



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF HOSPITALITY & TOURISM MANAGEMENT

UNIVERSITY EXAMINATION FOR THE:

DIPLOMA IN TOURISM MANAGEMENT (DTM S18)

BAC 2201: QUANTITATIVE TECHNIQUES

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

DATE: Pick Date Aug 2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

SECTION A (Answer all the questions)

30 POINTS

QUESTION ONE

a) Distinguish between discrete and continuous data. (2 marks)

b) List and explain four applications of statistics. (8 marks)

c) Given $A = \begin{bmatrix} 2 & -4 \\ 1 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 4 & -1 \\ 2 & 0 \end{bmatrix}$ $E = \begin{bmatrix} -3 & 2 & 0 \\ 1 & -1 & -2 \end{bmatrix}$

Calculate:

i) $A + B$ (2 marks)

ii) AB (2 marks)

iii) $12(E)$ (2 marks)

d) Solve for X

i. $3(2x - 1) = 4(x + 5)$ (4 marks)

ii. $5x^2 + 2x - 3 = 0$ (5 marks)

e) Given $f(x) = 3x^3 - 2x - 7$,

Find the second derivative, $f''(x)$ and the third derivative, $f'''(x)$. (5 marks)

SECTION B (Answer only TWO questions)

QUESTION TWO

a) Use of Index numbers is a most powerful tool in the hands of managers, government officials and individuals to analyze the business and economic situations of a country. Highlight and briefly explain four uses of index numbers to these users. (8 marks)

b) Find the stationary points and identify whether these are maximum or minimum points.

$$y = 2x^3 - 9x^2 - 24x + 10 \quad (8 \text{ marks})$$

c) Nyali Ltd has an aggregate demand of 1.2 Million units. Each time they place an order there is an ordering cost of shs 1,000, holding cost is shs 100 per unit.

Determine the Economic Order Quantity (EOQ) (4 marks)

QUESTION THREE

a) Casterly Rock ltd produces a single product. The following data relates to the product.

$$P = \text{sh } 200$$

$$v = \text{sh } 140$$

$$f = \text{sh } 800,000$$

Required

i. Determine the break even sales units. (3 marks)

ii. The profit if sales are 10,000 units. (3 marks)

iii. Sales units required to make profit of sh 200,000. (4 marks)

- b) The following table summarizes the distances, to the nearest km, that 134 travel agents travelled to attend a meeting in London.

Distance (km)	Number of travel agents
41–45	4
46–50	19
51–60	53
61–70	37
71–90	15
91–150	6

Use interpolation to estimate the median Q_2 , the lower quartile Q_1 , and the upper quartile Q_3 of these data.

(10 marks)

QUESTION FOUR

- a) Define the following terms relating to inventory control. (each 2 marks)

- i. Holding Cost
- ii. Ordering Cost
- iii. Stock out Cost
- iv. Economic Order Quantity

- b) The following information was extracted from the books of Prestige Lodge regarding its stocks:

Reorder quantity	1,800
Reorder period	4 weeks
Maximum consumption	450 units/week
Normal consumption	300 units/week
Minimum consumption	150 units/week
Maximum reorder period	5 weeks
Minimum reorder period	3 weeks

Required

Determine the following stock levels for Prestige Lodge:

(12 marks)

- i. Re-order level
- ii. Maximum stock level
- iii. Minimum stock level

QUESTION FIVE

a)

- i. Solve the following by elimination method. (5 marks)

$$3x - y = 4$$

$$\underline{2x + y = 1}$$

- ii. Solve the following by substitution method. (5 marks)

$$2x + y = 8$$

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

b) From the following data, calculate the price index numbers for 2008 with 2000 as base by:

- i. Laspeyre's method (5 marks)
- ii. Paasche's method (5 marks)

<i>Item</i>	<i>2000</i>		<i>2008</i>	
	<i>Price (Rs.)</i>	<i>Quantity (unit)</i>	<i>Price (Rs.)</i>	<i>Quantity (unit)</i>
Maize	70	28	140	21.0
Millet	175	35	210	17.5
Sugar	140	52.5	175	52.5
Coconut	70	70.0	70	87.5