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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 HOSPITALITY MANAGEMENT **CCU 004 BUSINESS CALCULATIONS AND STATISTICS**

Date: 13<sup>TH</sup> AUGUST 2024 Time: 8:30AM - 10:30AM

(3 Marks)

#### **INSTRUCTIONS TO CANDIDATES** ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS **QUESTION ONE (30 MARKS)**

- Calculate the variance from the data given 20,25,36,42 and 45 a)
- 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 foll	lowing;		-			
	i) Mean					(3	3 Marks)
	ii) Median					(4	4 Marks)
	iii) Mode					(3	3 Marks)
c)	Given two matric	ces A and B					
	$A = \begin{bmatrix} 5 & 6 \\ 2 & 3 \end{bmatrix} B = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$	$\begin{bmatrix} 3\\ 2 \end{bmatrix}$					
	Determine the fo	llowing;					
	i) Transpos	e of A					(1 Mark)
	ii) AB						(3 Marks)
	<b>iii</b> ) $B^T + A$						(2 Marks)
d)	Solve the follow	ing quadratic e	quation by fact	orization metho	od;		
	4	$x^2 - 7x + 3 =$	= 0				(3 Marks)
e)	A bag contains 4	white beads a	nd 3 black bea	ids. A man pick	x 2 at random.	Find the pro	bability that
•	both beads are of	t same color.		• • •			(4 Marks)
I)	Solve the follow:	ing simultaneou	is equation by	using elimination	on method;		(4 Marks)
			3 <i>X</i>	+4y = 14			
	TATION TWO (20	MADKS)	5%	y = 2y = 0			
<u>vu</u> a)	Given two matric	res A and B					
u)	$A = \begin{bmatrix} 5 & 3 \\ 6 & 4 \end{bmatrix}$	$B = \begin{bmatrix} 7 & 2 \\ 3 & 8 \end{bmatrix}$					
	Determine the fo	llowing;					
	i) Transpos	e of A					(1 Marks)
	ii) BA						(3 Marks)
	iii) $B^{T}+A$	- 2					(3 Marks)
<b>b</b> ) F	Find the inverse of n	natrix, $A = \begin{bmatrix} 2 \\ - \end{bmatrix}$	5 9				(3 Marks)
$\mathbf{c}$	The following shows	s Marks obtaine	ed by student i	n a test			

Marks 0-10 10-20 20-30 30-40 40-50 50-60 No of students 7 12 10 8 5 16

Calculate the following from the data above;

i)  $Q_3$ (4 Marks) ii) *P*<sub>30</sub> (4 Marks) iii) Mode (2 Marks)

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

a) Solve the following simultaneous equation by;

$$5x + 2y = 4$$

- 3x + 4y = 6i) Elimination method (4 Marks) ii) Substitution method (4 Marks)
- Solve the following simultaneous equation by Matrix method; b) (4 Marks)

$$4a + 2b = 5$$
  
 $3a + 5b = 1$ 

$$3a+5b=1$$

- Ann bought 4 chairs and 5 tables at sh.450. Leah bought 6 chairs and 3 tables at 500. Calculate the c) cost of a chair and a table. (4 Marks)
- A bag contains 4 white beads and 3 black beads. A man pick 2 at random. Find the probability that: d) (2 Marks)
  - Both beads are of same colour i)
  - ii) One white and one black

## **QUESTION FOUR (20 MARKS)**

The data below shows the Marks of students obtain in KWUST; a)

Class interval	0-10	10-20	20-30	30-40	40-50		
Frequency	5	10	15	8	7		
i) Draw a c	umulative f	requency distribu	ution curve		(4 Mar		
ii) From the	From the graph above, find the value of median graphically						
iii) find out	find out the value of mode						
iv) Draw a h	Draw a histogram and superimpose a frequency curve						
Solve the follow	ing equation	$14x^2 - 4x - 3 =$	$= 0^{1}$		,		
i) E	y formula				(3 Mar		
ii) F	actorization				(3 Mar		

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

b)

From the following information of cumulative distribution table a)

Class Interval	Frequency
56-60	6
60-65	11
65-70	7
70-75	19
75-80	15
80-85	8
85-90	7
90-95	5
95-100	2

## Calculate the;

- Mean i)
- ii) Median
- iii) Mode
- Variance iv)
- Standard variation v)
- Co-efficient of variation vi)

(3 Marks) (4 Marks) (2 Marks) (3 Marks) (5 Marks)

(2 Marks)

(3 Marks)