

3CSU01 ELECTRONIC DEVICES & CIRCUITS

MAX_MARKS(50+100)

Objectives:

To acquaint the students with construction, theory and characteristics of the following electronic devices:

1. P-N junction diode
2. Bipolar transistor
3. Field effect transistor
4. LED, LCD and other photo electronic devices
5. Power control / regulator devices

Syllabus:

Mobility and conductivity, charge densities in a semiconductor, Fermi Dirac distribution, carrier concentrations and Fermi levels in semiconductor, Generation and recombination of charges, diffusion and continuity equation, Mass action Law, Hall effect, Junction diodes, Diode as a ckt. Element, load line concept, clipping and clamping circuits, voltage multipliers.

Transistor characteristics, Current components, Current gains: alpha and beta. Operating point. Hybrid model, h-parameter equivalent circuits. CE, CB and CC configuration. DC and AC analysis of CE, CC and CB amplifiers. Ebers-Moll model. Biasing & stabilization techniques. Thermal runaway, Thermal stability.

Small Signal Amplifiers at low frequency: Analysis of BJT and FET, RC coupled amplifiers. Frequency response, midband gain, gains at low and high frequency. Miller's Theorem. Cascading Transistor amplifiers, Emitter follower. JFET, MOSFET, Equivalent circuits and biasing of JFET's & MOSFET's. Low frequency CS and CD JFET amplifiers. FET as a voltage variable resistor. Source follower.

Feedback Amplifiers : Classification, Feedback concept, Transfer gain with feedback, General characteristics of negative feedback amplifiers. Analysis of voltage series, voltage-shunt, current-series and current-shunt feedback amplifier. Stability criterion.


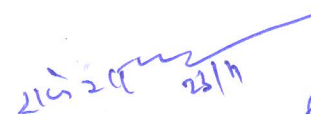

Oscillators : Classification. Criterion for oscillation. Tuned collector, Hartley, Colpitts, RC Phase shift, Wien bridge and crystal oscillators, Astable, monostable and bistable multivibrators. Schmitt trigger.

TEXT BOOKS:

1. Electronic devices & circuits theory By R.L. Boylestad, Louis Nashelsky, Pearson Education
2. Integrated Electronics By Millman Halkias, T.M.H

REFERENCE BOOKS:

1. Electronic devices & circuits By David Bell, Oxford Publications

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3CSU02 DATA STRUCTURES & ALGORITHMS

MAX_MARKS(50+100)

Objectives:

1. To study various data structure concepts like Stacks, Queues, Linked List, Trees and Files.
2. To overview the applications of data structures.
3. To be familiar with utilization of data structure techniques in problem solving.
4. To have a comprehensive knowledge of data structures and relevant algorithms.
5. To carry out asymptotic analysis of any algorithm

Syllabus:

Asymptotic notations: Concept of complexity of program, Big-Oh, theta, Omega- Definitions and examples.

Linear Data Structures: Array and its storage representation, sparse matrices stack, queue, dequeue, circular queue for insertion and deletion.

Evaluation of expression in infix, postfix & prefix forms using stack. Recursion.

Linear linked lists: singly, doubly and circularly connected linear linked lists- insertion, deletion at/ from beginning and any point in ordered or unordered lists. Comparison of arrays and linked lists as data structures, various implementations of Linked list.

Searching: Sequential and binary search

Sorting: Insertion, quick, heap, topological and bubble sorting algorithms.

Non-Linear Structures: Definition of tree, binary tree, tree traversal binary search tree, B-tree , B+ tree, AVL tree, Threaded binary tree.

Graphs: Definition its various representations Depth first and breadth first traversal of graphs, spanning tree, Single source single destination shortest path algorithms.

TEXT BOOKS

1. Data Structures in C/C++, Tanenbaum, Pearson
2. Data Structure and Algorithms, Pai TMGH

REFERENCE BOOKS

1. An introduction to data structures with applications By Jean-Paul Tremblay, P. G. Sorenson, TMH
2. Data Structures in C/C++, Horowitz, Sawhney, Galgotia
3. Data Structures in C++, Weiss, Parson

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