Kathmandu University

Second In-semester Examination-2025

Department of Artificial Intelligence

Level: B.Tech Artificial Intelligence	Course: AIMA 203
Year: I	Semester: II
Time: 15 minutes	F.M. : 10

Name: Roll No: Marks-Scored:

SECTION"A" [10 Q × 1 = 10 marks] (***Do any ten***).

Fill in the blanks by writing the most appropriate word(s) or symbol(s).

1. Is $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$ an eigenvector of $\begin{bmatrix} -3 & 1 \\ -3 & -8 \end{bmatrix}$? _____.
2. Give an example of a subspace of $\mathbb{R}^2$: _____.
3. What is the sufficient condition for diagonalization of a matrix? _____ _____.
4. Write the relationship between algebraic multiplicity and geometric multiplicity of an eigenvalue. _____.
5. Compute the distance between: $u = \begin{bmatrix} -1 \\ 2 \end{bmatrix}, v = \begin{bmatrix} 4 \\ 6 \end{bmatrix}$ _____.
6. Find the angle between u and v given above. _____.
7. Let W be a subspace of V. What is the intersection between W and $W^{\perp}$? _____.
8. In QR factorization, what is the nature of R? _____.
9. Give an example of Hermitian matrix. _____.
10. Find orthogonal projection of u onto v for the given u and v in question 5. _____ _____.