



SCHEME OF STUDIES & EXAMINATIONS

Department: Electronics & Communication Engineering –4TH Semester

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
		ENVIRONMENTAL STUDIES(Common for all branche) (Gr-A)	3	-	-	-	75	-	75	-	3
2	CSE210B	COMPUTER ORGANIZATION & ARCHITECTURE (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.	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&IT,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	
Gr-B			22	6	8	230	450	195	875	30	
Gr-A											

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 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 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.
5. The ENVIRONMENTAL STUDIES (GES201B) & ENVIRONMENTAL STUDIES FIELD WORK (GES203B) are compulsory & qualifying courses.
6. 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.



SYLLABUS: B Tech (ECE)

Department : Electronics & Communication Engineering – 4TH Semester

Subject: Engineering Economics (Theory)

Subject Code: MGT201B

Detailed Content

UNIT NO.1 Different Economics With Inter Relations

- Topic No. 1: Introduction to various definitions of Economic
- Topic No. 2: Nature of Economic problem
- Topic No. 3: Micro and macro economics- their feature and scope
- Topic No. 4: Production possibility curve
- Topic No. 5: Economic laws and their nature
- Topic No. 6: Relation between Science
- Topic No. 7: Engineering Technology and Economics
- Topic No. 8: Concept and measurement of utility
- Topic No. 9: Law of Diminishing Marginal Utility
- Topic No. 10: Law of equi-marginal utility – its practical application and importance

UNIT NO.2 Demand And Costs

- Topic No. 11: Meaning of Demand, Individual and Market demand schedule
- Topic No. 12: Law of demand, & shape of demand curve
- Topic No. 13: Elasticity of demand & measurement of elasticity of demand
- Topic No. 14: Factors effecting elasticity of demand
- Topic No. 15: Practical importance & application of the concept of elasticity of demand
- Topic No. 16: Various concepts of cost-Fixed cost
- Topic No. 17: Variable cost, average cost
- Topic No. 18: Marginal cost, Money cost, real cost
- Topic No. 19: Opportunity cost. Shape of average cost
- Topic No. 20: Marginal cost, total cost etc. in short run and long run.

UNIT NO.3 Production , Economy & Market

- Topic No. 21: Meaning of production and factors of production
- Topic No. 22: Law of variable proportions, & Law of Return to Scale
- Topic No. 23: Lubrication principles, Bearing lubrication
- Topic No. 24: Functions of lubricating system
- Topic No. 25: Internal and External economics and diseconomies of scale
- Topic No. 26: Meaning of Market, Type of Market
- Topic No. 27: Perfect Competition, Monopoly
- Topic No. 28: Oligopoly, Monopolistic competition

UNIT NO.4 Supply , Economy and Globe

- Topic No. 29: Supply and Law of Supply
- Topic No. 30: Role of Demand & Supply in Price Determination and
- Topic No. 31: Effect of changes in Demand and supply on prices
- Topic No. 32: Nature and characteristics of Indian economy
- Topic No. 33: privatization – meaning, merits and demerits
- Topic No. 34: Globalization of India economy – merits and demerits
- Topic No. 35: Elementary Concept of WTO & TRIPS agreement
- Topic No. 36: Monetary Policy & Fiscal Policy



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Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

TEXT BOOKS:

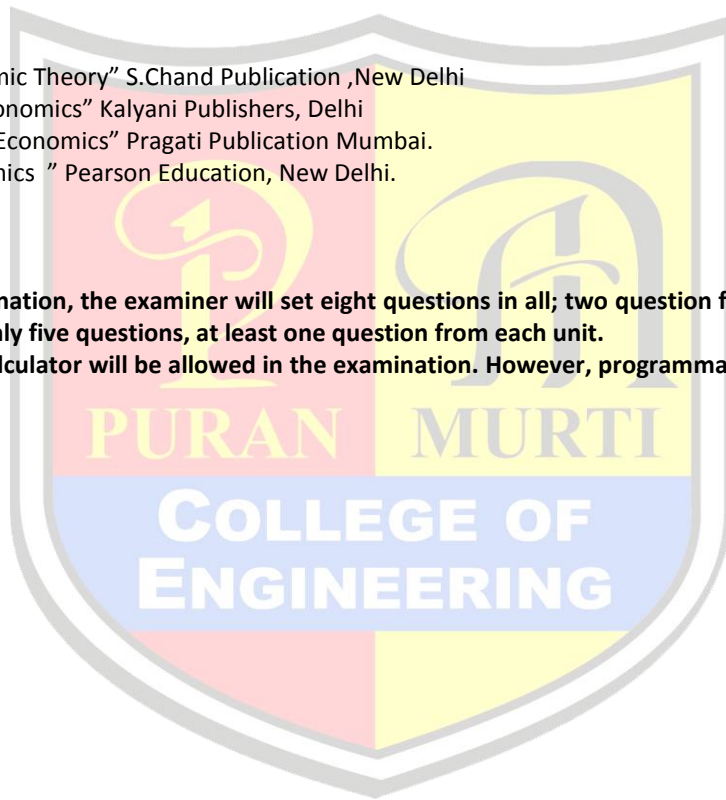
1. Ahuja H.L."Micro Economic Theory" S. Chand Publication, New Delhi
2. Dewett K.K "Modern Economic Theory" S. Chand Publication, New Delhi
3. Jain T.R, Grover M.L, Ohri V.K Khanna O.P,"Economics for engineers" V.K .Publication ,New Delhi

SUGGESTED 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 eight questions in all; two question from each unit & students will be required to attempt only five questions, 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.





SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering– 4TH Semester

Subject: Environment Studies

Subject Code: GES-201 B

Detailed Content

UNIT No 1 THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Topic No.1: Definition , scope and importance of environment.

Topic No.2: Need for public awareness

UNIT No 2 NATURAL RESOURCES

Topic No.3: Renewable and non renewable resources, Forest resources

Topic No.4: Water resources and Mineral resources

Topic No.5: Food resources

Topic No.6: Energy resources

Topic No.7: Land resources and Role of and individual in conservation of natural resources

Topic No.8: Equitable use of resources for sustainable life style

UNIT No 3 ECOSYSTEM:

Topic No.9: Concept, structure and function of an eco system

Topic No.10: Food chains and Food web

Topic No.11: Energy flow in the ecosystem

Topic No.12: Biogeochemical cycles

Topic No.13: Ecological succession

Topic No.14: Ecological pyramids and ideal ecosystem

Topic No.15: Forest ecosystem

Topic No.16: Desert, Aquatic and tundra ecosystem

UNIT No 4 BIODIVERSITY AND ITS CONSERVATION

Topic No.17: Types of biodiversity

Topic No.18: Biological classification of india and value of biodiversity

Topic No.19: Biodiversity at Globe National local levels

Topic No.20: Hot spot of biodiversity

Topic No.21: Endangered and endemic species of india

Topic No.22: Conservation of biodiversity

UNIT No. 5 ENVIRONMENTAL POLLUTION:

Topic No.23: Air pollution and Water pollution

Topic No.24: Soil and Marine Pollution

Topic No.25: Noise pollution and thermal pollution

Topic No.26: Nuclear hazard and solid waste management

Topic No.27: Role of an individual in prevention of pollution and case study of pollution

Topic No.28: Disaster management

UNIT No. 6 SOCIAL ISSUES AND THE ENVIRONMENT

Topic No.29: From unsustainable to sustainable development

Topic No.30: Urban problem related to energy

Topic No.31: Water conservation and management

Topic No.32: Resettlement and Rehabilitation of people

Topic No.33: Environment ethic and climate change

Topic No.34: Wasteland reclamation

Topic No.35: Environment protection Act

Topic No.36: Issues involved in enforcement and environmental Legislation

UNIT No 7 HUMAN POPULATION AND THE ENVIRONMENT

Topic No.37: Population growth



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- Topic No.38: Environment and human health
Topic No.39: Human right and value education
Topic No.40: AIDS, Women and child welfare
Topic No.41: Role of information technology in environment
Topic No.42: Role of information technology in human health

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	

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. Gorhani, 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, Delhi 284p.
12. McKinney, M.L. & Schoch, R.M. 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, Wadsworth 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 EnviroMedia (R).
21. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol I and II Enviro Media (R).
22. Trivedi 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. Philadelphia, USA 499p.
24. A text book environmental education G.V.S. Publishers by Dr. J.P. Yadav.

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

- Note:**
1. Examiner will set eight questions. Students will be required to attempt five Questions.
 1. The awards of this paper shall not be counted in the award of the Degree/DMC.



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4th Semester

Subject: Computer Organization and Architecture (Theory)

Subject Code: CSE-210B

Detailed Content

Unit No.1 General System Architecture

- Topic No.1 : Classification of computers(Based on Computation methodology(Analog, digital, hybrid)
- Topic No.2: Based on generations, based on size & capability, based on Flynn's criteria
- Topic No.3 : Multilevel viewpoint of a machine: digital logic
- Topic No 4: Micro architecture, ISA, operating systems, high level language
- Topic No.5 : Register Transfer language,
- Topic No.6 : Computer Buses(Basic Design Using Multiplexer), Bus width
- Topic No 7: Bus clocking(synchronous , asynchronous), Bus arbitration
- Topic No.8 : Bus examples(ISA bus, PCI bus, Universal serial bus)
- Topic No.9 :Computer Arithmetic ,Addition , subtraction(signed Magnitude)
- Topic No 10: signed 2's complement , Multiplication (Booth's algorithm)

Unit No.2 CPU Organization

- Topic No.11 : CPU Architecture types(accumulator, register, stack, memory/ register)
- Topic No 12 :Instruction cycle(Fetch-Decode-Execute)
- Topic No.13 : Instruction set based classification of processors(RISC, CISC, and their comparison)
- Topic No.14 : Addressing modes(register, immediate, direct, indirect, indexed)
- Topic No.15 : Operations in the instruction set
- Topic No.16 : Arithmetic and Logical, Data Transfer, Control Flow
- Topic No.17 : Instruction set formats(fixed, variable, hybrid)

Unit No.3 Input /Output & Control Unit

- Topic No.18: Input Output Interface
- Topic No.19: Asynchronous data transfer(Strobe control, handshaking , serial transfer)
- Topic No.20: Serial Vs parallel data transmission
- Topic No.21: Modes of data transfer(Programmed I/O, Interrupt driven, Direct Memory access (DMA))
- Topic No.22: Control Unit design, Control unit design methods(hardwired & microprogrammed)
- Topic No.23: Control Memory, Address Sequencing, Micro instructions

Unit No.4 Memory Organization:

- Topic No.24: Memory device characteristics(access/ cycle time, cost per bit, volatility ,storage density)
- Topic No.25: Memory hierarchy, Main memory Design(Semiconductor RAM & ROM organization, memory expansion, Static & dynamic memory types , their comparison)
- Topic No.26: Associative memory Design, Match logic, Locality of reference principle(Temporal & Spatial)
- Topic No.27: Cache mapping(Direct , associative , set associative)
- Topic No.28: Cache writing policies(Copy-Back , Writethrough)
- Topic No.29: Virtual Memory (Address space , memory space , Address mapping using pages , Page replacement)

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100



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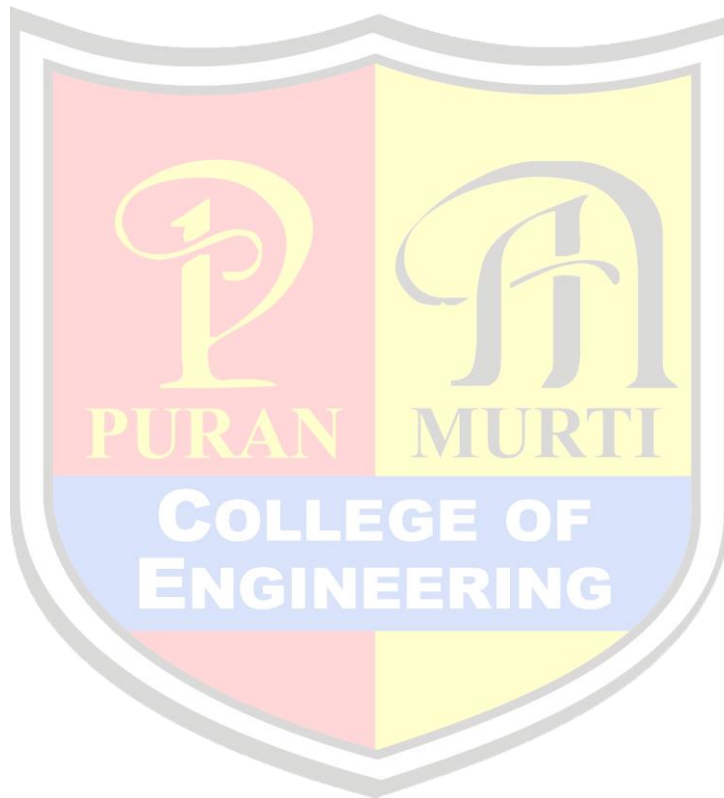
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TEXT BOOKS:

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.





SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: DIGITAL CIRCUIT & SYSTEMS (Theory)

Subject Code: ECE204B

Detailed Content

Unit No.1 Number System And Codes

- Topic No.1: Number System ,Binary Codes
- Topic No.2: Boolean Algebras, Sets, Relations and Lattices
- Topic No.3: Five and Six variable Karnaugh map
- Topic No.4: Quine Mcluskey and VEM Methods of Simplifications

Unit No.2 Logical Design

- Topic No.5: Design with Basic logical Gates
- Topic No.6: logic Design with Integrated Circuits, NAND and NOR Circuits
- Topic No.8: Design of High- Speed Adders
- Topic No.9: Functional Decomposition, Symmetric Networks
- Topic No.10: Identification of Symmetric Functions
- Topic No.11: Introduction to Threshold logic, Synthesis of Threshold Networks

Unit No.3 Synchronous Sequential Circuits

- Topic No.12: Sequential Circuits
- Topic No.15: The Finite State Model-Basic Definitions
- Topic No.16: Memory Elements and Their Excitations Functions
- Topic No.17: Synthesis of Synchronous Sequential Circuits.
- Topic No.18: The Finite State Model-Further Definitions, Capabilities and limitations of Finite State Machines
- Topic No.19: State Equivalence, and Machine Minimization
- Topic No.20: Simplification of Incompletely Specified Machines

Unit No.4 Asynchronous Sequential Circuits

- Topic No.21: Fundamental- Mode Circuits, Synthesis
- Topic No.22: State Assignment in Asynchronous Sequential Circuits, State Assignments using Partitions
- Topic No.23: The Lattice of Closed Partitions,and Reduction of the output Dependency

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	1	-		25	75	3 hours	100

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



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Analog Electronics Circuits (Theory)

Subject Code: ECE206B

Detailed Content

Unit No.1 Multistage Amplifier

- Topic No.1: RC Coupled Transistor Amplifier, Lower & Upper Cut off Frequency, Frequency Response curve & Bandwidth,
- Topic No.2: Transformer Coupled Amplifier, Direct Coupled Amplifier, Cascade Amplifier, Darlington Pair Amplifier,
- Topic No.3: Distortion In Amplifiers.
- Topic No.4: Feedback concept , Transfer Gain with Feedback, General Characteristics of Negative Feedback, Advantages & disadvantages,
- Topic No.5: 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 No.2 Oscillators

- Topic No.6: Introduction, Barkhausen Criterion, Oscillator with RC Feedback circuit (RC Phase Shift, Wien Bridge), Tuned Collector, Tuned Base Oscillator, LC Feedback circuits (Hartley, Colpitts),
- Topic No.7: Condition for Sustained Oscillations & Frequency of Oscillations, Crystal Oscillator.
- Topic No.8: Definition, Application & Types of Power Amplifiers, Amplifier Classes of Efficiency (Class - A, B, AB, C),
- Topic No.9: Push Pull Amplifiers, Distortion in Simple & Push Pull Amplifier, Complementary Push Pull Amplifier, Integrated Circuit Power Amplifier ,
- Topic No.10: Introduction to MOSFET & CLASS D Power Amplifier

Unit No.3 Voltage Regulators

- Topic No.11: Voltage Regulation, Basic Series Regulators, Basic Shunt Regulators
- Topic No.12: Power Supply Parameters, Basic Switching Regulators, Step up Configuration, Step down Configuration
- Topic No.13: IC Voltage Regulator, SMPS., Switching action & Characteristics of a Transistor, Switching Times
- Topic No.14: Multivibrators, Astable Multivibrator, Monostable Multivibrator, Bistable Multivibrator, 555 Timer, Monostable & Astable Operation with 555 Timer.

Unit No.4 A/D Converters

- Topic No.15: Basic Principle of DAC & ADC, Types of DAC Circuits: Resistor Divider, R/2R Ladder network,
- Topic No.16: Types of ADC circuits: Parallel Comparator, Counter type, Successive approximation & Dual Slope, Specifications
- Topic No.17: Optoelectronic Devices, Photoconductors, Photo Diode, Photo Transistor, Photo Voltaic Sensor, Photo Emission, LED, LCD, Laser Diode, Schottky Diode,
- Topic No.18: SCR, TRIAC, DIAC, UJT, Single Electron Transistor.
- Topic No.19: Infrared LEDs, IGBT, Opto Coupler

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-		25	75	3 hours	100

TEXT 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



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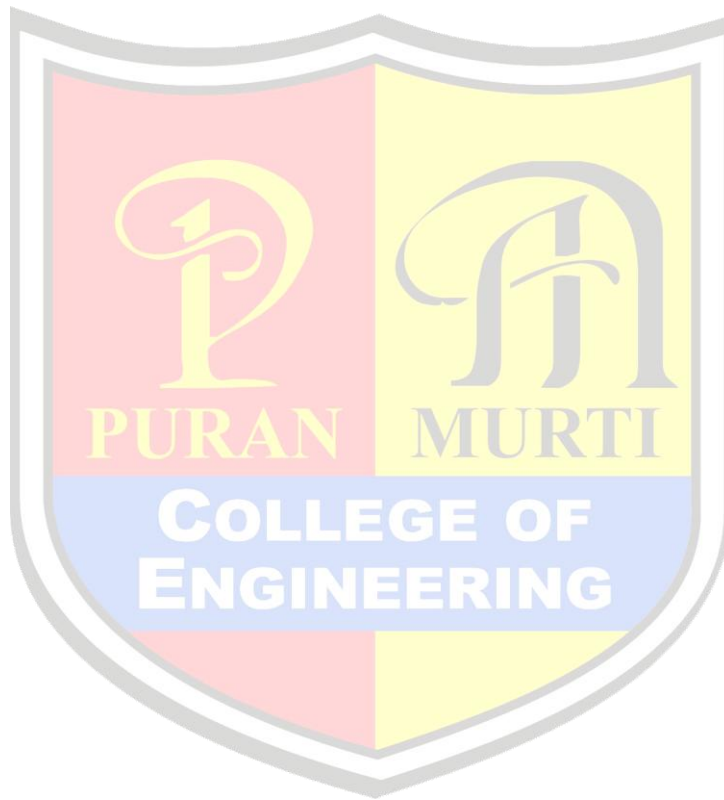
8. Electronic Principles By Albert Malvino.

REFERENCE BOOKS:

1. Basic Electronics By Debashion DE. -- Pearson
2. Electronics Device & Circuit By Dharam Raj Cheruku – Pearson
3. Electronics Device Circuit By David.A.Bell – Oxford

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





SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Power Electronics (Theory)

Subject Code: ECE208B

Detailed Content

UNIT No 1 Power Semiconductor Diodes and Transistors

- Topic No.1: Characteristics of Power Diodes, Types of Power Diodes
- Topic No.2: Power Transistors, Power MOSFET
- Topic No.3: Insulated Gate Bipolar Transistors (IGBT), MOS Controlled Thyristors
- Topic No.4: Terminal Characteristics of Thyristors, Thyristor Turn ON Methods
- Topic No.5: Switching Characteristics of Thyristors, Thyristors Gate Characteristics
- Topic No.6: Two Transistor Model of a Thyristor, Thyristor Ratings, Thyristors Protection, Heating Cooling and Mounting of Thyristors
- Topic No.7: Series and Parallel Operation of Thyristors
- Topic No.8: Programmable Unijunction Transistors(PUT)
- Topic No.9: Silicon Unilateral Switch(SUS), Silicon Controlled Switch(SCS)
- Topic No.10: Light Activated Thyristors, Static Induction Thyristors
- Topic No.11: Diac, Triac, Asymmetric Thyristors, Reverse Conducting Thyristors
- Topic No.12: Firing Circuits for Thyristors, Pulse Transformer in Firing Circuits, Triac Firing Circuit

UNIT No.2 Thyristors Commutation Techniques

- Topic No.13: Class A Commutation (Load Commutation), Class B Commutation (Resonant Pulse Commutation)
- Topic No.14: Class C Commutation (Complementary Commutation), Class D Commutation (Impulse Commutation)
- Topic No.15: Class E Commutation (External Pulse Commutation), Class F Commutation (Line Commutation)
- Topic No.16: Principle of Phase Control ,Full Wave Controlled Converters, Single Phase Full Wave Converter
- Topic No.17: Single Phase Two Pulse Converter with Discontinuous Load Current
- Topic No.18: Three Phase Converter Systems Using Diodes ,Three Phase Thyristor Converter Circuits
- Topic No.19: Effect of Source Impedance on Performance of Converter, Dual Converters

UNIT No 3 Choppers

- Topic No.20: Principle of Chopper Operation, Control Strategies
- Topic No.21: Step Up Choppers, Types of Chopper Circuits
- Topic No.22: Steady State Time Domain Analysis of Type A Chopper
- Topic No.23: Thyristor Chopper Circuits, Multiphase Choppers
- Topic No.24: Single Phase Voltage Source Inverter: Operating Principle ,Force Commutated Thyristor Inverters
- Topic No.25: Three Phase Bridge Inverter, Voltage Control in Single Phase Inverter
- Topic No.26: Pulse Width Modulated Inverter
- Topic No.27: Reduction of Harmonics in the Inverter Output Voltage
- Topic No.28: Current Source Inverters, Series Inverters, Single Phase Parallel Inverter

UNIT No 4 AC Voltage Controller and Cycloconverters

- Topic No.29: Types of AC Voltage Controller, Integral Cycle Control
- Topic No.30: Single Phase Voltage Controllers, Sequence Control of AC Voltage Controller
- Topic No.31: Principle of Cycloconverter Operation, Three Phase Half Wave Cycloconverter,
- Topic No.32: Output Voltage Equation for Cycloconverter, Load Commutated Cycloconverter
- Topic No.33: Switched Mode Power Supply(SMPS), Uninterruptible Power Supplies, High Voltage DC Transmission,
- Topic No.34: Static Switches, Static Circuit Breakers, Solid State Relays.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100



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TEXT BOOKS:

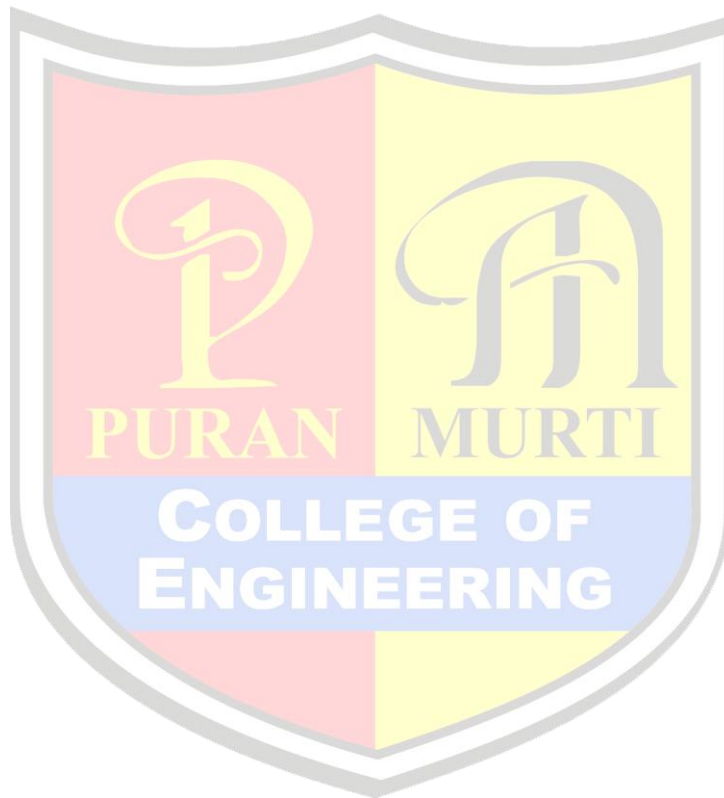
- 1.P.S Bimbhra : Power Electronics, Khanna Publisher
2. Muhamed H.Rashid : Power Electronics Circuits, Devices and Applications, PHI.
3. Singh And Kanchandani : Power Electronics, TMH.1.

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





SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Communication Systems (Theory)

Subject Code: ECE210B

Detailed Content

Unit No.1 Introduction to Communication System

- Topic No.1: Modulation, Demodulation, Radio Frequency Spectrum
- Topic No.2: Signals & their classification
- Topic No.3: Limitations & Advantages of a Communication System
- Topic No.4: Comparison of Analog & Digital Communication Systems, Historical Perspective, Modes & Medias of Communication
- Topic No.5: Sources of Noise, External & Internal Noise, Noise Calculations, Noise Figure, Noise Figure Calculation
Noise Temperature, Noise in Communication Systems
- Topic No.6: Band Pass Noise Model, Cascaded States & its Noise Figure Calculation
- Topic No.7: Signal in presence of Noise, Pre-Emphasis & De-Emphasis
- Topic No.8: Noise Quieting Effect, Capture Effect, Noise in Modulation Systems

Unit No.2 Linear Modulation

- Topic No.9: (AM) Basic definition & derivation for Modulation & Modulation Index
- Topic No.10: Modulation & Demodulation of AM
- Topic No.11: Suppressed Carrier Modulation
- Topic No.12: Quadrature Amplitude Modulation, SSB-SC, DSB-SC, VSB Modulation & Demodulation
- Topic No.13: Comparison of various AM Systems
- Topic No.14: Generation of AM waves, Basic definition & derivation for Modulation & Modulation Index
- Topic No.15: Generation of FM waves, Comparison between PM & FM, Frequency
- Topic No.16: Spectrum of FM, B.W. & required spectra,
- Topic No.17: Types of FM, vector representation of FM,
- Topic No.18: Universal Curve, Multiple FM, Demodulation of FM waves,
- Topic No.19: Demodulation of PM waves, Comparison between AM & FM..

Unit No.3 Transmitters & Receivers

- Topic No.20: Classification of Radio Transmitters, Basic Block Diagram of Radio Transmitter
- Topic No.21: Effect of Feedback on operation of Transmitter, Radio Telephone Transmitters
- Topic No.22: Privacy Device in Radio Telephony, FM Transmitter using Reactance Modulator, Armstrong FM Transmitter
- Topic No.23: Radio Receivers, Classification, TRF Receiver, Super Heterodyne Receiver
- Topic No.24: Image Rejection & Double Spotting, Choice of IF
- Topic No.25: Tracking & Alignment of Receivers, AGC
- Topic No.26: Probability, Properties, Conditional Probability
- Topic No.27: Random Variables, CDF, PDF, Uniform Distribution, Random or Stochastic Process ,Ergodic Process, PSD
Properties of PSD ,Correlation Function

Unit No.4 Pulse Analog Modulation

- Topic No.28: Sampling theory, TDM, FDM, PAM, PWM, PPM, Modulation & Demodulation techniques of above all
- Topic No.29: Elements of Pulse Code Modulation, Noise in PCM Systems
- Topic No.30: Bandwidth of PCM Systems, Measure of Information, Channel Capacity
- Topic No.31: Channel Capacity of PCM System, Differential Pulse Code Modulation (DPCM). Delta Modulation (DM)



PM

COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-		25	75	3 hours	100

TEXT BOOKS:

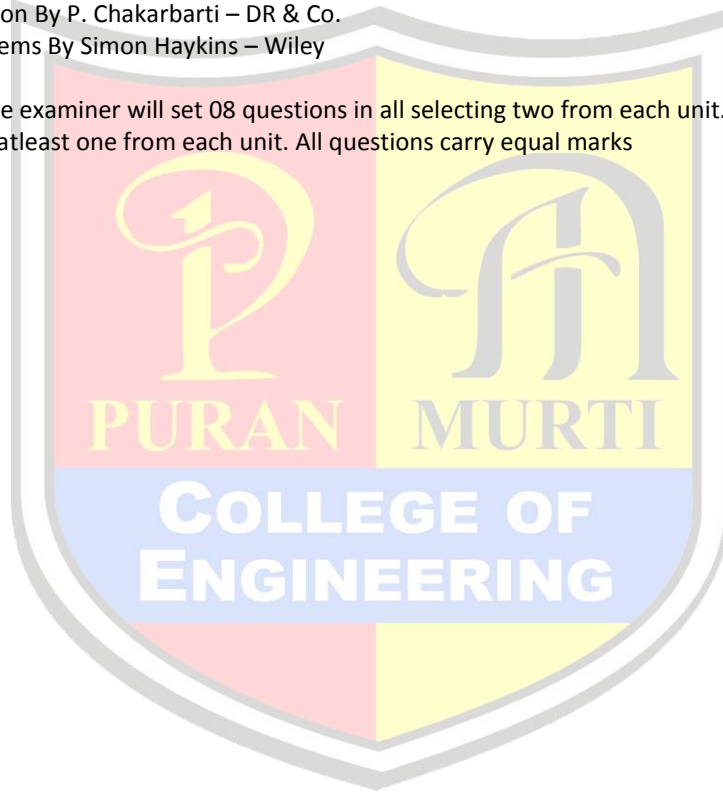
1. Communication Systems By Manoj Duhan – I. K. International

REFERENCE BOOKS:

1. Electronic Communication Systems By Kennedy – TMH
2. Communication Systems By Singh & Sapre – TMH
3. Electronic Communication, By Roody Coolen – Pearson
4. Analog Communication By P. Chakarbarti – DR & Co.
5. 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





SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Field And Waves (Theory)

Subject Code: ECE212B

Detailed Content

UNIT No 1

- Topic No.1: Coulomb's Law of Electrostatic Force, Electric Field Intensity, Electric Potential, Electric Charge Density
- Topic No.2: Field of A Finite Line Of Charge, Field Potential of an Infinite Line Of Charge
- Topic No.3: Electric Potential Difference, Electric Dipole, Electric Flux Density
- Topic No.4: Gauss Law, Application of Gauss Law
- Topic No.5: Laplace Equation, Solution of Laplace Equation in Rectangular And Cartesian Coordinates
- Topic No.6: Uniqueness Theorem of Electrostatic Field Solutions
- Topic No.7: Methods of Electrostatic Images, Electrostatic Energy, Capacitance

UNIT No.2

- Topic No.8: Introduction, Faraday Induction Law, Magnetic Effect on Current Carrying Conductor
- Topic No.9: Magnetic Flux, Magnetic Flux Density, Biot-Savart's Law, Ampere's Law of Force
- Topic No.10: Magnetic Field of A Solenoid, Magnetic Field In Vector Notations, Magnetic Field Intensity
- Topic No.11: Magnetic Flux Density outside and inside an Infinitely Long Cylinder, Containing Uniform Current Density
- Topic No.12: Magnetic Vector Potential, Energy Stored In A Magnetic Field, Energy Density In A Magnetic Field

UNIT No 3

- Topic No.13: Introduction, Displacement Current Maxwell's Equations: In Free Space, Differential Form And Integral Form, Physical Interpretations Of Maxwell's Field Equations,
- Topic No.14: Boundary Conditions Electromagnetic Wave In Homogeneous Medium,
- Topic No.15: Wave Equation, Plane Wave And Uniform Plane Wave,
- Topic No.16: Electromagnetic Wave Equations, Wave Propagation In Conducting Medium, Polarization

UNIT No 4

- Topic No.17: Introduction, Basic Principles Of Transmission Lines,
- Topic No.18: Equivalent Circuit Representation, General Transmission Line Equation,
- Topic No.19: Wave Characteristics on Finite Transmission Lines, Transients on Transmission lines,
- Topic No.20: Primary Constant, Voltage And Current Calculations, Characteristic Impedance,
- Topic No.21: Open And Short Circuit Lines, Reflection Coefficient, VSWR, Smith's Chart And Its Applications.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Internal Assessment		External Assessment (Examination)			
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

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



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Digital Circuit And System Lab

Subject Code: ECE224B

Detailed Content

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 Asynchronus 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.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Internal Assessment	External Assessment (Examination)		Exam Duration		
L	T	P	Credits	Max. Marks		Max. Marks	Exam Duration
		2	1	20	30	3 hours	50

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.



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Analog Electronics Circuits Lab

Subject Code: ECE226B

Detailed Content

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.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Internal Assessment		External Assessment (Examination)			
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	1	20	30	3 hours	

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.



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Power Electronics Lab

Subject Code: ECE228B

Detailed Content

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 Cycloconvertner 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.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	50
		2	1	20	30	3 hours	

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.



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: Communication Systems Lab

Subject Code: ECE230B

Detailed Content

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.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Internal Assessment		External Assessment (Examination)			
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	1	20	30	3 hours	

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.



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

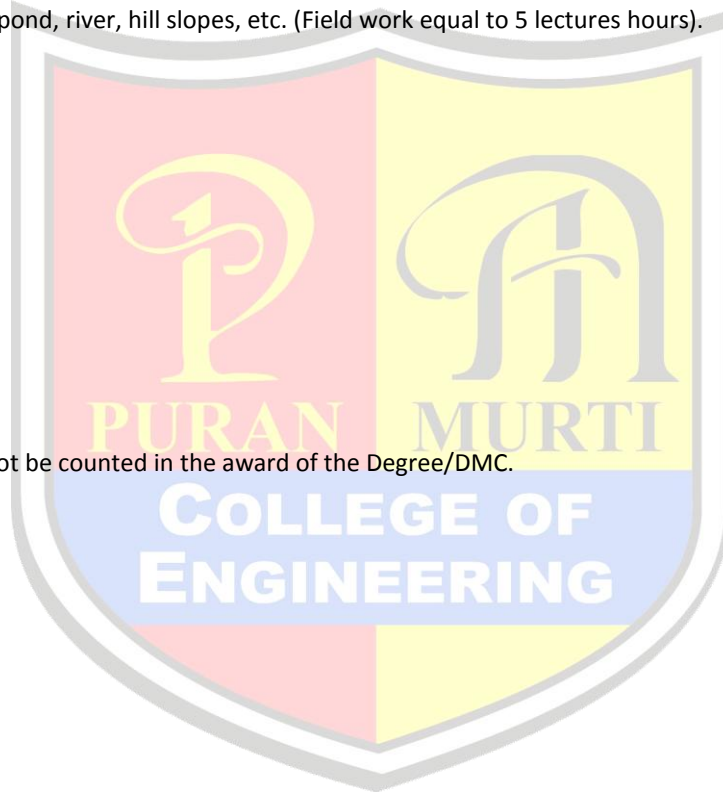
Subject: ENVIRONMENTAL STUDIES FIELD WORK

Subject Code: GES203B

Detailed Content

FIELD WORK:

1. Visit to a local area to document environmental assets – river/ forest/ grassland/ hill/ mountain.
2. Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural.
3. Study of common plants, insects, birds.
4. 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.



SYLLABUS: B Tech (ECE)

Department: Electronics & Communication Engineering – 4TH Semester

Subject: GENERAL PROFICIENCY & ETHICS

Subject Code: GPEC202B

Detailed Content

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 External Examiner to be appointed by the University	Member
3		Member