Minor- II

School of Mathematics and Statistics
University of Hyderabad

October 25, 2025

Duration: 60 minutes
Maximum Score: 20 points

Instructor: Dharmendra Kumar
Course: Eng Math - I

Instructions: You may use results proven in the lectures; however, answers without justification will receive a score of zero.

---

1. Find bases for row and column spaces of the following matrix:

$$\begin{bmatrix} 1 & -3 & 4 & -2 & 5 & 4 \\ 2 & -6 & 9 & -1 & 8 & 2 \\ 2 & -6 & 9 & -1 & 9 & 7 \\ -1 & 3 & -4 & 2 & -5 & -4 \end{bmatrix}$$

[4 + 4]

2. Let $A \in \mathbb{C}^{n\times n}$ be a skew- Hermitian matrix. Show that the eigen values of A are either purely imaginary or zero.

[6]

3. Show that

$$A = \begin{bmatrix} 7 & -5 & 15 \\ 6 & -4 & 15 \\ 0 & 0 & 1 \end{bmatrix}$$

is diagonalizable. Find A^{2025}.

[4 + 2]

All the best !