KISII UNIVERSITY

COURSE CODE: **MBAD 781**   TILTE:**QUANTITATIVE METHODS**

*INSTRUCTIONS: ANSWER ANY **FOUR** QUESTIONS*

QUESTION ONE

a) Give a detailed comparison between univariate and bivariate data   (5 marks)
b) A sample of ten truck drivers at a loading warehouse bay wait for the following lengths of times (minutes) to be attended to by the warehouse manager.

5	17	8	2	55
9	22	11	16	5

   i) What are the mean, median and mode for these data?
   ii) What measure of central tendency would you use here? Justify your choice
                                                                  (10marks)

QUESTION TWO

a) Suppose marginal cost function is given as MC=100-2Q

What would be the increase in total cost when output changes from 10 to 15 units? (5 marks)

b) A desk lamp produced by The Luminar Company was found to be defective (D). There are three factories (A,B,C) where such desk lamps are manufactured. A Quality Control Manager (QCM) is responsible for investigating the source of found defects. This is what the QCM knows about the company's desk lamp production and the possible source of defects:

Factory	% of total production	Probability of defective lamps
A	0.35=P(A)	0.015=P(D|A)
B	0.35=P(B)	0.010=P(D|B)
C	0.30=P(C)	0.020=P(D|C)

The QCM would like to answer the following question: If a randomly selected lamp is defective, what is the probability that the lamp was manufactured in factory C? (10 marks)

QUESTION THREE

a) Most (if not all) economic decisions are the result of an optimization problem subject to one or a series of constraints. Give three examples of such decisions and constraints.
                                                                  (5marks)

b) The table below represents number of large scale manufacturing firms' investors showing interest in Mombasa county

Year	2019	2020	2021	2022	2023
No. of investors	6	2	10	4	8

Predict the number firms that might show interest in investing in Mombasa county in the year 2030 (10 marks)

QUESTION FOUR

The Kisii university School of Business and Economics carried out a survey on profits earned per month by micro-enterprises within Kisii county and found the average to be Kshs 24,672. To see if the average profit is different at sub county level, the school selected a random sample of 35 micro-enterprises in Gucha sub-county and found the average profit per month is Kshs 25,226. The standard deviation of the population is kshs 3,251. At $\alpha = 0.01$, can it be concluded that the average profit at Gucha sub-county is different from Kshs 24,672? (15 marks)

QUESTION FIVE

A company uses three different resources A, B and C to manufacture two different products. 200 units of resource A, 120 units of B and 160 units of C are available. 1 unit of first product requires 2 units of A, 2 units of B and 4 units of C, and 1 unit of the second product requires 4 units of A and 2 units of B. It is known that per unit of first product earns a profit of 20 monetary units and per unit of second product earns a profit of 30 monetary units. The manager of the company would like to know how many units of each product should be manufactured to maximize total profit. (Use graphical method) (15 marks)

QUESTION SIX

The table below is Regression Coefficients for Strategic Control Practices: Financial Controls (FC),Human Resource Controls (HRC), Information And Communication Controls (ICC) And Marketing Controls (MC), and Organizational Performance (OP)

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
1 (Constant)	-0.397	0.089		-4.465	0.000
FC	0.249	0.190	0.253	1.310	0.001
HRC	-0.571	0.302	-0.573	-1.887	0.060
ICC	1.595	0.263	1.603	6.070	0.000

MC	-0.380	0.225	-0.388	-1.689	0.092

a. Dependent Variable: PERFOR

Financial controls (FC),Human resource controls (HRC), information and communication controls (ICC) and marketing controls (MC) and organizations performance (dependent variable)

Required

   a) Come up with a regression model and explain the model

   b) State hypotheses and make decisions   (15 marks)