

**COOPERATIVE UNIVERSITY  
OF  
KENYA**

**BMAT 1105: MANAGEMENT MATHEMATICS II**

**CAT 1**

- (a) The price of two commodities are represented by the following equation. Calculate the values of X and Y using matrices.

$$2x - 2y - 3 = 0$$

$$8y = 7x + 2$$

- (b) Define the following terms

Price Elasticity of Demand, Cross Elasticity of Demand, Optimization and Marginal Analysis

- (c) Find the derivative of the functions below

i.  $f(x) = \frac{x-1}{x+2}$

ii.  $f(x) = \frac{\ln x}{2x^2}$

- (d) Find the derivative of  $y = e^{-3x} \sin 4$

- (e) Find

$$\int_1^3 \int_0^2 (xy + x^2y^2) dy dx$$

- (f) A local council raises the price of Car parking from \$3 per day to \$5 per day and finds that usage of car parks contracts from 1,200 cars a day to 900 cars per day. Calculate the price elasticity of demand for this price change and calculate whether total revenue from the car park rises or falls

- (g) Find the exact value of  $\int_0^1 x^2 e^x dx$

- (h) Find the derivative of the function  $y = \sqrt{x^2 - 1} - \ln \left[ \frac{1}{x} + \sqrt{1 + \frac{1}{x^2}} \right]$

**INSTRUCTIONS: SUBMISSION DATE: 29-3-2019 BY 8 A.M.**

**Marks will be awarded for originality**

**Plagiarism will attract a serious marks deduction.**