

**Kathmandu University**  
First In-Semester Exam-2025  
**Department of Artificial Intelligence, Panchkhal**

Level: B.Tech Artificial Intelligence

Course: AIMA 203

Year: II

Semester: II

Time: 60 minutes

F.M. : 20

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1. Round off the digits 45.321 and 12.987 upto two decimal places and find the error in their product after rounding off. [2]
2. Write the rate of convergence of Newton Raphson's method. Find a root of  $f(x) = xe^x - 1 = 0$ , correct to 2 decimal places. [1+3]
3. Find a real root of the equations  $y^2 - 5y + 4 = 0$  and  $3yx^2 - 10x + 7 = 0$  correct to 3 decimal places, using the method of iteration. [4]

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4. Solve using LU-factorization method.  $3x_1 - x_2 = -1$ ,  $-x_1 + 3x_2 - x_3 = 7$ ,  $-x_2 + 3x_3 = 7$ . [4]
5. Determine whether the matrix is ill-conditioned or not.  $A = \begin{bmatrix} 5 & 4 \\ 6 & 8 \end{bmatrix}$ . [2]
6. Using Lagrange's method estimate the value of  $y(202)$  from the following data:  
 $(200, 5.2983), (203, 5.3132), (206, 5.3278), (210, 5.3471)$ . [4]

**OR**

Using Newton's Interpolation formula estimate :  $y(10)$  from  
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