MSCCS-07/MSCCS-201/MCA-201

December - Examination 2017

MSCCS-Final/MCA-IInd Year Examination

Data Structure and Algorithm

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

Time : 3 Hours] **[Max. Marks :- 100**

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

Section - A $10 \times 2 = 20$

(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 upto 30 words. Each question carries 2 marks.

1) (i) Define Graph.

(ii) List the Applications of Queue Data Structure.

(iii) What is Algorithm?

(iv) Which algorithm is used to find all the shortest path in a Graph?

(v) What do you mean by Recursion?

(vi) What is spanning tree?

(vii) List the uses of Dictionary.

(viii) What is NP-complete problem.

(ix) State cook Lenin Theorem.

(x) What is Priority Queue?

Section - B $4 \times 10 = 40$

(Short Answer Questions)

Note: Answer **any four** questions. Each answer should not exceed 200 words. Each question carries 10 marks.

2) What is 2-D array? Write a program algorithm to add the elements of two 2-D array. Also explain the algorithm.

3) What is Linked List? Discuss the advantages of Linked Lists over array.

4) Write short note on Circular Queue.

5) Evaluate the following postfix notation of expression :-

32, 4, 1, 2, *, 12, 3, –, +.

6) What short note on B^+ tree.

7) Explain the basic concept of NP-Hard and NP-Complete problem.

8) Describe travelling salesman problem with suitable example.

9) Explain Planarity Detection Technique of a Graph with example.

Section - C

$2 \times 20 = 40$

(Long Answer Questions)

Note: Answer **any two** questions. You have to delimit your each answer maximum upto 500 words. Each question carries 20 marks.

10) What is Stack Data Structure? Describe the applications of stack with suitable example.

11) Give the comparative description of Prims and Kruskal algorithm with example.

12) What is strongly connected components? Give an algorithm to find strongly connected components with suitable example.

13) What do you mean by sorting? Explain any two sorting algorithm and also compare them.