SLR-DK-120

Seat No.	

Set P

B.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Computer Science (Paper - VII)
DATA STRUCTURES

Day & Date: Saturday, 19-10-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) The total number of fields in nodes of singly linked list is _____.
   a) one b) two
   c) three d) four

2) Double circular linked contains _____ NULL links.
   a) one b) two
   c) three d) zero

3) _____ are used in computers for scheduling to applications.
   a) Stack b) Queue
   c) Linked list d) None

4) Linked list provides sequential access.
   a) True b) False

5) Queue is primitive data structure.
   a) True b) False

6) Queue overflow condition occurs while performing _____ operation.
   a) Status b) Delete
   c) Insert d) Empty

7) Inserting new node in between two nodes of doubly linked list requires _____ links to be set.
   a) zero b) two
   c) three d) four

8) A linear collection of data elements where the linear nodes is given by means of pointer is called ____ .
   a) binary tree b) node list
   c) primitive list d) none of these

9) Linked list can't be implemented without pointer.
   a) True b) False

10) _____ algorithm is used to arrange the data elements.
   a) Searching b) Sorting
   c) Merging d) Arranging

11) A terminal node in a tree is called as _____ .
   a) root b) branch
   c) node d) leaf

12) The root is processed before its subtrees in _____ traversal.
   a) inorder b) preorder
   c) postorder d) all of the these

13) The complexity of linear search algorithm is _____ .
   a) O(n) b) O(log n)
   c) O(n2) d) O(n log n)

14) In AVL Tree, the Balance Factor of each node is either
   a) 1,2,3 b) -1,1,2
   c) -1,0,1 d) 2,0,-2

Q.2 A) Answer the following questions. (Any Four) 08

1) Define ADT? Give its examples.
2) Define queue. Give its examples.
3) Explain node structure of singly linked list.
4) Define strictly binary tree. Give its example.
5) List any two advantages of binary search over linear search.

B) Write short notes. (Any Two) 06

1) Space complexity
2) Dynamic programming
3) B+ Tree

Q.3 A) Answer the following questions. (Any Two) 08

1) Write a function to push an element in stack.
2) Explain priority queue.
3) Explain bubble sort technique.

B) Answer the following questions. (Any One) 06

1) Write an algorithm for evaluation of postfix expression using stack.
2) Write a program to implement insertion sort.

Q.4 A) Answer the following questions. (Any Two) 10

1) Explain the operations on circular queue.
2) Write a program to implement binary searching.
3) Explain asymptotic notation.

B) Answer the following questions. (Any One) 04

1) Differentiate between stack and queue.
2) What is tree? List the advantages of tree over linked list.

Q.5 Answer the following questions. (Any Two) 14

1) Write a program to implement tree traversal methods.
2) Explain insert and delete operations on circular linked list.
3) Convert the following infix expression to postfix form using stack.

   (A+B)*C/D-E