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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY UNIVERSITY EXAMINATIONS, 2024/2025 ACADEMIC YEAR FIRST YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (ECONOMICS AND FINANCE)

Date:8th August, 2024 Time: 2:30pm-4:30pm

KEF 2100 STATISTICS FOR ECONOMISTS 1 INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) C	a) Consider the data below											
Class		20-3	39	40-5	9	60-79)	80-99)	100-119	120-139	140-159
interv	val											
f		3		8		10		5		4	4	6
Calcu	ılate;											
i) Mode (2									(2 Marks)			
ii) 1	Media	n										(2 Marks)
iii)	Q ₁ and	$l Q_3$										(3 Marks)
iv) .	sixth d	decile	2									(2 Marks)
b) Co	b) Consider the following data and construct a stem and leaf display (3 Marks)								(3 Marks)			
	20	14	21	29	43	17	15	26	8	14		

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29	23	16	46	28	11	26	35	26	28
30	22	23	7	32	19	22	18	27	9

c) A box contains 3 red, 4 white and 5 blue disks. Two disks are selected at random from the box. Find probability that all two disk are of different colour if the selection is without replacement. (2 Marks)

d) Two events A and B are such that P(A) = 0.5, P(B) = 0.4 & $P(A \cup B) = 0.8$ Calculate:

i)	$P(A \cap B)$	(2 Marks)
ii)	P(A/B)	(2 Marks)
iii)	$P(B^c/A)$	(2 Marks)

f) Find the mean of the following data using A=9

X	70	110	120	101	88	83	95	98	107	100
	. 1 .1 .	11 •	C	11						

g) Consider the following frequency distribution

classes	10-14	15-19	20-24	25-29	30-34
frequency	7	11	14	13	5

i) Compute mean and variance of the observations.

ii) Represent the data in a histogram.

QUESTION TWO (20 MARKS)

a) The table below represents each quantity purchased (X) and price per unit (Y) in a wholesale shop

Quantity	150	169	175	180	200
Price	20	17	16	14	12

- i) Obtain a simple regression equation relating price to quantity purchased. (7 Marks)
- ii) Estimate the price paid by an individual who bought is 140 units. (2 Marks)
- iii) Determine the Pearson's product moment correlation coefficient between quantity (5 Marks) purchased and price per unit, hence comment on the result.
- b) A horse was subject to the test of how many minutes it takes to reach a point from the starting point. The horse was made to carry luggage of various weights on 10 trials. The data collected are presented below in the table

Weight (in Kgs)	11	23	16	32	12	28	29	19	23	20
Time taken (in mins)	13	22	16	47	13	39	43	21	24	22

Compute the Spearman's rank correlation coefficient and comment on interpret it. (6 Marks)

(3 Marks)

(5 Marks)

(2 Marks)

QUESTION THREE (20 MARKS)

The data below shows the sales unit for a salesman in 50 days.

 112
 100
 127
 120
 134
 118
 105
 110
 109
 112
 110
 118
 117
 116
 118
 122
 114
 114
 105

 109
 107
 112
 114
 115
 118
 117
 118
 122
 106
 110
 116
 108
 110
 121
 113
 120
 119
 111

 104
 111
 120
 113
 120
 117
 105
 110
 118
 112
 114
 114

a) Determine the appropriate number of classes, class width and class limits for these data.

			(4 Marks)					
b)	Usin	g the results in (a) construct a grouped frequency distribution.	(2 Marks)					
c)	Estimate;							
	i)	Mode.	(3 Marks)					
	ii)	Median.	(3 Marks)					
	iii)	Quartile deviation.	(3 Marks)					
	iv)	Mean.	(2 Marks)					
	v)	Standard deviation.	(3 Marks)					

QUESTION FOUR (20 MARKS)

a) A university professor has out a list of 10 questions, 5 of which will appear in the final examination of the course. One of the students is pressed for time and can prepare 7 of the questions. Suppose the professor chooses the 5 questions from the 10 questions.

What is the probability that;

i)) The student will prepare for all the five questions that will appear in the final					
	examination	(2 Marks)				
ii)	The student will be prepared for fewer than 3 questions	(3 Marks)				
iii)	The student will be prepared for exactly 4 questions	(3 Marks)				

iv)

b) The frequency distribution of data is given by

Class	10-19	20-29	30-39	40-49	50-59	60-69	70-79
Freq	2	8	f_1	18	f_2	6	1

Find

i) The values of f_1 and f_2 given that the total frequency is 60 and the mode is 40.05.

		(6 Marks)
ii)	Determine the	
	6 th decile.	(3 Marks)
	74 th percentile.	(3 Marks)

QUESTION FIVE (20 MARKS)

a) The following data gives the quantities and the cost of materials for four divisions of a company for two years.

		Quantity		Cost		
Division	Year 1	Year 2	Year 1	Year 2		
Α	175	201	1540	1830		
В	32	46	1270	1490		
С	48	43	2760	2490		
D	65	66	2190	2070		

Calculate;

- i) Laspeyres price and quantity indices
- ii) Paasches price and quantity indices
- b) Consider the number of hours ten students sitting for an exam

1	nours	8	5	11	13	10	5	18	16	2	8
		56	44	79	12	70	54	94	85	33	65
]	Marks										

Calculate spearman's rank correlation

c) Consider the data below

Class	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
interval								
F	1	3	7	10	15	12	6	2

Calculate;

- i) Mean absolute deviation
- ii) Variance

(3 Marks)

(3 Marks)

(4 Marks)

(4 Marks)

(6 Marks)