

**MSCCS-07/MSCCS-201/
MCA-201**

**June/December – Examination 2020
MSCCS (Final)/MCA (IInd Year)
Examination**

Data Structure and Algorithm

Paper : MSCCS-07/MSCCS-201/MCA-201

Time : 2 Hours]

[Maximum Marks : 80

Note :- The question paper is divided into two Sections A and B. Write answers as per the given instructions.

Section–A

8×2=16

(Very Short Answer Type Questions)

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

1. (i) What is Array ? Give an example.
- (ii) What do you mean by Primitive Data Types ?
Give an example.
- (iii) List any *two* applications of Stack.
- (iv) Give an example of DAG (Directed Acyclic Graph).
- (v) How many edges are there in a complete graph on 'n' number of vertices ?
- (vi) Give an example of a Linked List.
- (vii) How many binary trees are possible with three nodes ? Draw all of these.
- (viii) What do you mean by NP-complete problem ? Give an example.

Section-B **4×16=64**

(Short Answer Type Questions)

Note :- Answer any *four* questions. Answer should not exceed **200** words. Each question carries 16 marks.

2. What is a 2-D Array ? Write an algorithm to find the maximum and minimum values stored in two dimensional arrays.

3. Explain Binary search with the help of suitable examples.
4. What do you mean by vertex cover ? Explain the use of vertex cover in hypergraph with suitable example.
5. Write a short note on the dynamic strategy.
6. Write an algorithm/program segment to check if two arrays (1-dim) of equal size are identical or not. The two arrays are said to be identical if corresponding elements are the same in both the arrays.
7. Write an algorithm to count the number of leaf nodes in the tree. Also, explain with a suitable example.
8. Write a short note on the Circular Linked List. Explain with a suitable example.
9. What is Queue ? What are the problems of queues which are solved by a circular queue ? Explain with suitable examples.