II Year-ISemester		T	P	C
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ELECTRICAL TECHNOLOGY(RT21045)

PrerequisiteCourse:

Nil

CourseDescriptionandObjectives:

This course covers various topics related to principle of operation and performance of various electrical machines.

i. To learn the principle of electromechanical energy conversion of single excited and multi excited machines.
ii. To understand the principle of operation, constructional details and operational characteristics of DC generators.
iii. To understand the principle and characteristics of DC motors. To introduce starting and speed control methods of DC motors.
iv. To learn the principle of operation and constructional details of transformers. Develop the equivalent circuit and evaluate the performance of transformers.
v. To learn the principle of operation and constructional details of three phase induction motor. Study the torque – slip characteristics and starting methods of induction motor.
vi. To study the principle of operation of single phase induction motor, shaded pole motor, capacitor motor and AC servo motor.

CourseOutcomes:

Uponcompletionof thecourse,thestudentwill beable toachievethefollowingoutcomes.

Cos	CourseOutcomes	POs
1	Able to understand the principles of electro mechanical energy conversion..	3
2	Able to explain the operation of DC generator and analyze the characteristics of DC generator.	3
3	Able to explain the principle of operation of DC motor and analyze their characteristics. Acquire the skills to analyze the starting and speed control	3
4	Capability to develop equivalent circuit and evaluate performance of transformers	3
5	Ability to analyze speed – torque characteristics of induction motor and understand starting methods of induction motor.	3
6	Capability to understand the operation of various special machines.	3

Syllabus:

UNIT I:

Objective: exposure to algorithmic complexities, recursive algorithms, searching and sorting techniques

Preliminaries of algorithm, Algorithm analysis and complexity

Data structure- Definition, types of data structures

Recursion: Definition, Design Methodology and Implementation of recursive algorithms, Linear and binary recursion, recursive algorithms for factorial function, GCD computation, Fibonacci sequence,

Towers of Hanoi, Tail recursion.

List Searches using Linear Search, Binary Search, Fibonacci Search

Sorting Techniques: Basic concepts, Sorting by : insertion (Insertion sort), selection (heap sort), exchange (bubble sort, quick sort), distribution (radix sort) and merging (merge sort) Algorithms.

UNIT II:

Objective: Applying stack and queue techniques for logical operations Stacks and Queues: Basic Stack Operations, Representation of a Stack using Arrays, Stack Applications: Reversing list,Factorial Calculation, Infix to postfix Transformation, Evaluating Arithmetic Expressions.

Queues: Basic Queues Operations, Representation of a Queue using array, Implementation of Queue Operations using Stack, Applications of Queues- Round robin Algorithm, Circular Queues, Priority Queues.

UNIT III:

Objective: Exposure to list representation models in various types of applications

Linked Lists: Introduction, single linked list, representation of a linked list in memory, Operations on a single linked list, Reversing a single linked list, applications of single linked list to represent polynomial expressions and sparse matrix manipulation, Advantages and disadvantages of single linked list, Circular linked list, Double linked list

UNIT IV:

Objective: Implementation of tree implementation in various forms Trees: Basic tree concepts, Binary Trees: Properties, Representation of Binary Trees using arrays and linked lists, operations on a Binary tree , Binary Tree Traversals (recursive), Creation of binary tree from in, pre and post order traversals

UNIT V:

Objective: Advanced understanding of other variants of trees and their operations.

Advanced concepts of Trees: Tree Travels using stack (non recursive), Threaded Binary Trees. Binary search tree, Basic concepts, BST operations: insertion, deletion, Balanced binary trees – need, basics and applications in computer science (No operations).

UNIT VI:

Objective: orientation on graphs, representation of graphs, graph traversals, spanning trees.

Graphs: Basic concepts, Representations of Graphs: using Linked list and adjacency matrix, Graph algorithms.

Graph Traversals (BFS & DFS), applications: Dijkstra's shortest path, Transitive closure, Minimum Spanning Tree using Prim's Algorithm, warshall's Algorithm (**Algorithemic Concepts Only, No Programs required**).

TEXT BOOKS:

1. Data Structure with C, Seymour Lipschutz, TMH
2. Data Structures using C,Reema Thareja, Oxford
3. Data Structures, 2/e, Richard F, Gilberg , Forouzan, Cengage
4. Data structures and algorithm analysis in C, 2nd ed, mark allen weiss

REFERENCE BOOKS:

1. Data Structures and Algorithms, 2008,G.A.V.Pai, TMH
2. Classic Data Structures, 2/e, Debasis ,Samanta,PHI,2009
3. Fundamentals of Data Structure in C, 2/e, Horowitz,Sahni, Anderson Freed,University Prees.