MALINI KISHOR SANGHVI COLLEGE OF COMMERCE & ECONOMICS

SUBJECT: BUSINESS MATHEMATICS

CLASS: F.Y.B.M.S.	SEM-II

SECTION II	40 MARKS

Note: (i) All Questions are compulsory with internal choice.
(ii) Simple Calculator is allowed.
(iii) Graph papers will be provided on request.

Q:2 Solve the following : (**ANY-ONE**)   **10 Marks**

[A]

i. Mr. ABC estimates that after 3 years he would requires Rs.50,00,000 for his new business. He wishes to put aside money now, invested in an instrument giving interest 7% p.a. compounded half-yearly to meet his requirement then. How much money should he invest presently?

ii. Kartik purchased a TV set and paid Rs. 5,000 immediately, anther Rs. 5000 after a year and Rs.5000 after 2 years and thus became debt free. Find the price of TV set if compound interest charged was 3.5%.

OR

[B]

i. The compound interest and the simple interest on a sum of money at a certain rate for 2 years is Rs.3000 and Rs.3090 respectively. Find sum and the rate.

ii. A company decide to set aside a certain sum at the end of each year to create a sinking fund, which should amount to Rs.5 lakhs in 4 years at 12% p.a. Find the amount to be kept aside each year.

Q:3 Solve the following: (**ANYONE**)   **10 Marks**

[A]

i. In how many different ways can 6 people be photographed, if only 4 can be seated at a time?

ii. The number of baseball games that must be scheduled in a league with n teams is given by $G(n) = \frac{n^2-n}{2}$ where each team plays every other team exactly once. Suppose there 10 teams participating tournament, find the number of games need to be schedule. A league schedules 15 games. How many teams are in the league?

OR

[B]

i. How many words can be formed of the letter ARTICLE, so that the vowels occupy only the even position.

ii. The supply function is given by S=S(p)=10+3p. State and give a verbal description of slop and intercept. What is quantity supplied when price is Rs.15. Find the inverse supply function.

Q:4 Solve the following: (ANY-ONE)   **10 Marks**

[A]

i. Given the following matrices:
$A = \begin{pmatrix} 2 & 4 \\ 8 & 3 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 2 \\ 7 & 7 \end{pmatrix}$ calculate AB and BA. Verify whether AB=BA?

ii. Solve the following system of equations by finding the inverse of associated matrix A.
$2x + 3y = 8, 3x + 2y = 7$ $A = \begin{pmatrix} 2 & 3 \\ 3 & 2 \end{pmatrix}$

OR

[B]

i. Given the following matrices:
$A = \begin{pmatrix} 2 & 4 \\ 8 & 3 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 2 \\ 7 & 7 \end{pmatrix}$ calculate $2A + 3B$.

ii. Find the invers of the following matrix.
$$A = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 4 \\ 1 & 3 & 4 \end{pmatrix}$$

Q:5 Solve the following: (ANY-ONE)   **10 Marks**

[A]

i. Find the derivative of $y = (x) = 2x^3 + 3 \log x - 1$ with respect to x.

ii. If the inverse demand function is given by $p = 20 - 2D$. Find total revenue function, average revenue function and marginal revenue function, also their values when $x = 5$.

OR

[B]

i. Find the derivative of $y = f(x) = (3e^x + 2)(2x^2 - x)$ with respect to x.

ii. If the total cost function is given by $C = C(x) = 4x^2 + 3x + 10$, Find the average cost and the marginal cost when $x = 3$.