

College Name: _____

Student Name: _____ Seat No: _____

Copy No: _____

KARACHI UNIVERSITY BUSINESS SCHOOL
UNIVERSITY OF KARACHI
FINAL EXAMINATION DECEMBER 2016; AFFILIATED COLLEGES
BUSINESS MATHEMATICS: BA (M) – 531
MBA – I

Date: January 7, 2017

Max Time: 1.40 Hrs
Max Marks: 30

INSTRUCTIONS:

- 1. Attempt any 3 Questions. Start each new question on a new page. Do not write anything on the question paper.**
- 2. Mobile Phone(s) or any other communicating device will not be allowed in the examination room. Students will have to remove the batteries of these devices before entering the examination hall.**

Q1 A firm sells a product for Rs 80 per unit. Raw material costs are Rs 12.50 per unit, labor costs are Rs 27.50 per unit, and annual fixed costs are Rs 360,000

- a) Determine the profit function $P(x)$, where x equals the number of units sold.
- b) How many units would have to be sold to earn an annual profit of Rs 250,000?
- c) Compute $(A \times B)^t$ where

$$A = \begin{bmatrix} 0 & 1 & -2 \\ 3 & 2 & 4 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 2 & 5 \\ 3 & 2 & -1 \\ 4 & 3 & 0 \end{bmatrix}$$

Q2 a) Find the inverse of A, and show that $A^{-1}A = I$

$$\begin{bmatrix} 1 & -1 \\ 2 & -3 \end{bmatrix}$$

- b) For the quadratic equation $y = x^2 - 4x + 3$ determine followings:
- i. Which way the parabola opens?
 - ii. The vertex
 - iii. The roots

Q3 Solve the following equations by using (**Gaussian Method**)

$$\begin{aligned} x_1 + x_2 + x_3 &= 6 \\ 2x_1 - x_2 + 3x_3 &= 4 \\ 4x_1 + 5x_2 - 10x_3 &= 13 \end{aligned}$$

Q4 a) Solve the following equations with the help of matrix

$$\begin{aligned} 4x + 3y &= 16 \\ 5x + 4y &= 22 \end{aligned}$$

- b) Find the determinant of matrix B

$$B = \begin{bmatrix} 2 & 3 & 1 \\ 3 & 2 & 4 \\ 4 & 5 & 2 \end{bmatrix}$$

Q5 a) Find the derivative of x $f(x) = (x^3 - 2x^5)(x^4 - 3x^2 + 10)$

- b) Determine the average rate of change in the value of y in moving from $x = -1$ to $x = 2$

$$Y = f(x) = x^2 - 2x + 3$$

END OF SUBJECTIVE PAPER