B.C.A. (Pt.-III)

331

Data Stru. (Usi.   ./C++)

B.C.A. (PART -III) EXAMINATION, 2019
(Faculty of Science)
(Three-Year Scheme of 10+2+3 Pattern)

DATA STRUCTURE (Using C/C++) - 331

Time Allowed : Three Hours   Maximum Marks : 100

No supplementary answer-book will be given to any candidate. Hence the candidates should write the answer precisely in the main answer-book only.

Answer of all the questions (short answer as well as descriptive) are to be given in the main answer-book only. Answers of short answer type questions must be given in sequential order. Similarly all the parts of one question of descriptive part should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book. Write your roll number on question paper before start writing answers of questions.

Question paper consists of three parts.

All THREE parts are compulsory.

PART - I : (Very Short Answer) consists of 10 questions of 2 marks each. Maximum limit for each question is upto 40 words.

PART - II : (Short answer) consists of 5 questions of 4 marks each. Maximum limit for each question is upto 80 words.

PART - III : (Long answer) consists of 5 questions of 12 marks each with internal choice.

PART - I

1.	(a)	What is data structure ?	2
	(b)	What is LIFO ?	2
	(c)	What is dequeue ?	2
	(d)	How depth first search traversal works ?	2
	(e)	How insertion sort and selection sort are different ?	2
	(f)	What is doubly linked list ?	2
	(g)	What is binary tree ?	2
	(h)	Why do we need to do algorithm analysis ?	2
	(i)	What is hashing ?	2
	(j)	What is the time complexity of quick sort ?	2

PART - II

2. Explain the different operations to be performed on the data structures.   4

3. What is algorithm ? Write the characteristics of algorithm.   2+2

4. Write the algorithm for insert the element in Binary Search Tree.   4

5. Explain orthogonal representation of graph.   4

6. Explain time complexity of insertion sort.   4

PART - III

7. What do you mean by STACK ? Write an algorithm in C to perform PUSH and POP operations.   4+8

OR

What is an array ? What are different types of array ? Given an array A[0 : 15]. If B = 1000 and S = 2   2+4+6
then calculate the address of A[10].

8. What is Circular Linked List ? Explain the procedures for inserting and deleting nodes from a doubly   4+8
linked list.

OR

Convert EXP : A + (B ∗ C − (D/E ↑ F) ∗ G) ∗ H into postfix form showing stack status after every step.   12

9. For a binary tree T, the inorder and postorder travel sequences are as follows :   12

   inorder   : D, C, K, E, A, H, B, Q, J, I   ABC↓DC/F↑ − G↓H +
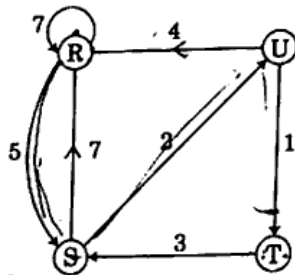
   postorder : D, K, E, C, H, Q, J, I, B, A

   Draw the binary tree T.

OR

Make a binary search tree of values 80, 40, 150, 100 and 30.   12

10. Consider the weighted graph G.   12

Assume V_1 = R, V_2 = S, V_3 = T and V_4 = U. Find a matrix C which will tell us the lengths of the shortest
paths between the nodes.

OR

Write an algorithm for DFS and BFS.   6+6

11. What is Binary Search ? Write an algorithm for binary search in an ascending order. Write the   4+8
complexity of Binary Search.

OR

Explain the selection sort. Write an algorithm for selection sort.   4+8

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