PDB), Cambridge Structural Database CSD, genome data bank, hybridoma data bank structure and others.

UNIT II

SEQUENCE ANALYSIS: Analysis tools for sequence data banks, Pair wise alignment: NEEDLEMAN and WUNSCH algorithms, Smith Waterman, Multiple alignment – CLUSTAL-W, BLAST, FASTA, sequence patterns and motifs and profiles.

PREDICTIONS: Secondary and tertiary structure: algorithms Chao-Fasman algorithm, hidden Markov model, neural networking, protein classification, fold libraries, fold recognition (threading), homology detection, SRS-access to biological data banks.

UNIT III

PHYLOGENETIC ANALYSIS: Basic concepts in systematics, taxonomy and phylogeny, phylogenetic trees- various types and their construction, tree building methods, distance methods, multiple alignment character based method, phylogenetic software.

MANAGING SCIENTIFIC DATA: Introduction, challenges faced in integration of biological information, SRS, Kleisli Query System TAMBIS, P/FDM mediator for a bioinformatics database, federation, discovery link and data management.

UNIT IV

GENOMICS & PROTEOMICS: Genome mapping, assembly and comparison, functional genomics: sequence based approaches & microarray based approaches, proteomics: technology of protein expression analysis & posttranslational modifications, protein sorting, protein-protein interaction.

Text & Reference Books:

1. Developing Bioinformatics Computer Skill, ed. Gibes & Jombeck, Shroff Publication.
2. Bioinformatics, ed. David W. Mount

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

AE417B

MODERN VEHICLE TECHNOLOGY

B. Tech Semester –VII (Open Elective)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

TRENDS IN POWER PLANTS: Hybrid vehicles – stratified charged / lean burn engines – Hydrogen engines – battery vehicles – Electric propulsion with cables – magnetic track vehicles.

UNIT II

SUSPENSION BRAKES AND SAFETY: Air suspension – Closed loop suspension – antiskid braking system, Retarders, Regenerative braking safety cage – air bags – crash resistance – passenger comfort.

UNIT III

NOISE & POLLUTION: Reduction of noise – Internal & external pollution control through alternate fuels / power plants – Catalytic converters and filters for particulate emission.

UNIT IV

VEHICLE OPERATION AND CONTROL: Computer control for pollution and noise control and for fuel economy – Transducers and actuators – Information technology for receiving proper information and operation of the vehicle like optimum speed and direction.

VEHICLE AUTOMATED TRACKS: Preparation and maintenance of proper road network – National highway network with automated roads and vehicles – Satellite control of vehicle operation for safe and fast travel.

Text Books:

1. Heinz Heisler, "Advanced Vehicle Technology" - Arnold Publication.

Reference Books:

1. Beranek.L.L., Noise reduction, McGraw Hill Book Co., Inc., Newyork, 1993.
2. Bosch Hand Book, 3rd Edition, SAE, 1993.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

CE451B

POLLUTION & CONTROL
B. Tech Semester –VII (Open Elective)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

WATER POLLUTION: Classification of water pollutants, water characteristics, effluent standards, primary treatment, secondary treatment – aerobic (activated sludge, aerated lagoons, trickling filter, roughing filter, rotating biological contactor) anaerobic (contact process, UASB).

UNIT II

AIR POLLUTION: Classification of air pollutants, Particulates: Physical characteristics, mode of formation, setting properties, Control measures.

HYDROCARBONS: Nature; sources, control, Carbon Monoxide: Source, harmful effects on human health, control measures. Oxides of Sulphur and Nitrogen Sources, effects on human health and plants. Control measure.

UNIT III

SOLID WASTE: Types, sources and properties of solid waste, methods of solid waste treatment and disposal.

SOLID WASTE MANAGEMENT: Generation, Collection and techniques for ultimate disposal, Elementary discussion on resource and energy recovery.

UNIT IV

Elementary treatment of nuclear pollution, metal pollution, noise pollution their effects & control.

TRACE ELEMENT: Mechanism of distribution, essential and non essential elements, trace of element in marine environment, its ecological effects and biological effects.

Text & Reference Books:

1. Environmental Engg.: by Howard s. Peavy & Others, MGH International.
2. Metacaf – EDDY – Waste-water engineering revised by George Teholonobus (TMH)
3. Environmental Chemistry by B.K. Sharma, Goel Publishing, Meerut.
4. Environmental Chemistry, A.K.DE, Wiley Eastern.
5. Air Pollution: H.C. Perking – Mc Graw Hill.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

CSE411B

MANAGEMENT INFORMATION SYSTEM

B. Tech Semester –VII (Open Elective)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

FOUNDATIONS:-

INFORMATION SYSTEM: Introduction to Information System and MIS, Decision support and decision making systems, systems approach, the systems view of business, Managing the digital firm, Electronic Commerce and Electronic business, DBMS, RDBMS, introduction to Telecommunication and Networks.

I.T.INFRASTRUCTURE: Managing Hardware Assets, Managing Software Assets, Managing Data Resources. Internet and New I.T. Infrastructure.

UNIT II

CONCEPTUAL SYSTEM DESIGN: Define the problems, set systems objective, establish system constraints, determine information needs determine information sources, develop alternative conceptual design and select one document the system concept, and prepare the conceptual design report. Information Systems Security and Control, Ethical and Social Impact of Information Systems.

UNIT III

DETAILED SYSTEM DESIGN: Inform and involve the organization, aim of detailed design, project management of MIS detailed design, identify dominant and trade of criteria, define the sub systems, sketch the detailed operating sub systems and information flow, determine the degree of automation of each operation, inform and involve the organization again, inputs outputs and processing, early system testing, software, hardware and tools propose an organization to operate the system, documentation of detailed design.

UNIT IV

IMPLEMENTATION, EVALUATION AND MAINTENANCE OF THE MIS: Plan the implementation, acquire floor space and plan space layouts, organize for implementation, develop procedures for implementation, train the operating personnel, computer related acquisitions, develop forms for data collection and information dissemination, develop the files test the system, cut-over, document the system, evaluate the MIS control and maintain the system. Pitfalls in MIS development, Redesigning the organization with Information systems, Managing Knowledge Work.

Text Books:

1. Management Information System by W. S. Jawadekar, 2002, Tata McGraw Hill.
2. Management Information System by K.C. Laudon & J.P. Laudon 7th Edition 2003 Pearson Education Publishers Indian Reprint.
3. Information System for Modern Management (3rd edition)- Robert G. Murdick, Loel E. Ross & James R. Claggett. PHI.

Reference Books:

1. Management Information System; O Brian; TMH
2. Management Information System by Davis Olson Mac Graw Hill
3. Management Information System by Stallings, (Maxwell Mc Millman Publishers)

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

IT413B

CYBER SECURITY
B. Tech Semester –VII (Open Elective)

L T P Credits
4 - - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION TO CYBERCRIME: Cybercrime and Information Security, Classifications of Cybercrimes, The need for Cyberlaws, The Indian IT Act Challenges to Indian Law and Cybercrime Scenario in India, Weakness in Information Technology Act and its consequences, Digital Signatures and the Indian IT Act, Cybercrime and Punishment; Technology, Students and Cyberlaw; Survival tactics for the Netizens, Cyber-offenses: Cyberstalking, Cybercafe and Cybercrimes, Botnets, Attack Vector, Cloud Computing.

TOOLS AND METHODS USED IN CYBERCRIME: Proxy Servers and Anonymizers, Phishing and identity theft, Password Cracking, Keyloggers and Spywares, Virus and Worms, Trojan Horses and Backdoors, Steganography, DoS and DDoS Attacks, SQL Injection, Buffer Overflow; Cybercrime: Mobile and Wireless Devices: Trends in Mobility, Attacks on Wireless Networks, Credit Card Frauds in Mobile and Wireless Computing Era, Security Challenges, Registry Settings for Mobile Devices, Authentication Service Security, Attacks on Mobile/Cell Phones.

UNIT II

UNDERSTANDING COMPUTER FORENSICS: The Need for Computer Forensics, Cyberforensics and Digital Evidence, Forensics Analysis of E-Mail, Digital Forensics Life Cycle, Chain of Custody Concept, Network Forensics, Computer Forensics and Steganography, Relevance of the OSI 7 Layer Model to Computer Forensics, Forensics and Social Networking Sites: The Security/Privacy Threats, Challenges in Computer Forensics, Forensics Auditing, Antiforensics.

UNIT III

ENTREPRENEURSHIP DEVELOPMENT AND GOVERNMENT: Role of Central Government and State Government in promoting Entrepreneurship - Introduction to various incentives, subsidies and grants - Export Oriented Units - Fiscal and Tax concessions available; Role of Central/State agencies in the Entrepreneurship Development - District Industries Centers (DIC), Small Industries Service Institute (SISI), Entrepreneurship Development Institute of India (EDII), National Institute of Entrepreneurship & Small Business Development (NIESBUD), National Entrepreneurship Development Board (NEDB).

UNIT IV

CYBERSECURITY: ORGANIZATIONAL IMPLICATIONS: Cost of Cybercrimes and IPR Issues, Web Threats for Organizations, Security and Privacy Implications from Cloud Computing, Social Media Marketing, Social Computing and the Associated Challenges for Organizations, Protecting People's Privacy in the Organization, Organizational Guidelines for Internet Usage, Safe Computing Guidelines and Computer Usage Policy, Incident Handling, Forensics Best Practices, Media and Asset Protection, Importance of Endpoint Security in Organizations.

Text Books:

1. "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Nina Godbole, Sunit Belapur, Wiley India Publications, April, 2011.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. IV YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VIII
Credit Based Scheme w.e.f. 2015-2016

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	ECE402B	WIRELESS COMMUNICATION SYSTEMS	3	1	-	25	75	-	100	4	3
2	ECE404B	DATA COMMUNICATION AND NETWORK(ECE,EEE)	3	1	-	25	75	-	100	4	3
3		DEPT. ELECTIVE I	4	-	-	25	75	-	100	4	3
4		DEPT. ELECTIVE II	4	-	-	25	75	-	100	4	3
5	ECE424B	DATA COMMUNICATION AND NETWORK LAB	-	-	2	20	-	30	50	1	3
6	ECE431B	PROJECT	-	-	8	75	-	125	200	8	3
7	ECE438B	SEMINAR	-	-	2	50	-	-	50	2	-
8	GPEC402B	GENERAL FITNESS FOR THE PROFESSION	-	-	-	-	-	100	100	4	3
Total			14	2	12	245	300	255	800	31	

DEPT. ELECTIVE-I			DEPT. ELECTIVE-II		
S.NO	CODE	TITLE	S.NO	CODE	TITLE
1	ECE406B	NEURAL NETWORK & FUZZY LOGIC	1	ECE416B	DIGITAL IMAGE PROCESSING
2	ECE408B	ELECTRONIC MATERIALS AND NANO TECHNOLOGY	2	ECE418B	RELIABILITY ENGINEERING
3	ECE410B	BIOMEDICAL ELECTRONICS	3	ECE420B	TELECOMMUNICATION SWITCHING SYSTEMS
4	ECE412B	OPTICAL COMMUNICATION	4	ECE426B	EMBEDDED SYSTEM DESIGN
5	ECE414B	RADAR AND SONAR ENGINEERING	5	ECE428B	POWER SYSTEM STABILITY AND FACTS

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronic Gadgets including Cellular Phones are not allowed in the examination.
- Project coordinator will be assigned the project (ECE436B) load of, maximum of 2 hrs. per week including his own guiding load of one hr. However, the guiding teacher will be assigned maximum of one period of teaching load irrespective of number of students/groups under him/her. Project involving design, fabrication, testing, computer simulation, case studies etc., which has been commenced by students in VII semester will be completed in VIII semester.
- For the course ECE438B (Seminar), a student will select a topic from emerging areas of Engineering & Technology and study it independently. Student will give a seminar / talk on the topic.
- The evaluation of the student for his / her General Fitness for Profession shall be carried out by a team consisting of Dean Faculty of Engineering. & Technology, Chairperson of concerned department and external examiner appointed by University.
- The minimum strength of the students should be 20 to run an elective course.

ECE402B

WIRELESS COMMUNICATION SYSTEMS

B. Tech Semester –VIII

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

Introduction to Wireless Communication Systems:

Evolution of Mobile Radio Communications : Introduction, First Generation (1G), Second Generation (2G), Generation (2.5G) , Third Generation (3G), Evolution from 2G To 3G, Fourth Generation (4G), Examples of Wireless Communication Systems , Difference Between Fixed Telephone Network and Wireless Telephone Network, Wireless Local Loop [WLL], Wireless Local Area Networks (WLAN) , Personal Area Network(PAN), Bluetooth.

The Cellular Concept-System Design Fundamentals

Introduction, Frequency Reuse, Channel Assignment Strategies, Hand-Off Strategies, Interference and System Capacity, Trunking and Grade of Service, Improving Coverage and Capacity in Cellular Systems.

UNIT II

Mobile Radio Propagation: Large Scale Path Loss :

Introduction to Radio Wave Propagation, Free Space Propagation Model, Practical Link Budget Design Using Path Loss Models, Outdoor Propagation Models, Indoor Propagation Models, Signal Penetration into Buildings.

Mobile Radio Propagation: Small Scale Fading and Multipath:

Small Scale Multipath Propagation, Impulse Response Model of a Multipath Channel, Small Scale Multipath Measurements, Parameters of Mobile Multipath Channels ,Types of Small Scale Fading, Rayleigh and Ricean Distributions.

UNIT III

Equalization and Diversity :

Fundamentals of Equalization, Equalizer in a Communication Receiver, Linear Equalizer, Non Linear Equalization, Diversity Techniques, Rake Receiver, Interleaving

Multiple Access Techniques for Wireless Communication :

Introduction, Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Spread Spectrum Multiple Access, Space Division Multiple Access (SDMA), Capacity of Cellular System.

UNIT IV

Wireless Networking :

Introduction to Wireless Networks, Development of Wireless Networks, Traffic Routing in Wireless Networks, Wireless Data Services, Common Channel Signaling, Integrated Services Digital Network (ISDN), Signalling System No.7(SS 7),Personal Communication Services/Networks.(PCS/PCN)

Wireless Systems and Standards:

Global System for Mobile (GSM),Cdma Digital Cellular Standard(IS-95),GPRS,EDGE,W-Cdma,Cdma2000

Text Books :

1. T.S. Rappaport, "Wireless Communication, Principles & Practice," PHI .
2. Rajeshwar Dass, "Wireless Communication Systems," I.K International Pvt. Ltd
3. Jochen Schiller, "Mobile Communication," Pearson Education

Reference Books:

1. William, C Y Lee, "Mobile Cellular Telecommunications," Mc Graw Hill
2. Dr. Kamilo Feher "Wireless and Digital Communication," PHI

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE404B

DATA COMMUNICATION AND NETWORK

B. Tech Semester –VIII (ECE, EEE)

L T P Credits
3 1 - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

Data Communication and Networks:

Components, Data Representation, Data Flow, Guided and Unguided Media, Distributed Processing, Network Criteria, Physical Structure, Network Models, Category of Networks

Data and Signals:

Analog and Digital Data, Analog and Digital Signals, Periodic and Non Periodic Signals, Transmission Impairments- Attenuation, Distortion, Noise, Performance bandwidth, Throughput, Latency, Bandwidth-Delay Product, Jitter

UNIT II

Digital Transmission:

Digital to digital Conversion-Line Coding, Line Coding Schemes, Block Coding, Scrambling, Transmission modes-Parallel Transmission and Serial Transmission

Multiplexing

Frequency Division Multiplexing, Wavelength division Multiplexing, Synchronous Time division multiplexing, Statistical Time Division multiplexing

UNIT III

Switching:

Circuit Switched Networks-Three Phases, Efficiency Delay, Datagram Networks-Routing table, Efficiency delay, Virtual Circuit Networks- Addressing , Three Phases, Efficiency, Delay in Virtual Circuit Networks

Data Link Control

Framing-Fixed Size Framing, Variable Sized framing, Flow and Error Control-Flow Control, error control, Protocols; Noiseless Channels-Simplest protocol, stop and Wait Protocol, Noisy Channels-Stop and Wait Automatic Repeat Request, Go Back n Automatic Repeat request, Selective Repeat Automatic Repeat request, PiggyBacking

UNIT IV

Network Models:

Layered Tasks-Sender, receiver and Carrier, The OSI Model-Layered Architecture, Peer to peer processes, Encapsulation, Layers in the OSI Model-Physical Layer, data Link layer, Network layer, transport layer, Session layer, Presentation layer, application layer, Summary of layers, Introduction to TCP-IP and Internetworking

Wired Lans-Ethernet:

IEEE Standards-Data Link Layer, Physical layer, Standard Ethernet-Mac Sublayer, Physical layer, Changes in the standard bridged Ethernet, Switched Ethernet, full duplex Ethernet, fast Ethernet-Mac sublayer, Physical layer

Text Books :

1. Data Communication and Networking by Behrouz.A.Forouzan(TMh Publication)

Reference Books:

1. Computer Networks by William Stallings

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE424B

DATA COMMUNICATION AND NETWORK LAB

B. Tech Semester –VIII

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks
Duration of Exam.	:	3 Hrs.

LIST OF EXPERIMENTS:

1. To study different types of transmission media
2. To study Quadrature Phase Shift Keying Modulation.
3. To study Quadrature Amplitude Modulation.
4. To Study 16 Quadrature Amplitude Multiplexing.
5. To Study Serial Interface RS-232 and its applications.
6. To study the Parallel Interface Centronics and its applications.
7. To configure the modem of a computer.
8. To make inter-connections in cables for data communication in LAN.
9. To install LAN using Tree topology.
10. To install LAN using STAR topology.
11. To install LAN using Bus topology.
12. To install LAN using Token-Ring topology
13. To install WIN NT
14. To cofigure a HUB/Switch.

Note:-

- 1 Total ten experiments are to be performed in the semester
- 2 At least seven experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

ECE431B

PROJECT B. Tech Semester –VIII

L	T	P	Credits
-	-	8	8

Class Work	:	75 Marks
Practical	:	125 Marks
Total	:	200 Marks
Duration of Exam.	:	3 Hrs.

The project started in VII Semester will be completed in VIII Semester and will be evaluated through a panel of examiners consisting of the following:

Head/ Chairperson of Department	:	Chairperson
Project coordinator	:	Member
External examiner	:	To be appointed by the University

The student will be required to submit two copies of his/her project report to the department for record (one copy each for the department and participating teacher).

Project coordinator will be assigned the project load of, maximum of 2 hrs. per week including his own guiding load of one hr. However, the guiding teacher will be assigned maximum of one period of teaching load irrespective of number of students/groups under him/her.

The format of the cover page and the organization of the body of the report for all the B.Tech. will be finalized and circulated by the Dean, Faculty of Engineering and Technology.

ECE438B

SEMINAR B. Tech Semester –VIII

L	T	P	Credits
-	-	2	2

Class Work	:	50 Marks
Practical	:	-
Total	:	50 Marks

The objectives of the course remains

- To learn how to carry out literature search
- To learn the art of technical report writing
- To learn the art of verbal communication with the help of modern presentation techniques

A student will select a topic in emerging areas of Engineering & Technology and will carry out the task under the observation of a teacher assigned by the department.

He/ She will give a seminar talk on the same before a committee constituted by the chairperson the department. The committee should comprise of three faculty members from different specializations. The teacher associated in the committee will be assigned 2 hours teaching load per week.

However, guiding students' seminar will not be considered towards teaching load.

The format of the cover page and the organization of the body of the seminar report for all the undergraduate programs will be finalized and circulated by the Dean, Faculty of Engineering and Technology.

GPEC402B**GENERAL FITNESS FOR THE PROFESSION**

B. Tech Semester –VIII

L	T	P	Credits
-	-	-	4

Examination	:	-
Practical	:	100 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

The purpose of this course is to inculcate a sense of professionalism in a student along with personality development in terms of quality such as receiving, responding, temperament, attitude and outlook. The student efforts will be evaluated on the basis of his/ her performance / achievements in different walks of life.

The evaluation will be made by the committee of examiners constituted as under:

- | | | | |
|----|--|---|-----------------------------|
| 1. | Dean, Faculty of Engineering & Technology/ Director /Principal of affiliated college | : | Chairperson |
| 2. | Chairperson of the department | : | Member |
| 3. | External expert | : | Appointed by the university |

A. The student will present a written report before the committee with following in view:

The student will present before the committee his/her achievements during the current academic session in the form of a written report highlighting followings:

- | | | |
|------|--|-------------------|
| I. | Academic Performance | ----- |
| II. | Extra Curricular Activities / Community Service, Hostel Activities | (12 Marks) |
| III. | Technical Activities / Industrial, Educational tour | (12 Marks) |
| IV. | Sports/games | (16Marks) |

Note: Report submitted by the students should be typed on both sides of the paper.

- B. A student will support his/her achievement and verbal & communicative skill through presentation before the examiners.
(40 Marks)

- C. Faculty Counselor Assignment **(20 Marks)**

It will be the duty of the student to get evaluated by respective faculty counselor and to submit the counselor assessment marks in a sealed envelope to the committee.

A counselor will assess the student which reflects his/her learning graph including followings:

1. Discipline throughout the year
2. Sincerity towards study
3. How quickly the student assimilates professional value system etc.
4. Moral values & Ethics- Syllabus (one lecture/week on the topics of Human values/Ethics is to be delivered)

ECE406B

NEURAL NETWORK AND FUZZY LOGIC

B. Tech Semester –VIII (Elective I)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

NEURO-FUZZY TECHNIQUES:

Neuro-fuzzy techniques, need of neuro-fuzzy techniques, Neural and fuzzy intelligence, fuzziness vs Multivalence: the dynamical systems to machine intelligence.

NEURAL NETWORKS:

Neural networks characteristics, difference between biological neuron & A.N.N, History of development in neural networks principles, Artificial neural net terminology, Model of a neuron, Topology

UNIT II

NEURAL NETWORKS MODELS & RULES:

Feed forward network, feedback network, Supervised, Unsupervised, Re-enforcement learning. Knowledge, representation and acquisition. Basic Hop field model, Types of learning, Hebbian learning, Perception learning, Delta learning, Window–Hoff Learning correlation Learning, Winner-Take–all learning rule

ARTIFICIAL NEURAL NETWORKS & APPLICATIONS:

Radial basis function neural networks, Basic learning laws in RBF nets, Recurrent back propagation, Introduction to counter propagation networks, ART networks, Associative Memories, Applications such as pattern recognition, speech and decision-making.

UNIT III

FUZZY LOGIC:

Basic concepts of fuzzy logic, Fuzzy vs. Crisp set, Linguistic variables, Membership functions, Fuzzy sets & Operations of fuzzy sets, Fuzzy IF-THEN rules.

FUZZY SYSTEM:

Fuzzy system, Fuzzy Inference System, De-Fuzzification.

UNIT IV

APPLICATIONS OF FUZZY LOGIC:

Application of Fuzzy logic: Industrial automation, energy saving AC control, washing machines, automatic target tracking, ABS system, Traffic light controller.

NEURO-FUZZY SYSTEM:

Introduction, combining fuzzy system with neural network, properties of Neuro-Fuzzy system, Neuro-Fuzzy architecture, applications.

Reference Books:

1. B. Yegnanarayana, " Artificial Neural Networks"PHI
2. J.M. Zurada, "Introduction to artificial neural systems", Jaico Pub.
3. ROSS J.T , "Fuzzy logic with engineering application", TMH
4. Simon Haykin, "Neural Networks", PHI
5. Ahmad M.Ibrahim, "Introduction to applied Fuzzy Electronics", (PHI)
6. P.D. wasserman, "Neural computing theory & practice", (ANZA PUB).

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE408B**ELECTRONIC MATERIALS AND NANOTECHNOLOGY**

B. Tech Semester –VIII (Elective I)

L	T	P	Credits
4	-	-	4

Class Work	:	25Marks
Theory	:	75Marks
Total	:	100Marks
Duration of Exam.	:	3 Hrs.

UNIT I**INTRODUCTION TO ELECTRONIC MATERIALS:**

Thermodynamics of Materials; Mechanical Properties of Materials; Bonding, Structure and Crystallography; Advanced Fluid-Solid Reaction Engineering; Microstructural and Microchemical Characterization of Materials.

MATERIAL BASICS:

Ohms Law and Materials Properties; The Hall Effect; Conductors – Metals, Alloys, Non-metallic Conductors; Contacts, Resistors and Heating; Thermionic Emission, Tunneling, Thermoelectric Effects; Ionic conductors: Debye Length, Nernst Equation.

UNIT II**INTRODUCTION TO DIELECTRICS:**

Dielectrics – Mechanisms of Polarization; Frequency dependence of Dielectric constants; Dielectric Losses; Mechanisms of Electrical Breakdown; Piezo-electricity; Ferro-electricity; Dielectrics and Optics.

BASICS OF MAGNETICS:

Magnetics – Origin of Magnetic dipoles; Types of Magnetisms: Diamagnetism, Para-magnetism and Ferro-magnetism; Magnetic data storage.

UNIT III**ADVANCED MATERIALS:**

MEMS; NEMS; CNTS; Novel semiconductors; Photovoltaic materials.

MATERIALS FOR IC FABRICATION:

Materials and Processes for Silicon Technology; Si Oxide, LOCOS Process; Chemical Vapor Deposition: Silicon Epitaxy, Oxide CVD, CVD for Poly-Silicon, Silicon Nitride and Miscellaneous Materials; Etching Techniques: Chemical Etching, Plasma Etching; Lithography: Basic Lithography Techniques, Resist and Steppers; Electrochemistry of Silicon.

UNIT IV**ELECTRONIC DEVICES:**

Electronic Device Components: Wires & Cables, Semiconductors, Capacitors, PCBs, MEMS, Battery, CD-R, EMI/RFI, ITO, Electro-wetting, LCD & LED; CDs and DVDs.

NANOTECHNOLOGY IN ELECTRONICS:

Nanotechnology in Electronics: Magnetoresistive Random Access Memory (MRAM); Self-assembled nanostructures; Nano-photonics; Nano-ionics; Molecular electronics; Nanomaterials electronics; Nanofabrication.

Reference Books:

1. Materials Science and Engineering, by W.D. Callister, 7th edition, J. Wiley and Sons 2007, ISBN-10: 0-471-73696-1.
2. NANOTECHNOLOGY FOR MICROELECTRONICS AND OPTOELECTRONICS, J.M. Martínez-Duart, R.J. Martín-Palma and F. Agulló-Rueda, Eds, Elsevier 2006, ISBN-10: 0080 445535.
3. Anatoli Korkin & Federico Rosei, Eds, Nanoelectronics and Photonics, Springer 2008, ISBN: 978-0-387-76498-6.
4. Edward L. Wolf, Nanophysics and Nanotechnology: An Introduction to Modern Concepts in Nanoscience, Wiley-VCH, 2006, ISBN-10: 3-527-40651-4.
5. Faiz Rahman, Ed, NANOSTRUCTURES IN ELECTRONICS AND PHOTONICS, Pan Stanford Publishing 2008, ISBN-10 981-4241-10-5.
6. ADVANCED MAGNETIC NANOSTRUCTURES, Eds David Sellmyer & Ralph Skomski, Springer 2006, ISBN 10: 0-387-23309-1.
7. Silicon nanoelectronics, edited by Shunri Oda and David Ferry, Taylor and Francis 2006, ISBN 0-8247-2633-2.
8. Opto electronics & Photonics By Kasap (Pearson).

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE410B

BIOMEDICAL ELECTRONICS B. Tech Semester –VIII (Elective I)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Electrodes, Sensors and Transducers:

Signal Acquisition, Transduction, Active v/s Passive sensors, Sensor error sources, sensor terminology, signal processing, electrodes for biophysical sensing, medical surface electrodes, microelectrodes, different types of transducers.

Electrocardiography:

Generation of electric currents in heart, ECG waveform, standard lead system, ECG preamplifier, ECG readout devices, ECG machines, ECG machine maintenance, faults and troubleshooting.

UNIT II

Cardio vascular measurements and Devices:

Physiological pressure measurements, B.P. measurements, Oscillometric and Ultrasonic non-invasive pressure measurements, pressure transducers, pressure amplifiers, calibrations methods, detector circuits, dilution methods, blood flow measurements. Introduction to plethysmography, phonocardiograph, defibrillators, pacemakers, heart lung machine.

Respiratory system measurements and Devices:

Human respiratory system, gas laws, internal respiration, external respiration, mechanics of breathing, parameters and regulations of respiration, respiratory transducers, medical gases, introduction to spirometer and artificial ventilators.

UNIT III

Nervous system measurements and Devices:

Organization of Human nervous system, cerebral angiography, cranial X-rays, brain scans, system preamplifier and specifications of EEG, EEG electrodes, EEG telemetry system, typical EEG system artifacts, faults, trouble shooting and maintenance.

ICUs, CCUs and Operating Rooms (Ors):

ICU/CCU equipments, Bedside monitors, central monitoring consoles, ECG and physiological telemetry, types of surgery, OR personal, sterilization, OR equipments.

UNIT IV

Medical Laboratory Instrumentation:

Blood tests, Colorimeter, flame photometer, spectrophotometer, blood cell counters, pH and blood gas analyzers, auto analyzer, dialysis machine, Electrical safety precautions, typical faults.

Medical Imaging Equipments:

Basic Principles and working of various medical imaging modality: X-ray, CT Scan, MRI, PET Scan, Ultrasonography, color Doppler, Echocardiography, nuclear medical imaging.

Reference Books:

1. Introduction to Biomedical Equipments Technology by Carr & Brown, Pearson Education.
2. Biomedical Instrumentation and measurements by Cromwell et al, Pearson Education.
3. Handbook of Biomedical Instrumentation by Khandpur, Tata McGraw Hill.

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE412B

OPTICAL COMMUNICATION
B. Tech Semester –VIII (Elective I)

L T P Credits
4 - - 4

Class Work : 25 Marks
Theory : 75 Marks
Total : 100 Marks
Duration of Exam. : 3 Hrs.

UNIT I

Introduction to Optical communication System:

Electromagnetic Spectrum used for optical communication,Block Diagram of optical Communication System,Basics of transmission of light rays,Advantages of optical fiber communication

Structure of Optical Fibers:

Step Index Fibers,Graded index Fibers,Single mode fibers(Cut off wavelength,Mode field Diameter,Effective Refractive index),MultiMode fibers

UNIT II

Attenuation:

Material losses in Silica Glass Fibers(Intrinsic and Extrinsic),Linear Scattering losses(Rayleigh Scattering,Mie scattering),Non Linear scattering losses(SBS,SRS),Fiber Bend loss

Dispersion:

Chromatic Dispersion(Material Dispersion,Waveguide Dispersion),InterModal Dispersion(Multimode Step index fiber,MultiMode Graded Index fiber),Dispersion Modified single mode fibers(Dispersion Shifted and Dispersion Flattened Fibers)

UNIT III

Optical Fiber Connections:

Fiber alignment and joint loss(Multimode,Single mode),Fiber Splices(Fusion),fiber Couplers(Three and Four port Couplers)

Optical Sources(LED):

Introduction to absorption and Emission Of radiation,Characteristics of Optical sources,LED power and Efficiency,LED Structures(Surface and Edge Emitting),LED Characteristics(Optical O/P power,O/P Spectrum,Modulation Bandwidth)

UNIT IV

Optical Sources(LASER):

Einstein Relation,Population Inversion,Optical Feedback,Laser Oscillation,Threshold condition for laser oscillation,Comparison of LED and Laser as an Optical Source.

Optical Detectors:

Introduction,Quantum Efficiency,Responsivity,Long wavelength cut off,P-I-N photodiode,Avalanche Photodiode,Benefits and drawbacks of Avalanche photodiodes,Multiplication Factor

Text Books:

1. Fiber Communication By JOHN.M. SENIOR (Pearson Education).

Reference Books:

1. Optical Communication By G. Keiser(Tata Mc Graw Hill)
2. Essentials of Modern optical Fiber Communication By REINHOLD NOE(Springer)
3. Fiber Optic Communication By Palais(Pearson)

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE414B

RADAR AND SONAR ENGINEERING

B. Tech Semester –VIII (Elective I)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION TO RADAR:

Radar Block Diagram & operation, Radar Frequencies, Radar development, Application of Radar.

RADAR EQUATION:

Simple form of Radar Equation, Prediction of Range performance, Minimum detectable signal, Receiver noise, Signal to Noise ratio, Transmitter Power, Pulse repetition frequency & range ambiguities, System losses, Propagation effects.

UNIT II

CW & FREQUENCY MODULATED RADAR:

The Doppler effect, CW Radar, Frequency-modulated CW Radar, Multiple Frequency CW Radar.

MTI & PULSE DOPPLER RADAR:

Introduction, Delay Line Cancellors, Multiple or staggered, Pulse repetition frequencies, range-Gated Doppler Filters, Digital Signal Processing, Other MTI delay line, Limitation of MTI performance, Noncoherent MTI, Pulse Doppler Radar, MTI from a moving platform.

UNIT III

TRACKING RADAR:

Tracking with Radar, Sequential Lobbing, Conical Scan, Monopulse Tracking Radar, Tracking in range, Acquisition.

RECEIVERS, DISPLAYS & DUPLEXERS:

Radar Receivers, Noise Figure, Mixer, Low-noise Front ends, Displays, Duplexer, Receiver protectors.

UNIT IV

INTRODUCTION TO SONAR:

History of sonar, underwater propagation: sound velocity profile, propagation mode, multipaths; Types of sonar system: active, generic active and passive.

SONAR PARAMETERS:

Basic Types of noise in sonar system, Detection of acoustic energy using sonar: detection criterion, sonar system performance, figure of merit; Sonar transducers.

Text Books:

1. Introduction to Radar Systems: Merrill I. Skolnik, ; MGH

Reference Books:

1. Electronic Communication Systems : Kennedy; TMH
2. Fundamental of DADAR, SONAR and Navigation Engineering: K.K. Sharma; Katson Books

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE416B

DIGITAL IMAGE PROCESSING

B. Tech Semester –VIII (Elective II)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Introduction to Digital Image processing :

Development of Digital Image processing, Components of an Image Processing System, Fundamental steps in Image Processing, Different Levels of Processing, Lower Level Processing Techniques, Applications of Image Processing

Introduction to Image Acquisition:

Capturing Devices, Light and the Electromagnetic Spectrum, Image Sensing and Acquisition: Image Acquisition using a single sensor, Image Acquisition using sensor strips, Image Acquisition using sensor arrays, A simple Image formation model.

UNIT II

Elements of Visual Perception:

Structure of the Human Eye, Image Formation in Eye, Brightness Adaptation and Discrimination.

Image Digitization and Pixels:

Basic Concepts in sampling and quantization, Representing Digital Images, Spatial and Intensity Resolution, Image Interpolation, Some Basic Relationships between pixels: Neighbours of a Pixel, Adjacency, Connectivity, Regions, and Boundaries, Distance Measures.

UNIT III

Image processing tools:

Array versus Matrix Operations, Linear vs Nonlinear Operations, Arithmetic Operations, Set & Logical Operations, Spatial Operations, Vector and Matrix Operations, Probabilistic methods.

Image Transforms & Image Registration:

Unitary Transforms: Separable Unitary Transforms, Basis Images, Orthogonal Transforms, Basic Information Theory; Fourier Transform, Discrete Fourier Transform, Properties of Fourier Transform, Convolution & Correlation, Convolution in Frequency domain.

Geometrical Transformations: Basic Transformations, Applications of Geometrical Transformations; Image mapping: Determining a set of Landmarks, Image Transformation Matrices, Computing Transformation Coefficients; Problems of Transforming Digital Images: Direct mapping, Reverse mapping, Grey Level Interpolation.

UNIT IV

Image Enhancement in Spatial Domain:

Pixel Grey Level Transformation: Linear & Nonlinear Transformations, Grey Level Slicing, Bit-Plane Slicing, Image Averaging; Mask Based Processing: Smoothing Linear filter, Geometric Mean Filter, Harmonic Mean Filter, Median Filter, Max & Min Filters, Sharpening Filters, Image blurring and deblurring; Histogram Processing: Histogram Equalization, Contrast Stretching.

Image Enhancement in Frequency Domain:

Basics of Filtering in the frequency domain: Frequency domain filtering fundamentals, Steps for frequency domain filtering, correspondence between filtering in the spatial and frequency domains, Image smoothing: Ideal Low pass filter, Butterworth Low pass Filter, Gaussian filter; Image sharpening: Ideal High Pass Filter, Butterworth High Pass Filter, Gaussian high pass filter.

Text Books:

1. Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing", Pearson
2. M. K. Pakhira, "Digital Image Processing and Pattern Recognition", PHI

Reference Books:

1. Anil K Jain, "Fundamentals of Digital Image Processing", PHI Edition 1997.
2. Keenneth R Castleman, " Digital Image Processing", Pearson
3. Chanda & Majumder, "Digital Image Processing & Analysis", PHI

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE418B

RELIABILITY ENGINEERING B. Tech Semester -VIII (Elective II)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

Introduction:

Definition for Reliability, Need for reliability engineering, Causes of failures, catastrophic failures and degradation failures. Characteristic types of failures, useful life of components, Exponential case of chance failures, Reliability measures, Derivation for exponential distribution function, other kinds of distributions, Binomial, Poisson uniform, Rayleigh, Weibull, Gamma distributions, Markov chains, failures data analysis.

Reliability in Systems:

Reliability Block Diagrams, series systems, parallel systems, K-out of - M systems, Open and short circuit failures, standby systems. Reliability Analysis of Non-series Parallel system, Boolean Algebra Method, Cut-set approach, delta star method, logical signal relation method, Bayes Theorem Method

UNIT II

Reliability Prediction:

Objective of reliability Prediction, Classification, information sources for failure rate data, prediction methodologies, general requirement, role and limitations of reliability prediction.

Reliability Allocation:

Subsystems reliability improvement, Apportionment for new units, criticality.

UNIT III

Redundancy Techniques for reliability:

Forms of maintenance, measures of maintainability and availability, maintainability function, availability function, two unit parallel system with repair, Markov model for two unit systems, preventive maintenance, provisioning of spares.

Reliability Testing:

Kinds of testing, component reliability measurements parametric methods, confidence limits, accelerate testing, equipment acceptance testing.

UNIT IV

Economics of Reliability Engineering:

Reliability cost, effect of reliability on cost. Reliability achievement cost models, reliability utility cost models, replacement policies.

Integrated performance measures for communication systems:

Integration of reliability and capacity, Delay related reliability.

Text Books:

1. KK Aggarwal, "Reliability Engineering", Kluwer Academic Netherlands.
2. B Singh, "Quality Control and Reliability Analysis", Khanna Publishers.

Reference Books:

1. KB Mishra: Reliability Prediction & Analysis: A Methodology oriented treatment, Elsevier, Netherlands
2. Ebeling, "Introduction to Reliability & Maintainability", TMH

NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.

ECE420B**TELECOMMUNICATION SWITCHING SYSTEM**

B. Tech Semester –VIII (Elective II)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I**EVOLUTION OF SWITCHING SYSTEM:**

What is Switching, Types of Switching, Block Diagram of Telecommunication Network, Switching System Fundamentals, Classification of Switching System, Elements of a Switching System, Basic Function of Switching System, Basic Telephone Communication, Function of a Manual Switching System, Magneto or Local Battery Switchboard, Common Battery Switchboard, Limitations of Manual Switching System, Introduction to strowger switching system.

CROSSBAR SWITCHING SYSTEM:

Introduction, Principle of Common Control, Touch Tone Dial Telephone, Crossbar Switch Mechanism, Principle of Crossbar Switching, Crossbar Switch Configurations, Organisation of a Crossbar Telephone Switch, A General Trunking, Electronic Switching, Classification Crosspoint Technology

UNIT II**SPACE DIVISION SWITCHING:**

Stored Program control, Centralised SPC, Distributed SPC, Software Architecture, Application software, Enhanced Services, Two Stage Networks, n-Stage Networks.

TIME DIVISION SWITCHING:

Introduction, Analog Time Division Switching, Digital Time Division Switching, A Digital Memory Switch, Time Stages in General, Two-Dimensional Switching, Multiple Stage Time and Space Switching

UNIT III**PACKET SWITCHING:**

Statistical Multiplexing, Local area & wide area networks, Large Scale Networks, Broadband Networks

TELETRAFFIC ENGINEERING:

Introduction, Network Traffic Load, CCITT Recommended Busy Hours, Traffic Terminology, The Unit of Traffic, Congestion, Grade of Service, Blocking Probability, Traffic Measurements, Modelling Switching System, Markov processes representing traffic. Calculation of blocking probability, stationary probability measures for Ergodic Markov processes. Combinatorial interpretation, calculation of blocking probability.

UNIT IV**CONTROL OF SWITCHING SYSTEMS:**

Call Processing functions, common control, Reliability, Availability & Security.

SIGNALLING:

Customer Line Signalling, Audio frequency junctions & trunk circuits, FDM carrier Systems, PCM signalling, Inter – register signalling, Common channel Signalling Principles.

Text Books:

1. Thiagarajan Viswanathan, "Telecommunication Switching Systems and Networks", PHI
2. Syed Riffat Ali, "Digital switching Systems, system reliability and analysis", Tata MC Graw, 2002.

Reference Books:

1. Keshav S, "An Engineering Approach to Computer Network Networking", Addison Wesley, 1998.
2. Martin, "Telecommunication & Computer 3e", PHI

NOTE:

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ECE426B

EMBEDDED SYSTEMS DESIGN

B. Tech Semester –VIII (Elective II)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I

INTRODUCTION OF EMBEDDED SYSTEMS DESIGN:

Embedded Systems Design: Definition, Issues, Challenges and Trends, Current events and emerging technologies.

AVR MICROCONTROLLER:

Introduction to AVR microcontroller, features of AVR family microcontrollers, different types of AVR microcontroller, architecture, memory access and instruction execution, pipelining, program memory considerations, addressing modes, CPU registers, Instruction set, and simple operations.

UNIT II

FEATURES OF AVR MICROCONTROLLER:

Timer: Control Word, mode of timers, simple programming, generation of square wave, Interrupts: Introduction, Control word Simple Programming, generation of waveforms using interrupt, serial interface using interrupt.

SPECIAL FEATURES OF AVR MICROCONTROLLER:

Watch-dog timer, Power-down modes of AVR microcontroller, UART, SRAM.

UNIT III

APPLICATIONS BASED ON AVR MICROCONTROLLER:

Applications based on RF Card, Graphical LCD, Color LCD, Zigbee, DTMF, GSM, GPS, Smart Card, RF ID, Touch Screen, Bluetooth.

COMMUNICATION INTERFACE WITH AVR MICROCONTROLLER:

RS-232, RS-485, SPI, IIC, ISA, CAN.

UNIT IV

SOFTWARE REQUIREMENTS FOR EMBEDDED SYSTEMS DESIGN:

Assemblers, Compilers, Linkers, Loaders, Debuggers, Profilers and Test Coverage Tools Utilities like make, ranlib, obj copy and obj dump, Configuring and Building GNU Cross-Tool chain Building RTOS / EOS Image for Target Hardware.

OPERATING SYSTEM FOR EMBEDDED SYSTEM:

Embedded Operating Systems, Real Time Operating System (RTOS), Writing Time and Space Sensitive Programs, Writing Device Drivers, Interrupt Handling in C, Combining C with Assembly.

Text Books :

1. Programming & Customizing the AVR Microcontroller, Dhananjay V. Gadre, Tata McGraw-Hill Pub. Co. Ltd., New Delhi.

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ECE428B**POWER SYSTEM STABILITY AND FACTS**

B. Tech Semester –VIII (Elective II)

L	T	P	Credits
4	-	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks
Duration of Exam.	:	3 Hrs.

UNIT I**POWER SYSTEM STABILITY PROBLEM:**

Rotor angle stability, voltage stability, short term and long term stabilities, swing equation and its solution techniques.

SYNCHRONOUS MACHINES AND ITS MODELLING:

Power transformation, flux linkage equations, voltage equation, formulation using state-space equations, normalizing voltage and torque eqns., equivalent circuit of synchronous m/c, the flux linkage state-space model. Linearization of the flux linkage model, Simplified linear model block diagram, state-space representation of simplified model.

UNIT II**DYNAMIC STABILITY:**

State-space representation, stability of a dynamic system, analysis of stability, Eigen properties of the state matrix, Small signal stability of a single m/c infinite bus system, Effect of excitation systems, power system stabilizer, system state matrix with armature winding.

TRANSIENT STABILITY:

An elementary view of transient stability, numerical integration methods, simulation of power system dynamic response.

UNIT III**VOLTAGE STABILITY:**

Basic concept related to voltage stability, voltage collapse, voltage stability analysis, prevention of voltage collapse.

FLEXIBLE AC TRANSMISSION SYSTEM:

FACTS definitions, review of FACTS devices, series compensation in transmission systems, cascade connection of components-shunt and series compensation.

UNIT IV**SUB-SYNCHRONOUS OSCILLATORS:**

Turbine generator torsional characteristics, characteristics of series capacitor compensated transmission system, Self excitation, torsional interaction, counter measure to SSR problems, ferro resonance.

FACTS DEVICES:

Series connected controllers- inter line power flow controller(IPFC), thyristor controlled series capacitor(TSSC), thyristor controlled series reactor(TCSR), thyristor switch series reactor(TSSR). Shunt connected controllers- static synchronous compensator(STATCOM), static synchronous generator(SSG), battery energy storage system(BESS), super conducting magnetic energy storage(SMES), static VAR compensator(SVC), thyristor controlled reactor(TCR), thyristor switched reactor(TSR), thyristor switched capacitor(TSC), static VAR generator or absorber, static VAR system(SVS), thyristor controlled braking resistor(TCBR), Combined series-shunt connected controllers- unified power flow controllers(UPFC), thyristor controlled phase shifting transformer(TCPST), interphase power controller(IPC), Combined series-series controllers.

Text Books:

1. Power System Stability and Control by Prabha Kumar: MGH
2. Power System Control and Stability by Anderson and Fouad: Galgotia Publications

Reference Books:

1. Extra high voltage AC Transmission Engg. By Rokosh Das Begamudre
2. Electrical energy theory: An Introduction by O.I. Elgerd: TMH

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