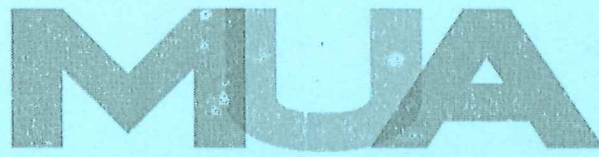


The
Management
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CERTIFICATE UNIVERSITY EXAMINATIONS

SCHOOL OF MANAGEMENT AND LEADERSHIP

CERTIFICATE COMMON UNIT

CCU 103: BASIC CALCULATIONS AND STATISTICS

DATE: 7TH AUGUST 2019

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **FOUR** questions.
6. Question **ONE** carries **30 MARKS** and the rest carry **10 MARKS** each.
7. Write all your answers in the Examination answer booklet provided.

QUESTION ONE

a) Evaluate the following simultaneous equation

By substitution

(3marks)

(i) $3x + y$

$2x - 3y$

By elimination

(3marks)

(ii) $5x - 7y = 27$

(iii) $3x - 4y = 16$

Solve these equations using the

b) By completing square method

i. $x^2 - 14x + 49 = 0$

(3Marks)

By formulae method

ii. $16x^2 - 60x - 75 = 0$

(3Marks)

(c) Define the following terms as used in statistics.

(3Marks)

i. Data.

ii. Sample.

iii. Descriptive statistics.

(d) The sum of three consecutive integers is 523. Find the three integers.

(2marks)

i. An n-sided convex polygon has $\frac{1}{2}n(n-3)$ diagonals. How many sides does 135 diagonal polygon has?

(3Marks)

$$\frac{7c^3df\sqrt{6c^3d^3}}{\sqrt{d^3} \quad 8d c^2}$$

Take the values of $C=2$, $d=16$, $f=8$

(3Marks)

ii. State three applications of statistics.

(3Marks)

iii. A student tossed two die at once. Find the probability of obtaining $4 \geq x \leq 2$

iv. Differentiate the following.

a) Non- Random sampling from Random sampling.

(2 Marks)

b) Continuous and Discrete data.

(2 Marks)

QUESTION TWO

The following data was obtained from a nursery of seedling

33, 35, 49, 80, 95, 74, 84, 99, 33, 30, 47, 48, 59, 67, 94, 95, 85, 37, 89, 95, 93
45, 67, 84, 89, 37, 48, 78, 93, 87, 83, 63.

- i. Create groups for the following data with class interval of Five (1 Mark)
- ii. Determine the following parameters;
 - a) Median (3Marks)
 - b) Mode (2 Marks)
 - c) Mean (2Marks)
- iii. Give three characteristics of the arithmetic mean. (2marks)

QUESTION THREE

A Firm has a marginal function given by,

$$M.C = 4x^2 - 6x^{-1} + 8x$$

Given that it's Total cost is 40,000. Calculate the total cost Function.

(b) If the firm's demand talking units demanded in terms of x

$$P = 250 - 6x$$

- (i) Find its total revenue function (3Marks)
- (ii) Determine its profits function (2Marks)
- (iii) Determine the minimum profit the firm can make (4Marks)
- (iv) Maximum revenue (1Mark)

QUESTION FOUR

a) The data below shows consumer behaviors

Class	Frequency
1300-1349	84
1350-1399	76
1400-1449	85
1450-1499	64
1500-1549	62
1550-1599	31
1600-1649	31
1650-1599	16
1700-1749	48
1750-1799	18
1800-1849	19

- (i) Determine the following
 - (a) Person's skewness index. (3Marks)
 - (b) Coefficient of variation. (3 Marks)
 - (c) Interquartile range. (4 Marks)

QUESTION FIVE

Class	Frequency
30.5-34.5	39
34.5-38.5	22
38.5-42.5	35
44.5-48.5	15
52.5-56.5	3
60.5-64.5	12
64.5-68.5	6
68.5-72.5	9

Determine the following

- i. Standard deviation. (3Marks)
- ii. Absolute mean. (2Marks)
- iii. 64th percentile. (3Marks)
- iv. 7th deciles. (2Marks)

QUESTION SIX

The following prices relate to a certain market
Calculate price using;

year	Item	Price	Quantity
2000	Bread	40	220
	Meat	45	75
	Fish	56	640
	butter	69	740
	Milk	31	950

Year	Item	Price	Quantity
2001	Bread	35	490
	Meat	36	320
	Fish	80	890
	Butter	75	700
	Milk	42	230

- (i) Laspyres price. (5Marks)
- (ii) Paasches price index. (5Marks)