C16-**CM/IT-304**

6230

BOARD DIPLOMA EXAMINATIONS

SEPTEMBER/OCTOBER - 2020

DCME – THIRD SEMESTER

DATA STRUCTURES THROUGH C

Time: 3 hours Max. Marks: 80

PART – A **3 X 10 = 30**

Instructions: *1. Answer **all** questions.*
*2. Each question carries **Three** Marks.*
3. Answer should be brief and straight to the point and should not exceed
Five simple sentences.

1. Define an Abstract Data Type (ADT).
2. Write about algorithm analysis.
3. What are the differences between a singly linked list and a doubly linked list?
4. Write a C-function to count the numbers of nodes in a singly linked list.
5. Write down the applications of queues.
6. Evaluate the postfix expression 862/+4-?
7. Define Binary Tree.
8. Define parent, child and sibling in trees.
9. Write down about the steps of bubble sort (ascending order) for the impact 7, 9, 4, 3, 5, 8.
10. List out different searching techniques.

[cont..,

PART – B 5 X 10 = 50

***Instructions**:* *1. Answer any **Five** questions*
*2. Each question carries **TEN** Marks.*
3. Answer should be comprehensive and Criteria for Valuation is the content but not the length of the answer.

11. Write a C program to sort the elements in a singly linked list.
12. Explain about insertion and deletion of elements in a doubly linked list.
13. a) Write an algorithm for converting an infix expression into a postfix expression. 5M

    b) Convert the infix expression (a+b)*((b-d)/e*f) into postfix expression using stack. 5M
14. Write a C-program to implement queues using linked list.
15. Write a C-program for creation and display of a binary tree.
16. a) Write about array representation of a binary tree. 5M

    b) Explain the procedure to convert a general tree to a binary tree. 5M
17. Write a C-program for selection sort.
18. a) Explain the principle of quicksort. 5M

    b) Write down the differences between different searching techniques. 5M