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223821

Sem. 2nd/ Artificial Intelligence & Machine Learning
Sub. : Principles of Data Structures

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which of the following is a linear data structure?

a) Tree b) Graph

c) Stack d) Heap

Q.2 Which algorithm is best for searching in a sorted array?

a) Linear Search b) Bubble Sort

c) Binary Search d) Insertion Sort

Q.3 PUSH operation in a already full stack may results in?

a) Overflow

b) Underflow

c) Element will be inserted

d) None of these

Q.4 Which data structure uses FIFO (First-in-First-Out)?

a) Stack b) Queue

c) Array d) Tree

Q.5 Which traversal prints a binary tree in the order: left, root, right?

a) Preorder b) Postorder

c) Inorder d) Level Order

Q.6 Which sorting algorithm is the fastest on average?

a) Bubble Sort b) Selection Sort

c) Merge Sort d) Quick Sort

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Name the data structure used to implement recursion.

Q.8 Tree is _____ data structure.

Q.9 A doubly linked list contains _____ pointers per node.

Q.10 Queue can be implemented using two stacks. (True/False)

Q.11 When the function class itself it is called_____.

Q.12 _____ is used to store hierarchical data.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Define stack and explain any two applications.

Q.14 Write a short note on circular queue and its advantages.

Q.15 Explain the difference between array and linked list.

Q.16 What is the difference between top-down and bottom-up design approaches in problem solving?

Q.17 Describe pre-order and post-order tree traversal.

Q.18 Differentiate between linear and binary search.

Q.19 What are the advantages of using heap over a tree?

Q.20 Write the steps for bubble sort.

Q.21 Describe the role of pointers in dynamic memory allocation.

Q.22 Explain the various types of data structures.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain merge sort with suitable example.

Q.24 Describe binary search tree with insertion and deletion operations.

Q.25 What are different type of arrays? Explain how element of arrays are stored in memory.