Registration No :

Total Number of Pages : 02

B.Tech
BE2106

2nd Semester Back Examination 2017-18
DATA STRUCTURE USING C
BRANCH : AEIE, AERO, AUTO, BIOMED, BIOTECH, CHEM, CIVIL, CSE, ECE, EEE, EIE,
ELECTRICAL, ENV, ETC, FASHION, FAT, IEE, IT, ITE, MANUFAC, MANUTECH,
MARINE, MECH, METTA, METTAMIN, MINERAL, MINING, MME, PE, PLASTIC, TEXTILE
Time : 3 Hours
Max Marks : 70
Q.CODE : C704
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.
Answer all parts of a question at a place.

Q1   **Answer the following questions :**   **(2 x 10)**

   a)   Define Data Structures and its types.

   b)   List out the advantages of using a linked list.

   c)   How can you check whether if binary tree is height balanced or not ?

   d)   State the difference between queues and linked lists.

   e)   List out the applications of a linked list.

   f)   State the difference between arrays and linked lists.

   g)   Difference between Abstract Data Type, Data Type and Data Structure.

   h)   Define a complete binary tree.

   i)   State the different ways of representing expressions.

   j)   What are the categories of AVL rotations?

Q2   **a)**   Write an algorithm for inserting and deleting an element from doubly linked list?   **(5)**

    b)   Write a program to implement the insertion & deletion operation in a linear queue.   **(5)**

Q3   **a)**   Explain linear linked implementation of Stack and Queue?   **(5)**

    b)   What is a Queue? Explain its operation with example?   **(5)**

Q4   **a)**   Convert the following infix expression to prefix notation   **(5)**
       E: (A+B*C*(M*N^P+T)-G+H)

    b)   Evaluate the given expression postfix expression   **(5)**
       E: ABC*D/+) where A=2, B=3, C=4, D=6

Q5   **a)**   What is a tree? Describe the terminologies used in tree.   **(5)**

    b)   Construct a tree from a given postfix expression using stack   **(5)**
       E: A B + C D E + * *

Q6 **a)** Explain the difference between depth-first and breadth-first traversing **(5)**
techniques at a graph.

b) Write an algorithm for bubble sort and find out its time complexity. **(5)**

Q7 Draw an AVL tree whose elements are inserted in the following order: mar, **(10)**
may, nov, aug, apr, jan, dec, jul, feb, jun, oct, sep

Q8 **Write short answer on any TWO :** **(5 x 2)**

a) Heap Sort

b) Binary Search

c) Quick Sort

d) Warshall's algorithm