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223821

2nd Sem./ Artificial Intelligence & Machine Learning

Subject : 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 one of the following is the size of int a[9] assuming that int is of 4 bytes

a) 4 b) 9

c) 36 d) 18

Q.2 When a user tries to delete an element from the empty stack, then the condition is said to be

a) Overflow b) Underflow

c) Garbage Collection d) None of the above

Q.3 Which of the following is infix expression

a) A+B*C b) +*ABC

c) ABC*+ d) +ABC*

Q.4 If the elements 1,2,3,4 are added in Queue in serial order, What would be the order of removal

a) 4321 b) 4312

c) 2341 d) 1234

Q.5 A linear data structure in which insertion & deletion can be performed from both the ends

a) Queue b) Priority Queue

c) Circular Queue d) Deque

Q.6 What is the maximum number of children that a node can have in a binary tree

a) 2 b) 1

c) 4 d) Infinity

SECTION-B

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

Q.7 Define sorting.

Q.8 Define Variable.

Q.9 What is Data Structure.

Q.10 Define Dequeue.

Q.11 Define Recursion.

Q.12 LIFO Stands for.

SECTION-C

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

Q.13 Covert the following expression in PREFIX

A-(B+C-(D*E)H)

Q.14 Write an algorithm to sort the elements using Bubble Sort.

Q.15 Define Array. Write various operations than can be performed using array.

Q.16 Write an algorithm to search an element using linear search.

Q.17 Write an algorithm to insert an element in Linked List.

Q.18 Write the applications of Linked List.

Q.19 What do you mean by traversing A Binary Tree.

Q.20 Write a program to print factorial of a number using Recursion.

Q.21 Explain the concept of Circular Queue.

Q.22 Write an algorithm to traverse a binary tree in preorder.

SECTION-D

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

Q.23 Define Stack. Explain with algorithms various operations that can be performed in a stack.

Q.24 Explain the concept of Binary Search with the help of an example.

Q.25 Write a program to sort the elements using Insertion Sort.