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# **KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR** FIRST YEAR FIRST SEMESTER EXAMINATION FOR THE CERTIFICATE IN BEAUTY THERAPY AND HAIR DRESSING

Date: 3<sup>rd</sup> December, 2024 Time: 11.30am – 1.30pm

## **CCU 004: BUSINESS CALCULATION AND STATISTICS**

### INSTRUCTIONS TO CANDIDATES

## ANSWER QUESTION ONE (COMPULSORY) AND ANYOTHER TWO QUESTIONS\_\_\_\_ **QUESTION ONE (30MARKS)**

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- i) Elimination method
- ii) Substitution method

(3 marks) (3 marks)

 $4x \pm 2y - 16$ 

$$5x - 3y = 9$$

b) The data below shows the marks of student obtained in a given test.

Marks	0-5	5-10	10-15	15-20	20-25
No of student	2	5	10	6	7

Calculate the following

i)	Mean	(2 marks)
ii)	Median	(4 marks)
iii)	Mode	(3 marks)

c) Given two matrices A and B

$A = \begin{bmatrix} 7 & 8 \\ 2 & 3 \end{bmatrix}  B = \begin{bmatrix} 1 & 5 \\ 6 & 9 \end{bmatrix}$	
Determine the following;	
i) Transpose of A	(1 marks)
ii) AB	(3 marks)
iii) $B^T + A$	(2 marks)

- d) Solve the following equation  $4x^2 7x + 3 = 0$ 
  - i) Formula ii) Factorization (3 marks)
- e) A bag contains 4 white beads and 3 black beads. A man pick 2 at random. Find the probability that both beads are of same colour. (3 marks)

(3 marks)

#### **QUESTION TWO (20 MARKS)**

a) The following data shows the marks of student obtained in an exam

Marks	No.of student
40-50	20
50-60	25
60-70	36
70-80	72
80-90	51
90-100	40

Calculate the following

b)

i) Mean	(3 marks)
ii) Median	(4 marks)
iii) Mode	(3 marks)
iv)Standard deviation	(5 marks)
v) coefficient of variation	(3 marks)
Find the inverse of matrix A given $A = \begin{bmatrix} 5 & 3 \\ 7 & -4 \end{bmatrix}$	(2 marks)

#### **QUESTION THREE (20 MARKS)**

a) Given two matrices A and B  $A = \begin{bmatrix} 4 & 3 \\ 1 & 5 \end{bmatrix} \quad B = \begin{bmatrix} 3 & 7 \\ 3 & 4 \end{bmatrix}$ Determine the following; i) BA ii)  $B^{T} + A$ 

(3 marks) (2 marks)

	b)	The following s	shows marks	obtained b	y s	student	in a	i tes	st.
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Marks	0-10	10-20	20-30	30-40	40-50	50-60
No of	7	12	10	8	5	16
students						

Calculate the following from the data above

i) <i>Q</i> <sub>3</sub>	(3 marks)
ii) First quartile	(3 marks)
iii) D <sub>4</sub>	(3 marks)
iv) P <sub>30</sub>	(3 marks)
v) <i>D</i> <sub>6</sub>	(3 marks)
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#### **QUESTION FOUR (20 MARKS)**

a) Solve the following simultaneous equation by;

$$5x + 2y = 4$$
$$3x + 4y = 6$$

(4 marks) (4 marks)

i) Elimination method

II) Substitution method	ii)	Substitution	method
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- b) Solve the following simultaneous equation by Matrix method (5 marks) 4a + 2b = 53a + 5b = 1
- c) Assume you want to do a research on early pregnancy in your county, state four method you would use to collect data using primary data sources (4 marks)
- d) Differentiate between primary data source and secondary data source (3 marks)

#### **QUESTION FIVE (20 MARKS)**

a) The table below shows the masses of 104 people.

Μ	Mass (kg) 0-5 5-10 10-15 15-20 20-25 25-30								
No. of people 9 11 32 18 24 10									
i) Draw a cumulative frequency for the data above									
ii)	i) From the graph above estimate the value of median								
iii)	i) Draw a histogram and superimpose a frequency curve								
iv)	) From the graph above estimate the value of mode								

b) Solve the following equation  $4x^2 - 4x - 3 = 0$ 

i)	By formula	(3 marks)
ii)	Factorization	(3 marks)