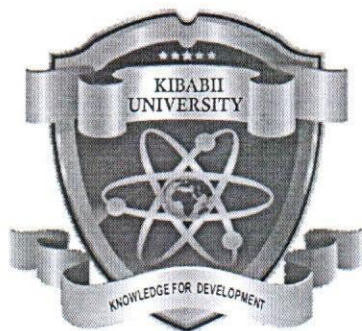


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(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR
FIRST YEAR FIRST SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATION
FOR THE DEGREE OF BACHELOR OF EDUCATION AND
BACHELOR OF SCIENCE

COURSE CODE: STA 106

COURSE TITLE: BASIC STATISTICS

DATE: 24/09/2021

TIME: 2:00 PM- 4:00 PM

INSTRUCTIONS TO CANDIDATES

Answer Question One and Any other TWO Questions

TIME: 2 Hours

This Paper Consists of 4 Printed Pages. Please Turn Over.

QUESTION ONE

- (a). Define the following terms
- Statistics (2 mks)
 - Sample (2 mks)
 - Variable (2 mks)
 - Regression (2 mks)
 - Stem and leaf plot (2 mks)
- (b). List 4 types of random sampling methods (4 mks)
- (c). The following is the number of hours (X) the students studies for a final examination and their performance (Y).

x	17	13	12	15	16	14	16	16	18	19
y	94	73	59	80	93	84	66	79	77	91

Calculate Pearson's correlation coefficient(r) (8 mks)

- (d). Assume that 75% of STA 106 students studied for the test. If 40% of those who studied got an A, but only 10% of those who don't study got an A, What is the probability that someone who gets an A actually studied for the test? (6 mks)
- (e). List two types of data. (2 mks)

QUESTION TWO

- a). What are the disadvantages of non-random method of sampling? (3 mks)
- b). Explain 4 levels of measurements in Statistics (8 mks)
- c). Using the following data,
25, 32, 46, 11, 51, 39, 45, 32, 17, 30.
- create a stem and leaf plot (4 Mks)
 - From the plot, what is the range of the data? (1 mk)
 - What is the mean of the data? (2 Mks)
 - What is the median of the data? (1 mk)
 - What is the mode of the data? (1 mk)

QUESTION THREE

- (a). What is an Index number? (2 mks)
- b). Using this table below,

Comm- odity	Base Year		Current Year		P_0q_0	P_1q_0	P_0q_1	P_1q_1
	P_0	q_0	P_1	q_1				
A	10	5	20	2	50	100	20	40
B	15	4	25	8	60	100	120	200
C	40	2	60	6	80	120	240	360
D	25	3	40	4	75	120	100	160
Total					265 ΣP_0q_0	440 ΣP_1q_0	480 ΣP_0q_1	760 ΣP_1q_1

Calculate the index number using the following formulas:

- (i). Laspeyre's formula (2 mks)
- (ii). Paasche's formula (2 mks)
- (iii). Dorbish Bowley's formula (2 mks)
- (iv). Fisher's Ideal formula (2 mks)
- c). List 2 applications of Statistics (2 mks)
- d). Shannon hits the snooze bar on her alarm clock on 60% of school days. If she does not hit the snooze bar, there is 0.90 probability that she makes it to class in time. However, if she hits the snooze bar, there is only a 0.70 probability that she makes it to class on time.
- (i). Use a tree diagram to express this situation (3 Mks)
- (ii). On a randomly chosen day, what is the probability that Shannon is late for class? (2 Mks)
- (iii). Suppose that Shannon is late for school, what is the probability that she hits the snooze bar that morning? (3 Mks)

QUESTION FOUR

- a). Describe the procedure of approximating the outliers using the two methods known to you. (10 mks)

- b), i) What is meant by regression analysis? (2 Mks)
- ii) Use the data below to determine the two linear regression coefficients b_0 and b_1 and then write the regression equation with the two approximated parameter values. Then, sketch the results. (8 Mks)

x	1	2	3	4	5
y	2	4	5	4	5

QUESTION FIVE

- a). Using the data for minutes between earthquake eruption below 76, 84, 76, 103, 92, 47, 98, 54, 80, 91, 69, 86, 83, 75, 93, 89, 96, 65, 94, 85.
- (i). Construct the frequency table by using 6 classes. (5 Mks)
 - (ii). Construct a Frequency Histogram. (5 Mks)
 - (iii). Construct a Frequency polygon (3 Mks)
 - (ii). Construct an Ogive (3mks)
- b). Explain two branches of statistics (4 mks)