GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Computing Science and Engineering

Master of Computer Applications
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem I - E1PA101T - Computational Mathematics and Statistics

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1) $A = \begin{bmatrix} 9 & 2 \\ 7 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 11 & 4 \\ 5 & 8 \end{bmatrix}$, K2 (2)

Calculate $6A - 2B$

2) $A = \begin{bmatrix} 2 & 1 & 3 \\ 3 & -2 & 1 \\ -1 & 0 & 1 \end{bmatrix}$ find the rank of the matrix. K1 (3)

3) Find the mean of the given frequency distribution from the following data: K2 (4)

Marks	No. of Students
0-4	3
5-9	5
10-14	7
15-19	4
20-24	6

4) Find eigenvalues and eigenvector of the 2 x 2 matrix: $A = \begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$ K2 (6)

5) Find the value of 'k' for which the given set of equations has infinite solutions (3k-8) x + 3y + 3z = 0, 3x + (3k-8) y + 3z=0, 3x+3y+(3k-8) z=0 K3 (6)

6) If $A = \begin{bmatrix} 5 & 8 & 16 \\ 4 & 1 & 8 \\ -4 & -4 & -11 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 & 1 \\ 2 & 1 & -2 \\ -1 & 0 & -2 \end{bmatrix}$ Show A is diagonalizable but B is not. K3 (9)

7) Find the inverse of the matrix using Gauss Jordan Elimination method K4 (8)

$A = \begin{bmatrix} 1 & 3 & 1 \\ -1 & 2 & 0 \\ 2 & 11 & 3 \end{bmatrix}$

8) Let us consider X for price P and Y for stock S. Then the mean and SD for P is considered as X-Bar = 100 and σx =8 respectively and the mean and SD of S is considered as Y-Bar =103 and σy =4. The correlation coefficient between the series is r (X, Y) = 0.4. Find the line of regression line Y on X. K4 (12)

OR

Calculate the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y): K4 (12)

X: 65 66 67 67 68 69 70 72

Y: 61 68 65 68 72 72 69 71