



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)  
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

MCA-16/MCA-11 2<sup>ND</sup> YEAR 3<sup>RD</sup> SEMESTER ASSIGNMENT

*Last Date of Submission: 30/04/2017*

**Course Title:** Design and Analysis of Algorithm

**Course Code:** MCA-12

**Year:** 2016-17

**Maximum Marks:** 30/40

Section 'A' contains 08 short answer type questions of 4/5 marks each. Learners are required to answers 4 questions only. Answers of short answer-type questions must be restricted to 250 words approximately.

1. Explain Travelling salesman problem?
2. Write a recursive and non-recursive function for binary search algorithm.
3. Explain the need of Analysis of Algorithm.
4. Explain Dijkstra's Algorithm with suitable example.
5. What is external and internal sorting? Give examples.
6. What are the characteristics of dynamic programming?
7. What is 8-queen problem? How can it solve using backtracking?
8. Write short note on the following:
  - a. Deterministic algorithm
  - b. Non-deterministic algorithm

Section 'B' contains 04 long answer-type questions of 7/10 marks each. Learners are required to answers 02 questions only.

1. State and proof Cook's theorem.
2. Explain Branch and Bound Technique.
3. Explain, what optimal binary search tree is.

4. What is minimum spanning tree? Find the minimum spanning tree for the following graph using Prim's and Kruskal algorithm.

