



## UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)

MSc(IT)-12 2<sup>nd</sup> YEAR 3<sup>rd</sup> SEMESTER ASSIGNMENT*Last Date of Submission: 15 Jan., 2014***Course Title: Discrete Mathematics****Course Code: MScIT-09****Year: 2013-14****Maximum Marks: 40 Marks**

Section 'A' contains 08 short answer type questions of 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. Define a semi group.
2. Define Tautology with an example.
3. Define a bipartite graph.
4. Define the following terms with examples
  - A. Circuit
  - B. Path
5. Define a planar graph
6. Define finite and infinite graphs.
7. Define a path in a graph.
8. Show that a tree with  $n$  vertices has  $(n-1)$  edges.

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

1. State and Prove De Morgan's Laws.
2. Define rooted binary tree, spanning tree and weighted graph.
3. Explain Prim's algorithm.
4. Define the following terms and give an example for each
  - a) Set
  - b) Proper subset
  - c) Power set
  - d) Empty set
  - e) Venn diagram