

**MCA-12****June/December – Examination 2020****Master of Computer Application  
(II Year) Examination****Design and Analysis of Algorithms****Paper : MCA-12***Time : 2 Hours ]**[ Maximum Marks : 80*

*Note* :- The question paper is divided into two Sections A and B. Write answers as per 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 up to **30** words. Each question carries 2 marks.

1. (i) What is Algorithm ?
- (ii) What is a Graph ?
- (iii) What do you mean by set ?

- (iv) What do you mean by Array ?
- (v) What is the meaning of Space Complexity ?
- (vi) Give an example of a Binary Search Tree.
- (vii) What is Recursive function ?
- (viii) What is Reducibility ?

**Section-B** **4×16=64**

**(Short Answer Type Questions)**

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

- 2. Write a short note on the Knapsack problem.
- 3. Explain Kruskal algorithm to obtain a minimum cost spanning tree with a suitable example.
- 4. Describe the method of solving travelling salesman problem using dynamic programming.
- 5. Explain the characteristics of dynamic programming.
- 6. What are the properties of NP-Complete and NP-Hard problem ?
- 7. What is graph coloring problem ? What is the bounding condition for graph coloring problem ?

- 8. How does the backtracking method find the Hamiltonian cycle in a graph ?
- 9. Write an algorithm to sort 44, 30, 50, 22, 60, 55, 77 using Heap sort algorithm.