

MSCCS-07/MSCCS-201/MCA-201

June - Examination 2019

MSCCS-Final/MCA-IIInd Year Examination**Data Structure and Algorithm****Paper - MSCCS-07/MSCCS-201/MCA-201****Time : 3 Hours]****[Max. Marks :- 80**

Note: The question paper is divided into three sections A, B and C. Write answers as per the given instructions.

Section - A**8 × 2 = 16**

(Very Short Answer Questions)

Note: Answer **all** questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to 30 words. Each question carries 2 marks.

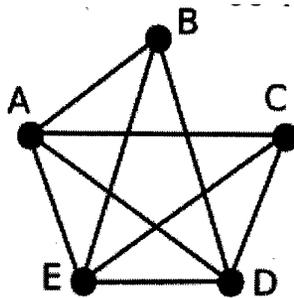
1. (i) What is primitive data type? Give an example.
- (ii) Give two examples of Binary Tree.
- (iii) Name the algorithm use to find all pair of shortest path in a graph.
- (iv) Give one difference between B Tree and B+ Tree.
- (v) Write the condition when the queue is full with an example.
- (vi) How many edges are there in a complete graph of 'n' number of vertices?
- (vii) Write any one application of Tree.
- (viii) List characteristics of an algorithm.

Section - B**4 × 8 = 32**

(Short Answer Questions)

Note: Answer **any four** questions. Each answer should not exceed 200 words. Each question carries 8 marks.

- 2) Give the definition of Data Structure. Also explain the classification of Data Structure
- 3) Explain the difference between Static and Dynamic Memory allocation with suitable example.
- 4) Write an algorithm to count number of leaf nodes in the tree. Also explain with suitable example.
- 5) Explain the Planarity testing of a graph. Prove that the following graph is planar or not:



- 6) What do you mean by Dynamic Programming? Explain matrix chain multiplication an example.
- 7) Write an algorithm for bubble sort. Also apply on the following data sets: 1,10,7, 88, 55,45,96.
- 8) Explain any two applications of stack in detail with suitable example.
- 9) Describe the worst case complexity of Quick sort with suitable example.

Section - C $2 \times 16 = 32$

(Long Answer Questions)

Note: Answer **any two** questions. You have to delimit your each answer maximum up to 500 words. Each question carries 16 marks.

- 10) Describe the following operations on Linked List with suitable example:
 - a. Creation of Linked list.
 - b. Insertion in Linked list.
 - c. Deletion in Linked list.
 - d. Traversal of Linked list.
- 11) Write an algorithm for insertion sort. Discuss with help of an example.
- 12) Write an algorithm for postfix expression, evaluate it and show the contents of stack for the following postfix expression:
 $6\ 2\ 3\ +\ -\ 3\ 8\ 2\ / \ + \ * \ 2\ \$ \ 3\ +$
- 13) Write short note on:
 - (a) Priority Queue
 - (b) Circular Queue
