Roll No. .....

Total No. of Questions : **10**] [Total No. of Printed Pages : **4**

(2043)

B.C.A. (CBCS) RUSA II Semester Examination

4208

DATA STRUCTURE

Paper : BCA-0204

Time : 3 Hours] **[Maximum Marks : 70**

Note :– Part–A is compulsory. Candidates need to attempt *one* question each from Parts B, C, D and E.

Part–A

(Compulsory Question)

1. Answer the following questions :

   (i) Process of inserting an element in stack is called ..... .

   (ii) What is the maximum number of children that a binary tree node can have ?

   (a) 0 (b) 1

   (c) 2 (d) 3

(iii) Binary search is always faster than linear search. (True/False)

(iv) Which of the following data structures allow insertion and deletion from both ends ?

(a) Stack (b) Dequeue

(c) Queue (d) Strings

(v) Stack is a linear data structure. (True/False)

(vi) ..... is called a FIFO data structure.

(vii) When the user tries to delete the element from the empty stack then the condition is said to be ..... .

(viii) Which data structure is required to convert the infix to prefix notation ?

(a) Stack (b) Linked list

(c) Binary Tree (d) Queue

(ix) Which of the following is the infix expression ?

(a) A + B * C (b) +A * BC

(c) ABC + * (d) None of these

(x) What is the maximum number of children that a node can have in a binary tree ?

(a) 3 (b) 1

(c) 4 (d) 2 1×10=10

2. Answer the following questions in brief :

(i) Convert the following arithmetic infix expression into postfix by using stack :

A* (b + c) + (b/d) + a + z * u

(ii) What do you mean by complexity of an algorithm ?

(iii) Construct a binary tree from given preorder traversal :

* – + F A B + C D

(iv) Write down any *two* disadvantages of linked list.

(v) Define time space complexity tradeoff. 4×5=20

Part–B 10 each

3. Explain various operations performed on data structure. Explain the physical and logical representation of different data structure.

Or

4. Define Array. Explain how arrays are represented in memory.

Part–C

10 each

5. Define Linked List. Explain different types of linked list in detail.

Or

6. Explain the various advantages of using linked list over array.

Part–D

10 each

7. Define Stack. Explain the various operations performed on stack.

Or

8. Define Circular queue. Explain the various operations performed on queue.

Part–E

10 each

9. Define Binary Search Tree. Write an algorithm to search an element in Binary search tree.

Or

10. Apply quick sort algorithm for the following list of elements by showing all the steps :

25 10 5 15 4 13 23