Reg. No. : | | | | | | | | | | |

Question Paper Code:53202

B.E./B.Tech. DEGREE EXAMINATION, DEC 2020

Third Semester

Computer Science Engineering

19UCS302 -DATA STRUCTURES

(Regulation 2019)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. A Linked list is considered as an example of _____ type of memory allocation. CO1- U

   (a) Dynamic. (b) Static. (c) Compile time (d) None of the mentioned

2. Linked list data structure offers considerable saving in ____. CO1- U

   (a) Computational Time (b) Space Utilization.

   (c) Space Utilization and Computational Time. (d) None of the mentioned

3. Choose the correct output for the following sequence of operations: CO2- R

   PUSH(5), PUSH(8), POP, PUSH(2), PUSH(5), POP, POP, POP, PUSH(1), POP

   (a) 8 5 2 5 1 (b) 8 5 5 2 1 (c) 8 2 5 5 1 (d) 8 1 2 5 5

4. Insertion and deletion operations in a queue are ____. CO2- R

   (a) Push and Pop (b) Enqueue and Dequeue

   (c) Insert and Delete (d) None of the above

5. B- Tree restricts the number of keys in a node between _____. CO3- R

   (a) m to 2m (b) m/2 to m-1

   (c) m/2 to m+1 (d) m/2 to m

6. The number of nodes in complete binary tree of level 5 is _____ CO3- R

   (a) 15 (b) 25 (c) 63 (d) 71

7. Breadth first search _____. CO4- R

(a) Scan all the adjacent edges before moving to other vertex.

(b) Scans adjacent unvisted vertex as soon as possible

(c) Is same as backtracking.

(d) None of the above

8. Which of the following algorithms solves the single source shortest path problem_____. CO4- R

(a) Dijkstra's algorithm (b) Floyd's algorithm

(c) Prim's algorithm (d) Kruskal's algorithm.

9. In radix sort, if 3digit numbers have to be sorted then --- iterations are performed CO5- R

(a) 3 (b) 2 (c) 1 (d)none

10. Linear Probing leads to CO6- R

(a) Secondary Clustering (b) Primary Clustering

(c) Open Addressing (d) Separate Chaining

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

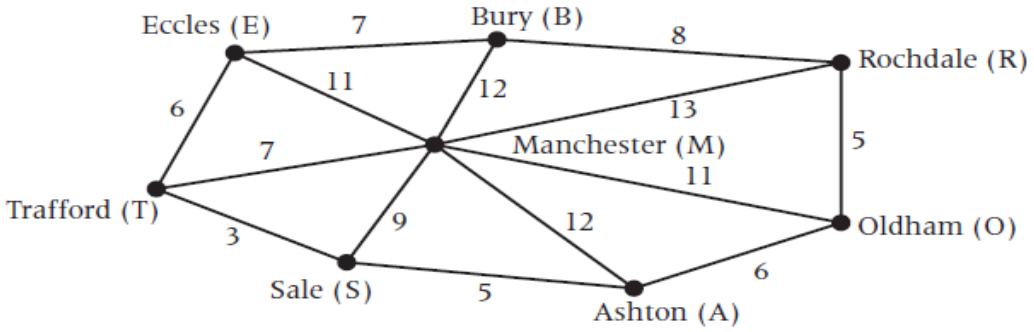
11. Develop a function which arranges elements in a given linked list such that all even numbers are placed after odd numbers without using an additional linked list. CO1- App (8)

12. Describe the insertion and deletion operations performed on a queue. CO2-U (8)

13. Insert the following keys in sequence into an AVL Tree. Find out the number of rotations required in each case 6,3,1,2,4,5,9,7,8,11,10,12. CO3-App (8)

14. The following diagram shows main roads connecting places near to Manchester, where the values shown represent thedistances in miles. Mark lives in Rochdale and works in Trafford. CO4- App (8)

(a) Use Dijkstra’s algorithm to find the shortest distance from Rochdale to Trafford. Write down the corresponding route.



15. Which of the sorting algorithms in its typical implementation gives best performance when applied on an array which is sorted or almost sorted & explain it? (Maximum 1 or two elements are misplaced). CO5- App (8)