College Name: _____

Student Name: _____ Seat No: _____

Copy No: _____

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

Date: July 15, 2016 **Max Marks: 30**
Max Time: 2 Hrs

INSTRUCTIONS:

1. **Attempt any 6 questions. Do not write anything on 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 police department estimates that the total cost C of owning and operating a patrol car can be estimated by the linear equation $C = 0.40x + 18,000$ where C is the total Cost and x be the number of miles driven.

a) Elaborate this equation in your own words
b) Also draw the graph

Q2. Find Derivative by First Principle $f(x) = x^3$

Q3. Compute the exponential function $f(x) = x^2 + 3x - 4e^x$, for $f(0)$, $f(-3)$, and $f(1)$

Q4. There are two families Mr. Sharif and Mr. Khan. Mr. Sharif family has 2 men, 3 women and 1 child, however, Mr.Khan's family consists 1 man, 1 woman, and 2 Childs, If Mr. Sharif's family denoted by 'A' and Mr. Khan's family denoted by 'B'. Calculate the daily requirement of calories and protein for each family.

	Calories	**Protein (gms)**
Men	2400	55
Women	1900	45
Child	1800	33

Q5. Find the derivative of following functions (any One)

$f(x) = \dfrac{10 - x}{x^2 + 2}$ (ii) $f(x) = (x^2 - 2x)(x^6 + 6x^2)$

Q6. Apply Integration to solve the differential equation

$dy = y.(x^2 + 2).xdx$

Q7. Integrate any One of the following:

(i) $f'(x) = \dfrac{a - bx}{2ax - bx^2}$

(ii) $f'(x) = x^2.e^{3x^3}dx$

(iii) $f'(x) = e^{x^2+4x}.(x + 2).dx$

Q8. The Demand for the production of a firm varies with the price that the firm charges for the product. The firm estimates that annual total revenue R (stated $ 2000) is a function of the price P (stated in dollars). Specifically, $R = f(P) = -50P^2 + 600P$

a) Determine the price which should be charged in order to maximize total revenue.
b) What is the maximum value of annual total Revenue?
c) Also draw the graph.

END OF SUBJECTIVE PAPER