KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF THE
POST – GRADUATE DIPLOMA IN EDUCATION
FIRST SEMESTER, 2021/2022
(JUNE - SEPTEMBER, 2022)

PGDE 704: STATISTICS AND RESEARCH METHODS

STREAM: Y1 S1 **TIME: 2 HOURS**

DAY: TUESDAY, 9:00 – 11:00 A.M. **DATE: 13/09/2022**

INSTRUCTIONS

1. Do not write anything on this question paper.
Answer Question ONE [Compulsory] and any other TWO Questions.

QUESTION ONE

1. a) Using appropriate illustrations, distinguish between the following terms:
   - i. class limit and class boundary (2Marks)
   - ii. inclusive classification and exclusive classification (2Marks)
   - iii. Highlight four major characteristics of statistics (2Marks)
   - iv. Differentiate between discrete data and continuous data (2Marks)
   - v. Explain the four importance of statics in business (4Marks)

b) i. State three limitations of statistics (3Marks)

ii. State three characteristics of a table (3 Marks)

iii. Distinguish between inferential statics and descriptive statistics citing examples in each (2 Marks)

c). i. The following are the scores of students in a statistic examination:

35	50	30	40	42	49	60	20	60	55	13	80	
50	40	45	35	38	30	50	45	93	40	20	70	
60	48	30	92	59	12	40	90	50	50	68	48	
56	45	40	60	70	43	55	10	90	82	60	40	
70	70	08	37	09	15	24	68	89	10	90	80	

Classify this information into ten equal classes using the inclusion method of classification with a class interval of 10 with the last class under 99 and use your classified data to graphically to locate the mode. (5 Marks)

ii. Calculate the median of the class. (5 Marks)

QUESTION TWO

a. Statistics is important, but it has its limitations. Explain four limitations of statistics (4Marks)

b. The table shows the daily wages of 85 workers in the construction industry

Wage	Freq
150-250	4
250-350	9
350-450	A
450-550	22
550-650	B
650-750	10
750-850	6
850-950	3

i) Given the lower quartile ($Q_{1)}$=405, calculate the values of A and B (4 Marks)

ii. Calculate the mean (3 Marks)

iii. Calculate the standard deviation. (3 Marks)

a) Describe the four components of time series (6 Marks)

QUESTION THREE

a. Describe the four components of time series (6 Marks)

b. The following table show the profits of affirm:

Year	1	2	3	4	5	6	7	8	9	10
Profit '000'	69	81	113	84	76	78	99	89	98	119

i) Calculate a three year moving average of the profits (4Marks)

c. Given the following table:

X	20	21	22	23	24	25	26
Y	1	6	13	16	10	8	3

i) Calculate the first four moments and then calculate a measure of Kurtosis and comment on the type of distribution.(10mks)

QUESTION FOUR

a) The table below presents a precedence table of activities and estimates duration for a project in Kenya. Assuming that this project will work standing working (five working in one week) and that all the tasks will start as soon as possible.

Task	Description	Duration working day	Predecessor
A	Requirement analysis	-	-
B	System design	15	A
C	Programming	25	B
D	Telecoms	15	B
E	Hardware installation	30	B
F	Integration	10	C,D
G	System testing	10	E,F
H	Training/ support	5	G
I	Hand over & go-live	5	H

i. Draw and label critical path diagram to show relationship (4 Marks)

ii. Determine the critical; path of the project (2 Marks)
iii. Calculate the plan duration of the projects weeks (2 Marks)
iv. Identify any non-critical paths and explain the reason as to why (4Marks)
v. Discuss the advantage and disadvantage of using critical path analysis in planning of work activities (4 Marks)

a) Consider the following distribution of marks scored by 60 students in a business statistics assignment. The modal mark is known and is given as 36.

Marks	0-15	15-30	30-45	45-60	60-75-	75-90
No. of students	8	12	F1	8	F2	6

i. Finding the missing frequencies f1 and f2 then compute the mean, median and standard deviation of this distribution. (4Marks)

QUESTION FIVE

a) The scores of students in a statics examination are as follows:

35	50	30	40	42	49	60	65	60	55
50	40	45	35	38	30	50	45	50	50
60	48	38	92	59	30	55	45	50	43
56	45	40	61	72	43	24	10	95	82
70	69	08	37	64	35	36	58	90	50

i. Classify this information into six equal classes using the exclusive method with a class interval of 15 and the upper limit of one of the classes must be 50. (6Marks)
ii. Using the less than o give, graphically locate Q_1,Q_2,Q_3,D_7, and state the value of the median (4Marks)

4. The following data shows marks obtained by 160 students in a class.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of students	5	10	4	030	25	20	15	10	3	2

Required:

a. Calculate the arithmetic mean of marks, mode and median (6Marks)

b. Describe the four components time series (4Marks)

QUESTION SIX

a) Calculate the correlation coefficient from the following data below:

X	100	200	300	400	500	600	700
Y	30	50	60	80	100	110	130

(10 Marks)

b) Two laboratories in Kisii University A&B carried out independent test on fat content in ice-scream. A sample is taken from each bunch halved and the separate halves taken to two laboratories. The mean fat content obtained from lab A is 6.7 while laboratory B is 7.0. Given the standard donation (s.d) is 1.73 and each bunch contain 10 items, test whether there is a significant difference between the mean fat content obtained by the two laboratories testing at 5%. (10Marks)