3009 Printed Pages : 8

PG (Vocational) (Sem.-I) Examination, 2020

COMPUTER APPLICATION

[CS-12]

(Programming and Data Structure With C)

Time : Three Hours] [Maximum Marks : 70

Note : Attempt **all** questions from Section A, **four** questions from Section-B, and **three** questions from Section-C.

Section-A

(Objective Type Questions)

Note : Answer **all** questions from this section. Each question carries **2** marks. [2x10=20]

(i) To make a queue empty, elements can be deleted, till :

(a) Front=rear+1

(b) Front = rear-1

(c) Front = rear

(d) None of the above

(ii) Binary Search Tree is a :

(a) tree whose right and left sub-tree has value has less root

(b) tree whose right and left sub-tree has value more than root

(c) tree whose left sub-tree has value less than root and right sub-tree has value more than root

(d) none of the above

(iii) Merge sort is worse than heap sort :

(a) from time point of view

(b) from storage point of view

(c) from time as well as storage point of view

(d) none of the above

(iv) If the file contains data (61, 41, 91, 11) then the most suitable sorting technique is :

(a) Quick sort

(ii) Binary Search Tree is a :

(a) tree whose right and left sub-tree has value has less root

(b) tree whose right and left sub-tree has value more than root

(c) tree whose left sub-tree has value less than root and right sub-tree has value more than root

(d) none of the above

(iii) Merge sort is worse than heap sort :

(a) from time point of view

(b) from storage point of view

(c) from time as well as storage point of view

(d) none of the above

(iv) If the file contains data (61, 41, 91, 11) then the most suitable sorting technique is :

(a) Quick sort

(b) Radix sort

(c) Insertion sort

(d) None of the above

(v) For any non-empty binary tree T, if n0 is the no of terminal nodes and n2 the no of nodes of degree 2, the relation between n2 and n0 is :

(a) n2=n0+1

(b) n0=n2+1

(c) n0=n2

(d) None of the above

(vi) An array A[15] [20] is stored in memory. Each element is of integer type. If the base address is 600 determine the address of A [8] [13] when the array is stored as row major wise :

(a) 746

(b) 946

(c) 1146

(b) Radix sort

(c) Insertion sort

(d) None of the above

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(c) 1146

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(vii) A complete binary tree with 10 leaves :

(a) cannot have more than 19 nodes

(b) has exactly 19 nodes

(c) has exactly 17 nodes

(d) cannot have more than 17 nodes

(viii) Number of subtrees of a node in a Graph is called :

(a) Order

(b) Degree

(c) Level

(d) Depth

(ix) Which of the following data structure may give overflow error, even though the current number of elements in it, is less than its size :

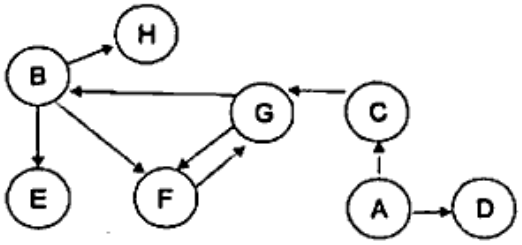
(a) simple queue

(b) circular queue

(c) stack

(d) none of the above

(x) In the following graph the depth first traversal is :



(a) ACGBEFH

(b) BEFGHCAD

(c) Both (a) and (b)

(d) None of the above

Section-B

(Short Answer Type Questions)

Note : Answer any four questions from this section. Each question carries 5 marks. [4x5=20]

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2. Write a C program to implement Push and Pop functions of Stack using Array.

3. Write down the major problem of Linear List. How can we solve the problem ? Why do we use Doubly Linked List ?

4. Write down the steps of sorting the following array of elements using Bubble sort : 40, 50, 30, 85, 70, 65, 90.

5. Draw the Binary Search Tree for the following set of numbers : 14, 10. 5, 9, 8, 20, 3, 15, 24, 10, 6.

6. What are the different methods for representation of Graph ? Explain each with example.

Section-C

(Long Answer Type Questions)

Note : Answer any three questions from this section. Each question carries 10 marks. [3x10=30]

7. Write a C program to implement Queue using Link List.

8. Insert the following keys into a B-Tree of order 3 : 10, 24, 23, 11, 31, 16, 26, 35, 29, 20, 46, 28.

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9. Write Kruskal's algorithm for finding shortest path in a Graph with an example.

10. Write a C program to implement Binary Search algorithm.

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