elim S.Y.B.C.A. Sem.-3

Seat No. : 1588 (2)

DB-102

December-2022

B.C.A., Sem.-III

CC-202 : Data Structure
(New Course)

Time : 2½ Hours] **[Max. Marks : 70**

1. Write the following :
   (1) What is Data Structure ? Explain classification of data structure in detail. (7)
   (2) What is searching ? Explain Linear Search with algorithm. (7)

   OR

   (1) Write an algorithm to sort an array using insertion sort with an example. (7)
   (2) List types of Link list. Write an algorithm for deleting last node from a doubly link list. (7)

2. Write the following :
   (1) What is Stack ? List and explain stack operations with algorithm. (7)
   (2) Write an algorithm to insert and delete an element in the Circular Queue. (7)

   OR

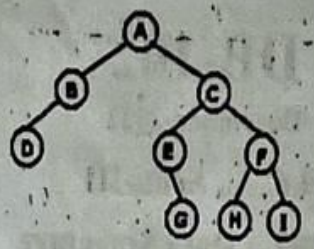
   (1) Explain Priority queue with example. (7)
   (2) Covert the following infix expression to postfix expression.
   (A*B+C) – (D*E/F) + (G*H) (7)

3. Write the following :
   (1) What is threaded binary tree ? Explain the concepts with suitable example. (7)
   (2) Write a short note on heap tree with its type. (7)

   OR

   (1) Write a short note on Binary search tree and create binary search tree using following data elements.
   40,30,50,10,34,75,30,12,89,54,67,81 (7)

(2) Find In-order, Pre-order, Post-order traversal for the below binary tree. (7)



4. Write the following :

(1) What is a Graph ? List and explain method of graph representation with example. (7)

(2) Explain Prim's algorithm with example. (7)

OR

(1) Explain Breath First Search (BFS) traversal with example. (7)

(2) Explain Kruskal's algorithm with example. (7)

5. Attempt any **seven** out of **twelve**. (14)

(1) Degree of leaf node is_____.

(A) 0 (B) 1

(C) 2 (D) 3

(2) Node is a child if it has a Successor nodes. (True / False)

(3) What is the difference between Simple queue and Circular queue ?

(4) Pushing an element into stack already having five elements and stack size of 5, then stack becomes _____.

(A) Overflow (B) Crash

(C) Underflow (D) User flow

(5) In general, the index of the first element in an array is _____

(A) 0 (B) 1

(C) 2 (D) –1

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

(A) 3 (B) 1

(C) 2 (D) 4

(7) _____ is a linear data structure.

(A) Array (B) Tree

(C) Graph (D) None of the above

Prelim S.Y.B.C.A. Sem. - 3

(8) The postfix form of A*B+C/D is ?

(A) *AB/CD+

(B) AB*CD/+

(C) A*BC+/D

(D) ABCD+/*

(9) Which of the following is not the type of queue ?

(A) Simple Queue

(B) Circular queue

(C) Single ended queue

(D) Priority queue

(10) What is the order of traversal for In-Order Traversal Method ?

(A) Left, Root, Right

(B) Right, Root, Left

(C) Right, Left, Root

(D) Left, Right, Root

(11) Which data structure has fixed size ?

(A) Linked list

(B) Graphs

(C) Arrays

(D) Tree

(12) A graph is said to be _____if there is a path between any two of its nodes.

(A) Coupled

(B) Attached

(C) Connected

(D) Allied