



**B.E DEGREE EXAMINATIONS: NOV/DEC 2014**

(Regulation 2013)

Third Semester

**ELECTRONICS AND COMMUNICATION ENGINEERING**

U13CST411: Data Structures

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. The program contains only one loop executed for n times. Then the time analysis of Big(O) notation is
  - a)  $O(n)$
  - b)  $O(n^2)$
  - c)  $O(\log n)$
  - d)  $O(n \log n)$
2. The logical connective " $\supset$ " is read as .....
3. Choose the operation which deletes the most recently inserted element in stack
  - a) Push
  - b) Pop
  - c) Top
  - d) Delete
4. The operation which inserts an element in queue is .....
5. The less often used traversal is
  - a) Inorder
  - b) Preorder
  - c) Level-order
  - d) Postorder
6. In double hashing the collision resolution formula is  $F(i) = \dots\dots\dots$
7. I pass in Quick sort is
  - a) Fixing pivot element position
  - b) Fixing first element
  - c) Dividing array into two
  - d) A & b
8. Merge sorts worst case running time is .....
9. A graph which is drawn without lifting pen is known as
  - a) Acyclic graph
  - b) Euler circuit
  - c) Directed graph
  - d) NP complete
10. The vertices whose removal would disconnect the graph are known as .....

**PART B (10 x 2 = 20 Marks)**

**(Not more than 40 words)**

11. Tell few words about debugging programs.
12. What do you know about redundant computation?
13. Recall the routine to test whether a stack is empty.
14. What are the important features present in pointer implementation of linked list?
15. Construct the expression tree for  $(a/b) * (b/d)$
16. What is collision?
17. What do you know about pivot point?
18. Tell shortly about divide and conquer technique.
19. Define topological sort.
20. What is biconnectivity?

**PART C (5 x 14 = 70 Marks)**

**(Not more than 400 words)**

**Q.No. 21 is Compulsory**

21. (i) Explain briefly about top-down design. How it is useful in design techniques. (7)  
(ii) Write an algorithm to find all pair shortest algorithm. (7)

22. a) What do you mean by cursor? Develop the algorithm for cursor implementation of linked list.

**(OR)**

- b) Show the steps for infix to postfix conversion and post fix evaluation. Do postfix conversion & evaluation for the expression.

$$a = (2 + 5) * (9 / 3) / 10$$

23. a) Illustrate single and double rotation in AVL tree. When do we need double rotation? Explain with an example.

**(OR)**

- b) Explain quadratic probing with an example.

24. a) (i) Construct the shell sort algorithm and explain it with an example. (5)  
(ii) Explain Quick sort with an example. (10)

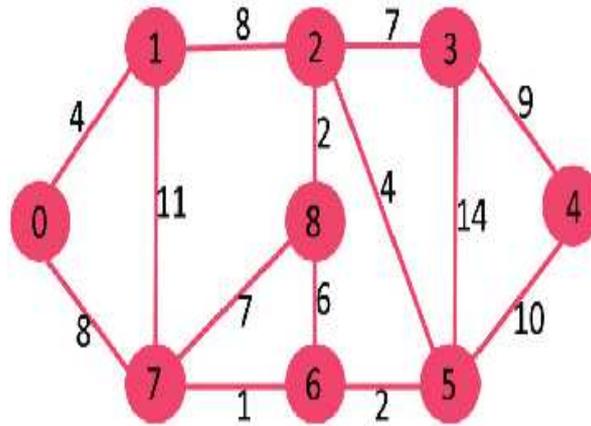
(OR)

- b) Show the strategies used in external sorting. Explain any two external sorting methods.

25. a) Extend the pseudocode for Dijkstra algorithm. Give example.

(OR)

- b) Find minimum spanning tree for the graph using prim's algorithm.



\*\*\*\*\*