Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 07

BCA (Sem.–1)

MATHEMATICS

Subject Code : UGCC2501

M.Code : 95410

Date of Examination : 15-01-2026

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.**

SECTION - A

1. Write briefly :

a) Write the following set in the roaster form

$A = \{ x : x \in \mathbb{R},\ 2x + 11 = 15 \}$.

b) State De' Morgans Law.

c) What is the symbol of disjunction?

d) Define Scalar Matrix with the help of example.

e) Find the n^{th} term of the A.P. 5, 11, 17, 23,....

f) Find the adjoint of the matrix $\begin{bmatrix} 2 & 3 \\ -4 & -6 \end{bmatrix}$.

g) Write the general form of the Geometric progression.

h) What do you mean by Singular Matrices?

i) What do you mean by Disjoint sets? Give one example.

j) Explain conditional statement with the help of example.

SECTION - B

2. a) Show that the following proposition is tautologies

$$\{(P \vee \sim Q) \wedge (\sim P \vee \sim Q)\} \vee Q$$

b) Show that $p \Rightarrow (q \Rightarrow r) = (p \wedge q) \Rightarrow r$.

3. a) If $P = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $Q = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ then find the value of $Q^T P^T$.

b) If $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 1 & 3 \\ 3 & 2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 4 \\ 3 & 2 & 1 \\ 1 & 3 & 2 \end{bmatrix}$ then find the value of AB and BA.

4. If A = {1, 4}, B = {4, 5}, C = {5, 7}, then determine (A × B) ∩ (A × C)

5. a) If sum of n terms of an Arithmetic progression is $5n^2 - 3n$, then find its p^{th} term.

b) For what value of K; K + 2, 4K - 6, 3K - 2 are three consecutive terms of an A.P.?

6. a) Find the sum of 7^{th} terms of the Geometric progression 3, 6, 12,…..

b) Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$.

7. In a group of 1640 persons who can speak Nepali or English or both, 1220 can speak Nepali and 540 can speak English. Find :

a) How many can speak both English and Nepali?

b) How many can speak Nepali only?

c) How many can speak English only?

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.