T 205

Mrs. AVN College, Visakhapatnam

MID Exams-I

Paper-V : LINEAR ALGEBRA

Subject: MATHEMATICS

SEM -II

Time: 1 hour

SECTION-A

Answer any TWO of the following (2*7=14M

1(a).Show that the set V_n of all ordered n-tuples over a field F is a vector space w.r.t addition of n-tuples as addition of vectors and multiplication of an n- tuples by a scalar as scalar multiplication.

(OR)

1(b).The necessary and sufficient condition for a nonempty subset W of a Vector space V(F) to be a subspace of V is that a,b $\in$ F, α , $\beta \in$ W $a\alpha+b\beta \in$ W.

2(a).Find the rank of the matrix by reducing it to normal form $\begin{bmatrix} 1 & 2 & -1 & 4 \\ 2 & 4 & 3 & 5 \\ -1 & -2 & 6 & -7 \end{bmatrix}$

(OR)

2(b). Find the inverse of the matrix byusing elementary transformations $\begin{bmatrix} 2 & 1 & 2 \\ 5 & 3 & 3 \\ 1 & 0 & 2 \end{bmatrix}$

SECTION-B

Answer any TWO of the following (2*3=6M)

3.If A= $\begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then show that A^2-4A-5I=0.

4. Show that A= $\begin{bmatrix} -5 & -8 & 0 \\ 3 & 5 & 0 \\ 1 & 2 & -1 \end{bmatrix}$ is an invalutory matrix.

5. Show that $\{(x + 2y, -x + 3y, : x, y \in R)\}$ is a subspace of V(R).