

TEST METHODS CHAPTER NO 3

TIME 1H

TOTAL MARKS 50

Q1(A) Find the rank of the matrix $\begin{pmatrix} 1 & 3 & 1 & -2 \\ 1 & 4 & 3 & -1 \\ 2 & 3 & -4 & -7 \\ 3 & 8 & 1 & -7 \end{pmatrix}$ by bringing it into reduced echelon form. (9)

(B) Reduce the matrix $\begin{pmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & -1 & -1 \end{pmatrix}$ into canonical form and also find matrix P and Q (8)

Q(2)(a) Suppose A and B are square matrices such that $A = AB^2$ and $B = A^2B$, then find A^2 in terms of B . (5)

(b) Prove that

(1) $(AB)^{-1} = B^{-1}A^{-1}$ (5)

(2) If A is a matrix over C and $A(\overline{A})^t = 0$ then show that $A = (\overline{A}) = 0$ (7)