

### FIRST YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF EDUCATION SCIENCE SECOND SEMESTER 2015/2016 (JANUARY-APRIL 2016)

### MATH 141: INTRODUCTORY STATISTICS.

STREAM: Y1S2

TIME: 2 HOURS

DAY: TUEDAY 09.00 - 11.00

DATE: 05/04/2016

#### INSTRUCTIONS

1. Do not write anything on this Question paper.

2. Answer All Questions.

## QUESTION ONE [COMPULORY (30marks)]

(a) Explain the meaning of the following:

- i. Mutually exclusive events
- ii. Permutation
- iii. Correlation
- Questionnaire iv.
- v. Survey
- vi. Sample space

(6marks)

(b) The following figures represent the number of trips made annually by the lecturers within the faculty of education of Kisii University to supervise teaching practice.

Construct a frequency distribution table with <u>five classes</u> for this data. Give the relative frequencies and construct a frequency polygon from the frequency distribution.

(6marks)

(c) In one month, a student recorded the length, to the nearest minute, of each of the lectures she attended. The table below shows her data and the calculations she made before drawing a histogram to illustrate these data.

Length of	50-53	E4.55	T = 2	
lecture(minutes)	30-33	54-55	56-59	60-67
	45	7 4		No. 1
Number of	A a	b	30	C 196
lectures	1 10	4 40		
Frequency *	5	13	7.5	
density		15	7.5	1.5

Calculate:

(i) The values of a, of b and of c.

(3marks)

(ii) The total number of lectures attended during the month.

(3marks)

(d) ) Construct a stem and leaf plot for the following data:

(6marks)

(e) Two judges rank eight photographs in a competition as follows:

Photograph	Α	R	TC	ID	-T=- <sup>}</sup>			96
1st Judge	2	5	12	D	E	F	G	H
2nd Judge	4	3	- 3	0	-	4	7	8
	•			6	1	8	5	7

Calculate Spearman's coefficient of correlation.

(6 marks)

ccion.		
2	Stem	leg
-2		
	198	
0		
2		

## QUESTION TWO [20marks]

The following data represent the lengths (x) and breadths (y) of 12 eggs measured in millimeters.

1	100		A8132	ALCA STREET						selfores.		55	
X	22.3	23.6	24.2	.22.6	22.3	22.3	22.1	23.3	22.2	22.2	21.8	23.2	1
У	16.5	17.1	17.3	17.0	16.8	16.4	17.2	16.8	16.7	16.2	*16.6	16.4	
4,000	415.				0.0	10.1	11.2	1 10.0	10.7	10.2	10.0	10.1	

(a) Draw a scatter diagram for the data.

(8marks)

(b) Obtain the least squares regression line of y on x and plot this on the scatter diagram you have drawn above. (12marks)

## QUESTION THREE (20marks)

(a) The following table shows the distribution of marks scored by 84 students in a certain discipline.

Marks	1-20	21-40	41-60	61-80	81-100
Number of	10	18	24	14	10
students	30	159	2.	792	10

100

Determine the following:

- (i) The mean mark
- (ii) The median mark

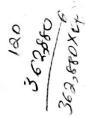
(4marks) (4marks)

(iii) The modal mark

(4marks)

- (b) (i) A ball is drawn at random from a box containing 6 red balls, 4 white balls, and 5 blue balls. Determine the probability that it is red or white (2marks)
- (ii) In how many ways can 10 people be seated on a bench if only 4 seats are available? (3marks)
- (iii) In how many ways can a committee of 5 people be chosen out of 9people?

(3marks



## QUESTION-FOUR-(20marks)

(a) The stem plot below shows the times, recorded to the nearest second, of 12 people in a race.

Stem	-leaf-
1	23
. 1	55666
1	799
2	0 1

Calculate the mean time and determine the standard deviation.

(12marks)

- (b) Two fair coins are tossed. Show the possible outcomes on a possibility space diagram and find:
  - The probability that one head is obtained (i)
  - The probability that two tails are obtained. (ii)

(8marks)

# QUESTION FIVE (20marks)

(a) The following table shows marks scored by two students in 12 subjects.

C4										- 5			
Student A	65	63	67	61	160	160							
Ctardent D		00	07	64	68	62	70	66	68	67	155		
Student B	68	66	68	65	60		+		00	101	69	71	ı
		100	100	65	69	66	68	65	71	67	_	+	1
						-		100	1 / 1	10/	168	170	

#### Calculate

Product moment correlation coefficient (i)

(10marks)

Spearman's Rank coefficient of correlation. (ii)

(10marks)

+1