



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

BCA-16/BCA-11 1<sup>ST</sup> YEAR 2<sup>ND</sup> SEMESTER ASSIGNMENT

*Last Date of Submission: 31/05/2017*

**Course Title:** Discrete Mathematics

**Course Code:** BCA-05

**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. Define a Ring with suitable example.
2. Define Tautology and Contradiction with suitable example.
3. Construct a truth table for the proposition:  $(p \rightarrow q) \vee (\sim p \rightarrow q)$
4. Find whether  $q \vee (p \sim \vee q) \vee (\sim p \sim \wedge q)$  is a tautology or not.
5. Find the power set of the set  $S = \{3,4,5\}$ .
6. Find the number of permutations taking together all the letters of the word "ASSIGNMENT".
7. Show that  $A = \begin{pmatrix} 2 & 5 \\ 1 & 3 \end{pmatrix}$  and  $B = \begin{pmatrix} 3 & -5 \\ -1 & 2 \end{pmatrix}$  are inverses of each other.
8. Prove that  $A \cap (A \cup B) = A$

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

1. Show that the following equations are inconsistent. Apply Gaussian elimination on the augmented matrix to show inconsistency.
  - a.  $x + 2y - 3z = 0$   
 $2x + 4y - 2z = 2$

$$3x + 6y - 4z = 3$$

b.  $x + 2y - 3z = 1$

$$2x + 6y - 11z = -1$$

$$x - 2y + 7z = 8$$

2. Solve by Cramer's rule :

$$x - y + 2z = 1$$

$$2x + y + z = 2$$

$$x - 3y + z = 1$$

3. What is Matrix? Explain the types of Matrix with the help of an example.

4. What is Tautology? Explain with the help of an example.

