



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

BCA 1ST YEAR 2ND SEMESTER ASSIGNMENT

Last Date of Submission: 31 May 2016

Course Title: Discrete Mathematics

Course Code: BCA-05

Year: 2015-16

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 commutative ring with unity.
2. Negate the following statements:
 - All Students live in hostel.
 - Some boys can run faster than girls
3. State and prove pigeonhole principle.
4. Prove that the statement $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$ is a tautology.
5. Suppose that two distinguishable dice are rolled. In how many ways we get the sum of 6 or 8.
6. State and prove DeMorgan's Law.
7. Prove that the complement of the union of two sets is the intersection of their complements.
8. Define Group. Explain the difference between Finite and Infinite Group.

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

1. Prove that $A \times (B \cup C) = (A \times B) \cup (A \times C)$.
2. If $f: A \rightarrow B$ and $g: B \rightarrow C$ be one to one onto function, then prove that $(g \circ f)$ is also one to one onto.
3. Prove by induction that the sum of the cubes of 3 consecutive integers is divisible by 9.
4. Define Ring. Show that: $a(b - c) = ab - ac$ is a ring R .