Note :

1) All Questions are compulsory.
2) Figures to the right indicate marks.
3) Answer to every questions must be written on a new page.
4) Use non-functional calculator
5) Graph paper is not necessary.

Q.1 A) If the technology matrix of certain sectors in economics is

$$A = \begin{bmatrix} 0.3 & 0.5 \\ 0.2 & 0.4 \end{bmatrix} \text{ and final}$$

demand is $D = \begin{bmatrix} 150 \\ 12 \end{bmatrix}$ find its total outputs X_1 and X_2 [5]

B) Find the inverse if it exists of the matrix $\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$ [5]

C) Solve the equations by cramer's Rule.

$$5x + 2y = 7, \quad 6x - 5y = 38$$ [5]

OR

Q. 1. A) From the following information find total output of Both production Houses. Also find the corr. coeff matrix.

		Consumers		Final Demand
		C1	C2	D
Production	P1	50	40	10
Houses	P2	70	90	40

[5]

B) Solve the following equations using the reduction method   [5]

$$2x + 3y = 5$$
$$6x - 2y = 4$$

C) Solve the equations by cramer's Rule   [5]

$$x + 2y + z = 7$$
$$3x + z = -5$$
$$2y + z = 9$$

Q. 2. A) Draw the graph of the linear inequations.   [5]

$$3x - 2y \leq 0$$

B) IF $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & -4 & 1 \\ 3 & -5 & 2 \end{bmatrix}$ find $3A^2 - 2A + 5I$ where I is the Unit matrix   [5]

C) Solve the eqn [5]

$$\begin{vmatrix} \chi + 2 & 1 & -3 \\ 1 & \chi - 3 & -2 \\ -3 & -2 & 1 \end{vmatrix} = 0$$

OR

Q. 2. A) Draw the graph of the linear inequation. [5]

$5\chi + 4y > 0$

B) $A = \begin{bmatrix} 1 & -1 & 1 \\ 3 & -2 & 1 \\ -2 & 1 & 0 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 1 & 2 & 3 \end{bmatrix}$

Show that AB ≠ BA

C) Show that $\begin{vmatrix} 1 & bc & bc(b+c) \\ 1 & da & ca(c+a) \\ 1 & ab & ab(a+b) \end{vmatrix}$ [5]

Q. 3. A) Find the value of n if 4 + 7 + 10 + 13 + ... upto n terms is equal to 175 [5]

OR

B) A sum of money amounts to Rs. 6,600 in 2 year and Rs. 7,200 in 4 years find the sum and the rate of simple interest. [5]

C) Find the present value of an annuity of Rs. 2,000 paid at the end of each year for 4 year, at 11% compounded annually. [5]

OR

Q. 3. A) If for a G. P. $t_3 = 36$ and $t_6 = 972$ find t_8 [5]

B) A sum of money has been invested at simple interest at a certain rate for 4 year. Had it been invested at a rate 2% higher than the present rate it would have given Rs. 72 more find the sum. [5]

C) Four boys and five girls are made to stand in a line for a dance competition. How many different arrangements can be done so that no two boys are together. [5]

Q. 4. A) Define marginal demand and elasticity, also write the properties of elasticity. [5]

B) Differenciate the following w.r.t. x [5]

$$y = \frac{(\chi + 2)}{(\chi - 3)} + \frac{(\chi - 1)}{(2\chi + 1)}$$

P.T.O.

C) Evaluate the integrals $\int \dfrac{(\chi + 3)\ (\chi - 7)}{\chi}\ d\chi$ [5]

OR

Q. 4. A) The demand for a commodity when its price χ is given by

$y = \dfrac{(2\chi + 5)}{(3\chi - 4)}$ find the elasticity of demand when the price is 5 units.[5]

B) Find extreme values of the function $f(\chi) = 2\chi^3 - 12\chi^2 + 41\chi + 20$ Also state the extreme value of $f(\chi)$ at the corr. points. [5]

C) Evaluate the integrals $\int \dfrac{\chi^2 + 2\chi + \chi^{-1}}{\sqrt{\chi}}\ d\chi$ [5]

⇥◈◈◈⇤