

SIR CV RAMAN COACHING CENTRE- IDAPPADI ,

PREPARED BY DR.G.THIRUMOORTHY ,GOVT ARTS COLLEGE (A) SALEM -7

XII- MATHS EXERCISE 1.1,1.2,1.3. SLIP TEST QUESTION PAPER - 2024

SECTION - A (5 X 5 = 25 M)

ANSWER ANY FIVE QUESTIONS

1.

If $A = \begin{bmatrix} 5 & 3 \\ -1 & -2 \end{bmatrix}$, show that $A^2 - 3A - 7I_2 = O_2$. Hence find A^{-1} .

2.

If $F(\alpha) = \begin{bmatrix} \cos \alpha & 0 & \sin \alpha \\ 0 & 1 & 0 \\ -\sin \alpha & 0 & \cos \alpha \end{bmatrix}$, show that $[F(\alpha)]^{-1} = F(-\alpha)$.

3.

If $A = \begin{bmatrix} 3 & 2 \\ 7 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & -3 \\ 5 & 2 \end{bmatrix}$, verify that $(AB)^{-1} = B^{-1}A^{-1}$.

4. $A = \begin{bmatrix} 1 & \tan x \\ -\tan x & 1 \end{bmatrix}$, show that $A^T A^{-1} = \begin{bmatrix} \cos 2x & -\sin 2x \\ \sin 2x & \cos 2x \end{bmatrix}$.

5. Find the rank of the following matrices by row reduction method:

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

6. Four men and 4 women can finish a piece of work jointly in 3 days while 2 men and 5

women can finish the same work jointly in 4 days. Find the time taken by one man alone and that of one woman alone to finish the same work by using matrix inversion method

7.

If $A = \begin{bmatrix} -5 & 1 & 3 \\ 7 & 1 & -5 \\ 1 & -1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 1 & 2 \\ 3 & 2 & 1 \\ 2 & 1 & 3 \end{bmatrix}$, find the products AB and BA and hence solve the

system of equations $x + y + 2z = 1, 3x + 2y + z = 7, 2x + y + 3z = 2$.

8. Solve the following system of linear equations by matrix inversion method:

(i) $2x + 5y = -2, x + 2y = -3$

(ii) $2x - y = 8, 3x + 2y = -2$

PREPARED BY

Dr.G.THIRUMOORTHY ,M.Sc,B.Ed.,Ph.D

GOVT ARTS COLLEGE (A) SALEM -7

Thiruphysics1994@gmail.com

8610560810