MALINI KISHOR SANGHVI COLLEGE OF COMMERCE & ECONOMICS
SUBJECT: BUSINESS MATHEMATICS

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

SECTION II   17.5.22   **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.   Kartik promised to pay Ketan Rs.366025 after 4 years. If the rate of interest is 12% per annum, find its present worth.

   ii.   A man purchases a house and takes a mortgage on it for Rs. 10, 00,000 to be paid of in 2 years by EMI. If the interest rate is 8% p.a., find the sum of money that he pays as EMI when interest is charged as reducing balance method.

<div align="center">OR</div>

[B]

   i.   A principal amount to Rs.9680 after 3 years and to Rs.10800, after 5 years. Find the principal and rate of simple interest.

   ii.   How much money should a person invest at 7% p.a. compound interest so that he would get an annuity of Rs. 1,00,000 at the end of each year for the next four years after which his principal money will be over?

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

   i.   Jones is the Chairman of a committee. In how many ways can a committee of 5 be chosen from 10 people given that Jones must be one of them?

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

<div align="center">OR</div>

[B]

   i.   There are 8 questions in a question paper. In how many different ways can a student attempt 7 questions from the paper?

ii. The phone company charges a flat rate of $25 per month. In addition, they charge $0.05 for each minute of service.
   a) Write a linear equation for the monthly charge based upon the number of minutes of service each month.
   b) Interpret the slope.
   c) Interpret the y-intercept.
   d) What will be the charge for 100 minutes of service?
   e) You can afford a $55 phone bill each month. How long can you afford to talk on the phone each month?

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.

$x + 3y = 2, 2x + 5y = 14$ $\qquad A = \begin{pmatrix} 1 & 3 \\ 2 & 5 \end{pmatrix}$

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 $y = f(x) = 2x^2 - 3\log x + 10$ 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 $D =$ $D = 3$.

OR

[B]

i. Find the derivative of $y = f(x) = (3e^x + 2)(2x^2 \log x)$ with respect to x.
ii. If the total cost function is given by $C = C(x) = 4x^2 + 3x - 5$, Find the average cost and the marginal cost when $x = 5$.

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