



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

**MSCIT-12/MSCIT-16 2<sup>nd</sup> YEAR 3<sup>rd</sup> SEMESTER ASSIGNMENT**

*Last Date of Submission: 15 Dec, 2016*

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

**Course Code: MSCIT-12**

**Year: 2016-17**

**Maximum Marks: 30/40 Marks**

**Section 'A'**

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

1. What is the difference between greedy method and dynamic programming?
2. What is an Optimal Solution?
3. What are the characteristics of dynamic programming?
4. What is the average case complexity of linear search algorithm?
5. Write the procedure for selection sort.
6. What is 0/1 Knapsack problem?
7. Define a chromatic number of a graph.
8. Define backtracking.

**Section 'B'**

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

1. Write down and explain the algorithm to solve all pairs shortest paths problem.
2. Sort the following set of elements using Quick Sort.  
12, 24, 8, 71, 4, 23, 6
3. Explain asymptotic notations in details.
4. Explain Merge Sort Problem using divide and conquer technique. Give an example.