Code: 15A05201 **R15**

B.Tech I Year II Semester (R15) Supplementary Examinations December 2016

DATA STRUCTURES

(Common to CSE and IT)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) List out the areas in which data structures applied extensively.

(b) Differentiate array and linked list.

(c) Consider the following stack of characters, where stack is allocated N = 8 memory cells.

STACK : A, C, D, F, K, _, _, _.

Describe the stack as the following operations takes place.

(i) POP (STACK, ITEM)

(ii) POP (STACK, ITEM)

(iii) PUSH (STACK, R)

(iv) PUSH (STACK, L)

(d) How do you test for an empty queue?

(e) There are 8, 15, 13, 14 nodes, were there in 4 different trees. Which of them could have formed a full binary tree?

(f) Write the applications of graph data structure.

(g) Why is quick sort better than other sorting algorithms?

(h) List the properties of heap sort.

(i) What is sentinel search?

(j) What is clustering in a hashing and list its types?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain in brief about multi-dimensional array with an example.

OR

3 Write the various operations of double linked list in detail.

UNIT – II

4 Explain the various stack operations and illustrate the procedure *Infix To Postfix* with the following arithmetic expression: (A + B) ^ C – (D * E) / F).

OR

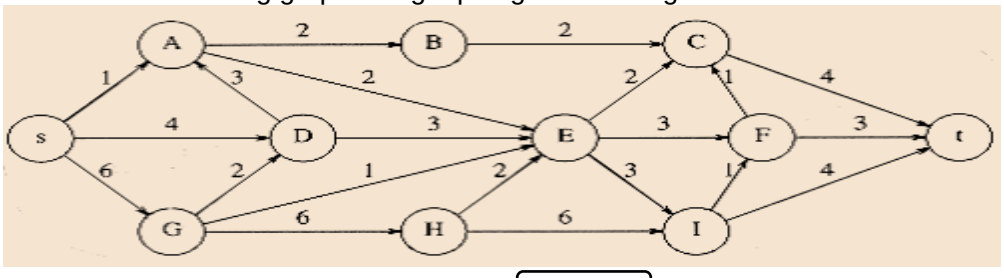
5 Write an algorithm and explain the various operations of Circular queue.

UNIT – III

6 Write a routine to perform a tree traversal with one example.

OR

7 Simulate the following graph using topological ordering.



UNIT – IV

8 Explain in brief about Two Way merge sort with an example.

OR

9 Explain quick sort with an example.

UNIT – V

10 Briefly explain about probability search and Ordered list search.

OR

11 Explain linear probing and quadratic probing with an example.

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