Total No. of Questions: 05 Total No. of Printed Pages: 02

Roll No.: _____

BTIT 204

II Semester Examination, May, 2018

B.Tech. / B.Tech. + M.Tech. / B.Tech. + MBA [IT]

Data Structure

Choice Based Credit System (CBCS)

Duration: 3 Hrs. **Maximum Marks : 60**

Minimum Pass Marks: 24

Note: (1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks.

(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.

(3) Draw the neat diagram, wherever necessary.

(4) Assume suitable data, wherever necessary.

Q.1.(A) Explain various complexity notations. **03**

(B) Describe the Tower of Hanoi problem. **03**

(C) Consider the linear array AAA(5:50), BBB(-5:10) and CCC(18).

(i) Find the number of elements in each Array.

(ii) Suppose Base(AAA)=300 and w=4 words per memory cell for AAA.

Find the address of AAA[15], AAA[35] and AAA[55]. **06**

OR

Describe : (a) Backtracking (b) Tower of Hanoi problem.

Q.2.(A) Explain doubly linked list with an example. **03**

(B) Define Two-Way Header link list with example. **03**

(C) Write Algorithm to transform infix expression into postfix expression? **06**

Also transform following infix expression into postfix expression:

A+(B*C-(D/E^F)*G)*H

OR

Explain:

(i) Circular Queue

(ii) Polynomial Arithmetic

(iii) Application of Stack

Contd.....

Q.3.(A) Explain AVL Tree with a suitable example. **03**

(B) What is Threaded Binary Tree? Also explain its uses. **03**

(C) Define AVL Search Tree with its application. Also construct a AVL Search Tree 6 by inserting following elements: **06**

64, 1, 14, 26, 13, 110, 98, 85

OR

Answer the following question.

i) Define the applications of B-Tree.

ii) Define Huffman Code and its application.

Q.4.(A) Define classifications of sorting techniques. **03**

(B) Differentiate Binary search and Sequential search. **03**

(C) Explain Selection Sort ? And sort the following data: **06**

44, 33, 11, 55, 77, 90, 40, 60, 99, 22, 88, 66 6

OR

Explain following by giving suitable example:

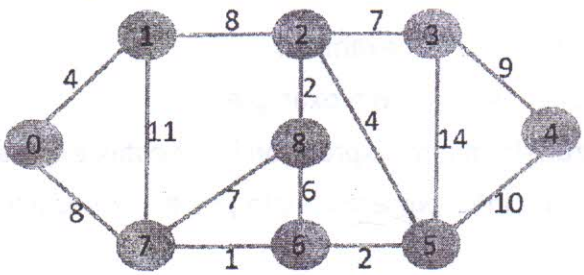
(i) Hash Function

(ii) Dynamic Tree Table

Q.5.(A) What is Adjacency Matrix? Also write its advantages. **03**

(B) Graph is a non-linear data structure. Justify? **03**

(C) Define Minimum Cost Spanning Tree? Solve following graph with prim's Algorithm to find minimum cost spanning tree. **06**



OR

Define linked representation of graph with an example in details?

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