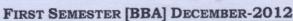
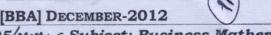
END TERM EXAMINATION





Paper Code: BBA/BBA(TTM/CAM)105/MoM-105 Subject: Business Mathematics **Maximum Marks:75** Time: 3 Hours

Note: Attempt any five questions. All questions carry 15 marks each.

Question 1:

- a) Given the first two terms in a geometric progression as 2 and 4, what is the 10th term?
- b) Define Lagrangian multipliers.

Question 2:

- a) Find the number of arrangements that can be made out of the letters of the word "SUCCESS" so that all S do not come together.
- b) Find the matrix X such that

$$\begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix} \mathbf{X} = \begin{pmatrix} 10 & 4 \\ -5 & 9 \end{pmatrix}.$$

Question 3:

a) Solve the equations 2x - 3y = 5kx + 6y = 2

for all possible values of k.

b) Find the vector equation of line 11 passing through the points A(1, -2, 6) and B(7, 1, -3).

Question 4:

- a) Find the acute angle between the line $\frac{x-1}{-2} = \frac{y}{1} = \frac{z}{2}$ plane3x + y + z = -3
- b) Solve $\frac{dy}{dx} = \frac{x^2}{y}$

Question 5:

a) What is the inverse of the matrix: $X = \begin{bmatrix} 7 & 4 \\ 2 & 1 \end{bmatrix}$?

$$X = \left[\begin{array}{cc} 7 & 4 \\ 2 & 1 \end{array} \right] ?$$

b) Use Lagrange multipliers to optimize $z = 4x^2 - 2xy + 6y^2$. Subject to x + y= 72

Question 6:

- a) Calculate: $\int x^{3} dx$
- b) Integrate the $\int (x^2 6x + 1) dx$

Question 7:

- a) Explain the significance of Differential calculus in Business Application.
- b) Raj Ltd. bought a machinery costing Rs. 1,00,000. The depreciation rate is 20% per annum. Find the estimated value after 6 years.

Question 8:

- a) Define Consumer's and Producer's surplus.
- b) Find how many different 4 digit numbers greater than 7000 can be formed from the digits 3,4,7,8,