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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 of the following is prefix expression

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

c) ABC*+ d) +ABC*

Q.2 The necessary condition to be checked before deletion from the queue is:

a) Overflow b) Front value

c) Rear value d) Underflow

Q.3 What is the maximum number of children that a node can have in a binary tree

a) 0 b) 2

c) 4 d) 3

SECTION-D

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

Q.23 Write a program to sort the elements using Bubble Sort

Q.24 Explain circular Queue.

Q.25 Explain the concept of Circular Queue.

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

a) 4321 b) 1234

c) 2341 d) 4312

Q.5 Which data structure is required to convert infix to prefix notation

a) Stack b) Linked list

c) Queue d) Tree

Q.6 Which of the following principle is used if two elements in the priority queue have the same priority?

a) LIFO b) HEAP

c) FIFO d) None of above

SECTION-B

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

Q.7 Define Constant.

Q.8 FIFO stands for

Q.9 Define Searching

Q.10 Define a tree

Q.11 Define Queue

Q.12 When a Function calls itself, the concept is called_____

SECTION-C

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

Q.13 Explain the concept of top down approach.

Q.14 Define Array. Write an algorithm to traverse all the elements of an array.

Q.15 Define Recursion. Explain the concept with the help of an example.

Q.16 Define Stack. Write an algorithm to insert an element in the stack.

Q.17 Explain the concept of Binary search with the help of an example.

Q.18 Convert the following expression in POSTFIX A + (B-C-(D*E)/H)

Q.19 Write an algorithm to sort the elements using Insertion Sort.

Q.20 Write the applications of Linked List

Q.21 Write an algorithm to traverse a binary tree in Inorder.

Q.22 Explain the concept of Quick Sort.