Roll No. .....

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

(1048)

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

4030

DATA STRUCTURES

Paper : BCA-0204

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

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

Part–A

(Compulsory Question)

1. Answer the following objective types questions :

   (a) The end at which new elements are added in a queue is called ..... .

   (b) The ..... the number of children a tree has.

(c) Stacks work on ..... principles.

(d) An example of dynamic data structures is ..... .

(e) ..... is the procedure by which each node in the tree is visited once in a systematic manner.

(f) The complexity of quick sort algorithm is ..... .

(g) Left, right, root traversal is known as ..... traversal.

(h) ..... is a finite ordered set of homogeneous elements.

(i) ..... data structures are which expand or shrink during program execution and their associated memory location change.

(j) ..... is the process of combining records in two different sorted files into a single sorted file.

10×1=10

2. Answer the following questions in short :

(a) What do you mean by Time and Space Complexity ? Explain.

(b) What is a binary threaded tree ? Explain.

(c) What are push and pop operations on stack ?

(d) Differentiate with examples between static and dynamic data structures.

(e) Differentiate between LIFO and FIFO. 5×4=20

Part–B 10 each

3. What do you understand by the following operations on data structures ?

(i) Merging

(ii) Searching

(iii) Sorting

(iv) Traversing

4. How arrays are arranged in Memory ? Differentiate between one dimensional and multidimensional array.

Part–C

10 each

5. Define the following with the help of examples :

   (i) Circular linked list

   (ii) Inverted linked list

6. Differentiate between linear and doubly linked list. What are the advantages of using linked lists over array ?

Part–D

10 each

7. Write an algorithm to insert a new node at the end of the stack.

8. Explain different operations that may be performed on queues with the help of example.

Part–E

10 each

9. Write a pseudo algorithm for inorder traversal of a binary tree. Explain with the help of an example.

10. Write a pseudo algorithm for Linear search.