Roll No. | | | | | | | |

Paper Code: TMC 401 /TIT 401 /TCS 410

Mid Semester Examination 2017

B.Tech(EC/IT) / MCA IV *Semester*

Data Structure using 'C' language.

Time: 1:30 Hours MM: 50

Note:

(i) This question paper contains two sections.

(ii) Both sections are compulsory.

Section A

Attempt all questions. Each question carry one mark

Q1. Fill in the blank /True-False (1X5=5 Marks)

a) Recursion is implemented using——— (Fill in the blank)

b) Priority queue where the insertion of an element is arbitrary, but only the smallest element can be removed is called——— (Fill in the blank)

c) Attempting to delete a node in empty link list results in ————(Fill in the blank)

d) In a singly linked list backtracking is not possible (True /False)

e) A deque is a queue from which items may be deleted at either end and into which elements may be inserted at either end. (True /False)

Attempt any Five parts. **(3X5=15 Marks)**

Q2.

a) Explain self referential structure.

b) Explain circular queue.

c) Any two applications of queue in computer science.

d) Explain Big Oh notation with example.

e) Explain non primitive data structures.

f) Explain advantages of linked list.

Section – B

Each question contains three parts a, b & c. Attempt any two parts of choice from each question.

Q3. (5X 2 = 10 Marks)

a. Explain malloc((), calloc() and free functions with examples.

b. Write an algorithm to implement serve operation of a queue (using linked list).

c. Apply binary search on the sequence of numbers given below to perform a search for a number 55: 3 10 17 29 35 42 55 60 75 90

Q4. (5X 2 = 10 Marks)

a. Explain tail and non- tail recursion with example.

b. Write C function to implement insert operation of queue using linked list.

c. Write a 'c' function to count total numbers of node from a singly linked. (Assume that linked list is already created and first node of the linked list is pointed by pointer Ptr)

Q5. (5X 2 = 10 Marks)

a. Write a 'C' function to insert a value in deque at front end.

b. Write C function to create a singly linked list by inserting each new node at the right hand side.

c. Write a C function to create a dynamic array and then find sum and average of the elements stored in that array.