Reg. No. :

Question Paper Code: 31082

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

Third Semester

Information Technology

01UIT302 – PROGRAMMING WITH DATA STRUCTURES

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define Abstract Data Type.

2. What are the applications of stack?

3. What is the maximum number of nodes in a binary tree of depth k?

4. Define threaded binary tree.

5. Mention the basic idea of the splay tree.

6. What is heap?

7. What do you mean by hashing?

8. What is a relation? What are the properties of equivalence relation?

9. What do you meant by topological sort?

10. What is bi-connected graph?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the insert and delete operations in a doubly linked list.   (10)

         (ii) Describe the algorithm to insert an element in a circular queue.   (6)

Or

(b) Explain the various operations that can be performed on a Stack using an array based implementation. (16)

12. (a) (i) Explain the various traversal methods of a binary tree with suitable algorithms. (12)

(ii) What is an expression tree? Discuss. (4)

Or

(b) Explain the different operations on a binary search tree with suitable algorithms. (16)

13. (a) Explain the various rotations used in a AVL tree with an example. (16)

Or

(b) (i) What is B-Tree? Explain its properties. (8)

(ii) How is the delete operation performed on binary heap? Explain. (8)

14. (a) Explain the different common collision resolution strategies in hashing. (16)

Or

(b) (i) What is rehashing? Write the algorithm to implement it. (8)

(ii) How is path compression operation performed in disjoint set? (8)

15. (a) (i) Explain the various representations of graphs. (8)

(ii) Describe the breadth first search algorithm. (8)

Or

(b) Find out the minimum spanning tree of a given graph by prim's algorithm.

(16)

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