END TERM EXAMINATION

FIRST SEMESTER [BBA] DECEMBER-2012

Paper Code: BBA/BBA(TTM/CAM)105/MOM-105 Subject: Business Mathematics

Time : 3 Hours   **Maximum Marks :75**

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

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

Question 3:
   a) Solve the equations $2x - 3y = 5$
                                 $kx + 6y = 2$
      for all possible values of k.
   b) Find the vector equation of line l1 passing through the points A(1, -2, 6) and B(7, 1, -3).

Question 4:
   a) Find the acute angle between the line $\frac{x-1}{-2} = \frac{y}{1} = \frac{z}{2}$ and the plane $3x + y + z = -3$.
   b) Solve $\frac{dy}{dx} = \frac{x^2}{y}$

Question 5:
   a) What is the inverse of the matrix:
$$X = \begin{bmatrix} 7 & 4 \\ 2 & 1 \end{bmatrix}?$$
   b) Use Lagrange multipliers to optimize $z = 4x^2 - 2xy + 6y^2$. Subject to $x + y = 72$

Question 6:
   a) Calculate :
      $\int x^7 dx$
   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,   and   9.

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