GCAN

July 2015 Time: 3 hours Date_____



THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN INFORMATION STUDIES

MATHEMATICS

3 hours

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INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.

Sign and write the date of examination in the spaces provided above.

This question paper contains FIFTEEN questions in two sections; A and B.

Answer ALL the questions in section A and any FOUR in section B in the spaces provided in this paper.

Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum score	Candidate's score
A	1 - 10	40	
	11	15	
	12	15	
В	13	15	
	14	15	
	15	15	
		Total score	

This paper consists of 16 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A (40 marks)

Answer ALL the questions in this section in the spaces provided.

- Properties of a bi	nomial probability distribution.	(3 mar
300 and Ksh 500 respectively.	toes on a 40 acre piece of land, maize on a seeds for an acre of potatoes, maize and w	near is Ksh 400, Ksh
(i) Using a row vector and	olumn vector for acreage and cost respect	
LIBRAETAN	olumn vector for acreage and cost respecti	very, represent this (2 marks
11		
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	CONT.	
(ii) Determine the total cost of	f seeds for the three pieces of land.	(2 mode)
	600	(2 marks)
Compute each of the following u	sing binary arithmetic	
(a) 23 ₁₀ -7 ₁₀ using one's comp	element;	(2 marks)

	8 ₁₀ – 3 ₁₀ using two's complement.	(2 mar)
_		
_		
Us	ing matrix method, solve the following set of simultaneous equations.	/A mod
	5x-2y=2	(4 mark
	4x + y = 4	
_		
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_	<u>⊘</u> 25 *	
(a)	Outline two properties of arithmetic mean using words.	(2 mark
_		(2 marks
_		

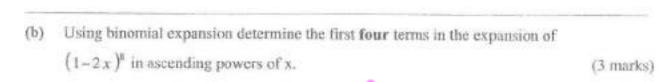
(b)	A mathematics teacher intends to make a multiple-choice test. She wants to gi student the same questions, but have each student's questions appear in a difference are twenty-seven students in the class, determine the least number of que quiz could contain.	and the second s
With t	the aid of a sketch, explain the term kurtosis as used in measures of dispersion.	(4 marks
The state of the s	A DE BOX 414 - 10900 FIRST	
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Differe	ntiate between discrete and continuous data types as used in statistics.	(4 marks)

(a) Table 1 shows the probability distribution of the commission earned by a salesperson.
 Determine the expected commission earned by a salesperson.

(2 marks)

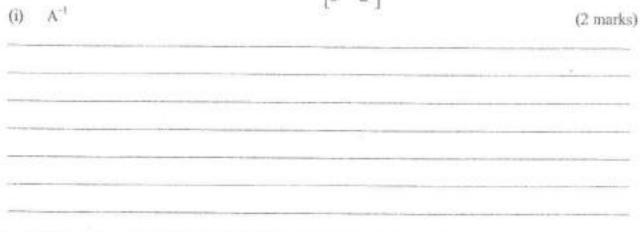
Commission in Ksh	0	1000	2000	3000	4000
Probability	0.05	0.15	0.25	0.45	0.1

Table I





9. Determine each of the following for matrix $A = \begin{bmatrix} 5 & -7 \\ 3 & 2 \end{bmatrix}$



	(2 ma
Using elimination method, solve the following set of simultaneous equations. $3x+2y=5$	(3 ma
2x + 3y = 4	
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(17) Kindle C	
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SECTION B (60 marks)

Answer any FOUR questions in this section in the spaces provided.

(ii) Identity matrix; (2 marks)

(iii) singular matrix; (2 marks)

(iii) orthogonal matrix.

(b) Table 2 shows breakfast menu in that customer may choose an item from each of the groups. Use it to answer the questions that follow.

Breakfast Sandwich	Accompaniments	Juice
Beef burger chicken burger vegetable burger	breakfast potatoes apple slices fresh fruit cup pastry	orange cranberry tomato apple grape

Table 2

(0)	can order;	(1 mark
(ii	can order without meat.	(2 marks
) Gi	ven $n(U)=169$, $n(A)=81$, and $n(B)=66$ Determine $n(A \cap B)$ if $n(A \cup B)=137$	(3 marks)
Kil	2 8 JUL 20'5 2 8 JUL 20'5 2 8 JUL 20'5 2 8 JUL 20'5	
(ii)	Draw a Venn diagram to represent the composition of the universal set.	(3 marks)

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_				
(b)	Construct a graph to represent the line	- 19 w	0.00008 <u>2</u>	10.00
101	Construct a graph to represent the line	ar inequality 2.	x+y≤6	(3 m
		6 1		
(c)	Explain each of the following measures	as used in stat	istics-	
	(i) arithmetic mean;		estitute of Science	
	17 minute mount	(1 mg	LIBRADIAN	(2 ma
		(\overline{2})	LIBRALIAN SCIENCE OF S	5
		11.7	(17) ************************************	4))

(2 marks)
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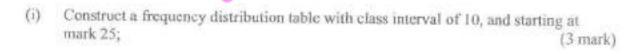
13.

(b)	Given that matrix $A =$	$\begin{bmatrix} 7 \\ -3 \end{bmatrix}$	$\begin{bmatrix} 1 \\ 2 \end{bmatrix}$, show that A	$1^{-1} = \begin{bmatrix} 2/1 & -1/17 \\ 3/17 & 7/17 \\ 3/17 & 7/17 \end{bmatrix}$	(3 marks)
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(c)	Table 3 shows marks scored by 42 students in one subject. I that follow.	Use it to answer the questions
	31100 10110 11 -	

35	40	56	41	64	73	49	80	58	70
46	25	69	86	36	68	64	~ 41	57	47
62	73	54	61	58	81	49	65	74	56
75	67	46	59	33	57	48	63	26	72
	28				10				
					-				

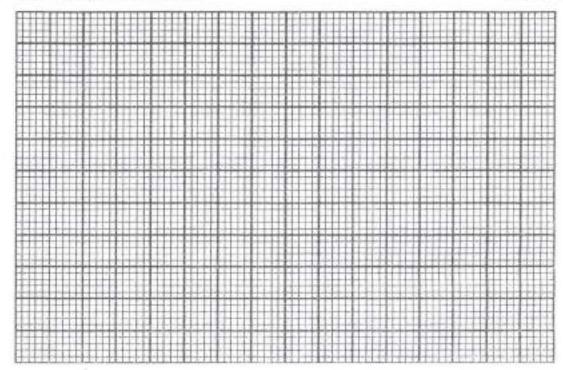
Table 3





(ii)	Draw	the	Ogive	for	the	data;
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(3 marks)



(iii) Estimate each of the following measures using the graph in (ii):

the median mark;

(1 mark)

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he inter-quartile range mark.

(I mark)

- 14. (a) Explain each of the terms as used in statistics:
 - (i) mutually exclusive events;

(2 marks)

(ii) independent events.

(2 marks)

(2 marks)
(2 marks
(4 marks

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2.4	740 V 10	
(a)	State the binomial theorem using mathematical notation.	(3 mari
-		(5 mark
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	130	
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	O. 802 414 00 400 Kings	
	VA. 4.14 100	
b)	Using a Venn diagram identify each of the following set operations. (i) $X \cap Y$:	
	(i) X ∩ Y;	
		(2 marks
		4
		8

X UY;	(2 mar
X°. LIBUALIAN Solne	(2 marks
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No. Action Control of the Control of	
de Company Ltd manufactures bulbs in two regions, Western and Eas n region manufactures 60 % of the bulbs of which 4% are defective a bulbs are defective.	stern. The
	and 5% Western
Jsing a tree diagram, represent this information.	(4 marks)

(ii)	Determine the probability that a bulb chosen at random is defective. (2 marks)
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