## SCHEME OF STUDIES & EXAMINATIONS : B Tech (CSE)

### Department : Computer Science & Engineering – 3rd Semester

### Credit Based Scheme w.e.f. 2013-14

| Sr. No | Course No. | Course Title | Teaching Schedule | | | Marks of class work | Examination Marks | | Total | Credit | Duration of Exam |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | | Theory | practical | | | |
| 1 | MGT 201B | ENGINEERING ECONOMICS **(Common for all branches Except BT & BME) (Gr –A)** | 4 | - | - | 25 | 75 | - | 100 | 4 | 3 |
| | | OR | | | | | | | | | |
| | GES 201B | ENVIRONMENTAL STUDIES **(Common for all branches) (Gr-B)** | 3 | - | - | 75* | - | - | 75* | - | 3 |
| 2 | CSE201B | DATA STRUCTURES (common with ECE , IT & AEI) | 3 | 1 | - | 25 | 75 | - | 100 | 4 | 3 |
| 3 | CSE 203B | DISCRETE STRUCTURE | 3 | 1 | - | 25 | 75 | - | 100 | 4 | **3** |
| 4 | ECE 201B | DIGITAL ELECTRONICS (common with EE,ECE) | 3 | 1 | - | 25 | 75 | - | 100 | 4 | 3 |
| 5 | ECE 210B | COMMUNICATION SYSTEMS (Common with IT, ECE IV$^{th}$ sem & AEI VI$^{th}$ sem) | 3 | 1 | - | 25 | 75 | - | 100 | 4 | 3 |
| 6 | CSE 205 B | COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES (Common with IT) | 3 | 1 | - | 25 | 75 | - | 100 | 4 | 3 |
| 7 | CSE 221B | DATA STRUCTURES LAB (common with ECE , IT & AEI) | - | - | 2 | 20 | - | 30 | 50 | 1 | 3 |
| 8 | ECE 221B | DIGITAL ELECTRONICS LAB (common with EE,ECE) | - | - | 2 | 20 | - | 30 | 50 | 1 | 3 |
| 9. | GES-203B | ENVIRONMENTAL STUDIES FIELD WORK **(Common for all branches) (Gr – B)** | -- | -- | -- | - | - | 25* | 25* | - | - |
| 10 | CSE 225 B | COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES LAB (Common with IT) | - | - | 2 | 20 | - | 30 | 50 | 1 | 3 |
| 11 | ME 217B | WORKSHOP **(Common for all branches Except BT & AE)** | - | - | 2 | 50 | - | - | 50 | 2 | 3 |
| Total | | GR- A | 19 | 5 | 8 | 260 | 450 | 90 | 800 | 29 | |
| | | GR-B | 18 | 5 | 8 | 310 | 375 | 115 | 800 | 25 | |

**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 and Ethics Syllabus.**
2. ***The Environmental studies (GES-201B) & Environment Studies Field work (GES-203B) are compulsory & qualifying courses only.**
3. **The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.**
4. **Electronics gadgets including Cellular phones are not allowed in the examination.**
5. **All the branches are to be divided into Group-A and Group-B as per the suitability of the Institute/College so that there is equitable distribution of teaching load in odd and even semesters.**

# SYLLABUS: B Tech (CSE)

**Department : Computer Science & 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: Internet and External economics and diseconomies of scale
Topic No. 26: Meaning of Market, Type of Marker
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: Monitory Policy & Fiscal Policy

| 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 Ecomomic Theory" S. Chand Publication, New Delhi
2. Dewett K.K "Modern Ecomomic 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 Ecomomic 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 (CSE)

**Department: Computer Science & Engineering – 4TH Semester**

**Subject: Environment Studies** **Subject Code: GES-203 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 conversation 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: Conversation 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 ofan 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
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 | 100 |

**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 Pllution, 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., Environmenal 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, Bomaby Natural History Scociety, 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 EnviroMdiea (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. 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 (CSE)

**Department: Computer Science & Engineering – 3rd Semester**

**Subject: Data Structures (Theory)** **Subject Code: CSE-201B**

## Detailed Content

**Unit No.1**

Topic No.1 : Basic Terminology: Elementary Data Organization
Topic No.2 : Data Structure Operations
Topic No.3 : Arrays: Array Definition and Analysis, Representation of Linear Arrays in Memory,
Topic No.4 : Traversing of Linear Arrays, Insertion and Deletion
Topic No.5 : Single Dimensional Arrays, Two Dimensional Arrays, Multidimensional Arrays
Topic No.6 : Sparse Matrix
Topic No.7 : Stacks and Queues: Operations on Stacks- Push, Pop, Peep, Representation of stacks
Topic No.8 : Application of stacks- polish expression and their compilation conversion of infix expression to prefix and postfix expression
Topic No.9 : Tower of Hanoi problem
Topic No.10: Representation of Queues
Topic No.11: Operations on queues: Create, Add, Delete
Topic No.12: Priority Queues, Dequeues, Circular Queue.

**Unit No.2 Linked Lists**

Topic No.13 : Singly linked lists: Representation of linked lists in memory
Topic No.14 : Traversing, Searching, Insertion into, Deletion from linked list
Topic No.15 : Polynomial Addition
Topic No.16 : Header Linked List
Topic No.17 : Doubly linked list
Topic No.18 : Generalized list

**Unit No.3 Trees and Graphs**

Topic No.19 : Basic Terminology, Binary Trees and their representation
Topic No.20 : expression evaluation
Topic No.21 : Complete Binary trees
Topic No.22 : Extended binary trees
Topic No.23 : Traversing binary trees, Searching, Insertion and Deletion in binary search trees
Topic No.24 : AVL trees
Topic No.25 : Threaded trees
Topic No.26 :B trees
Topic No.27 : Graphs: Terminology and Representations
Topic No.28 : Graphs & Multigraphs, Directed Graphs
Topic No.29 : Sequential representation of graphs
Topic No.30 : Adjacency matrices
Topic No.31 : Transversal Connected Component and Spanning trees
Topic No.32 : Shortest path

**Unit No.4 Searching, Sorting methodologies:**

Topic No.33 : Array-Bubble sort, Selection Sort, Insertion Sort, Linear Search, Binary Search.
Topic No.34 : Stack - Quick Sort, Merge Sort. Two way Merge Sort.
Topic No.35 : Queue-Radix Sort.
Topic No.36 : Tree –Heap Sort.

| 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. 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. SymourLipschetz, 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 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.

## SYLLABUS: B Tech (CSE)

**Department: Computer Science & Engineering – 3rd Semester**

**Subject: Discrete Structure (Theory)** **Subject Code: CSE-203B**

## Detailed Content

**Unit No.1 Set Theory**

Topic No.1 : Introduction to set theory
Topic No.2 : Set operations
Topic No.3 : Algebra of sets, Duality, Finite and Infinite sets
Topic No.4 : Cartesian Product
Topic No.5 : Relations, Representation of relations, Types of relation, Equivalence relations and partitions
Topic No.6 : Partial ordering relations and lattices
Topic No.7 : Function and its types, Composition of function and relations

**Unit No.2 Graphs And Trees**

Topic No.8 : Introduction to graphs, Directed and Undirected graphs
Topic No.9 : Homomorphic and Isomorphic graphs, Subgraphs
Topic No.10: Cut points and Bridges
Topic No.11 : Multigraph and Weighted graph
Topic No.12 : Paths and circuits
Topic No.13 : Shortest path in weighted graphs
Topic No.14 : Eurelian path and circuits
Topic No.15 : Hamilton paths and circuits
Topic No.16 : Planar graphs
Topic No.17 : Euler's formula
Topic No.18 : Trees, Spanning trees, Binary trees and its traversals

**Unit No.3 Propositional logic**

Topic No.19 : Basic operations: AND(^), OR(v), NOT(~)
Topic No.20 : Truth value of a compound statement
Topic No.21 : propositions, tautologies, contradictions
Topic No.22 : Validity of Arguments
Topic No.23 : Group theory: Definition and examples of a monoid, Semigroup, Groups and rings
Topic No.24 : Homomorphism, Isomorphism and Automorphism
Topic No.25 : Subgroups and Normal subgroups
Topic No.26 :Cyclic groups, Cosets
Topic No.27 : Lagrange's theorem

**Unit No.4 Recursion And Recurrence Relation**

Topic No.28 : linear recurrence relation with constant coefficients
Topic No.29 : Homogeneous solutions, Particular solutions
Topic No.30 : Total solution of a recurrence relation using generating functions.
Topic No.31 : Techniques Of Counting: Permutations with and without repetition
Topic No.32 : Combination

| 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 Book:**

1. Elements of Discrete Mathematics C.L Liu, 1985, McGraw Hill

**Reference Books:**

1. Discrete Mathematics by Johnson Bough R., 5th Edition, PEA, 2001..
2. Concrete Mathematics: A Foundation for Computer Science, Ronald Graham, Donald Knuth and Oren Patashik, 1989, Addison-Wesley.
3. Mathematical Structures for Computer Science, Judith L. Gersting, 1993, Computer Science Press.
4. Applied Discrete Structures for Computer Science, Doerr and Levasseur, (Chicago: 1985,SRA
5. Discrete Mathematics by A. Chtewynd and P. Diggle (Modular Mathematics series), 1995, Edward Arnold, London,
6. Schaums Outline series: Theory and problems of Probability by S. Lipshutz, 1982, McGraw-Hill Singapore
7. Discrete Mathematical Structures, B. Kolman and R.C. Busby, 1996, PHI
8. Discrete Mathematical Structures with Applications to Computers by Trambley & Manohar, 1995, Mc Graw Hill.

**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.

# SYLLABUS: B Tech (CSE)

**Department: Computer Science & Engineering – 3rd Semester**

**Subject: Digital Electronics (Theory)** **Subject Code: ECE201B**

## Detailed Content

**UNIT No 1 Fundamentals Of Digital Techniques**

Topic No.1: Digital signal, logic gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR,
Topic No.2: Boolean algebra
Topic No.3: Review of Number systems, Binary codes: BCD,Excess-3, Gray, EBCDIC, ASCII
Topic No.4: Error detection and correction codes
Topic No.5: Design using gates, Simplifications of SOP and POS Boolean Expressions
Topic No.6: Karnaugh map up to four variables.
Topic No.7: Multiplexers and Demultiplexers and their use as logic elements
Topic No.8: Decoders, Adders / Subtractors, BCD arithmetic circuits, Encoders, Code Converters
Topic No.9: Decoders / Drivers for display devices.

**UNIT No 2 Sequential Circuits**

Topic No.10: Flip Flops : S-R, J-K, T, D,
Topic No.11: master-slave, edge triggered, shift registers, sequence generators, Counters,
Topic No.12: Asynchronous and Synchronous Ring counters and Johnson Counter,
Topic No.13: Design of Synchronous and Asynchronous sequential circuits.

**UNIT No 3 Digital Logic Families:**

Topic No.14: Switching mode operation of p-n junction, bipolar and MOS. devices.
Topic No.15: Bipolar logic families: RTL, DTL, DCTL, HTL, TTL, ECL, MOS, and CMOS logic families.
Topic No.16: Tristate logic, Interfacing of CMOS and TTL families.
Topic No.17: Memory organizations, Characteristics of memory devices,
Topic No.18: Classifications of semiconductors memories.

**UNIT No 4 A/D And D/A Converters**

Topic No.19: Sample and hold circuit, weighted resistor and R -2 R ladder D/A Converters,
Topic No.20: specifications for D/A converters. A/D converters : Quantization, parallel -comparator, successive approximation, counting type, dual-slope ADC, specifications of ADCs.
Topic No.21: PLA, PAL, FPGA and CPLDs.

| 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. 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

## SYLLABUS: B Tech (CSE)

**Department: Computer Science & Engineering – 3rd 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)

| 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

## SYLLABUS: B Tech (CSE)

**Department: Computer Science & Engineering – 3rd Semester**

**Subject: Data Structure Lab** **Subject Code: CSE-221B**

## Detailed Content

**List of Programs:**

1. Write a program to perform binary search in an array.
2. Write a program to perform binary search using recursion.
3. Write a program to perform linear search in 2D 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

| 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 | 50 |

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

## SYLLABUS: B Tech (CSE)

**Department: Computer Science & Engineering – 3rd Semester**

**Subject: Digital Electronics Lab** **Subject Code: ECE221B**

## Detailed Content

**List of Experiments:**

1. To 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.

| 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 | 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 (CSE)

**Department:– Computer Science & Engineering - 3rd Semester**

**Subject: Workshop Lab** **Subject Code: ME 217 B**

## Detailed Content

**List of Experiments:**

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.

| 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 | 2 | 50 | - | 3 hours | 50 |

**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.