

2428/204
STATISTICS
June/July 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN SOCIAL WORK AND COMMUNITY DEVELOPMENT

MODULE II

STATISTICS

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of EIGHT questions.
Answer FIVE questions in the answer booklet provided.
All questions carry equal marks.
Maximum marks for each part of a question are as indicated.
Candidates should answer the questions in English.*

This paper consists of 5 printed pages.

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

1. (a) Highlight **four** disadvantages of survey research. (8 marks)
- (b) The following information was obtained from a given financial institution. The information refers to the loans given out in 1999 to several firms. Use the information to calculate the mean and standard deviation for the loans. (12 marks)

Loan	1100 - 1200	1200 - 1300	1300 - 1400	1400 - 1500	1500 - 1600
Firm	5	9	14	15	7

2. (a) Explain the following types of sampling:
- (i) Purposive sampling; (2 marks)
 - (ii) Quota sampling; (2 marks)
 - (iii) Snowball sampling; (2 marks)
 - (iv) Judgement sampling. (2 marks)

- (b) The following data relates to a given stock item used by a manufacturing firm:

Normal usage	560 units per day
Minimum usage	2440 units per day
Maximum usage	710 units per day
Lead time	15 - 20 days
EOQ	10,000 units

Using the above data, calculate the following various control levels:

- (i) Reorder level; (2 marks)
 - (ii) Maximum stock level; (3 marks)
 - (iii) Minimum stock level. (3 marks)
- (c) A company uses 100,000 units of a certain material per year, which cost Ksh 3 each. Carrying costs are 1% per month and ordering costs are Ksh 250 per order. Calculate EOQ. (4 marks)

$P(A) = 0.6$, $P(B) = 0.5$ and $P(C) = 0.7$

A vehicle engine comprises of 3 parts; A, B and C. The engine may operate if at least 2 parts are working. The probability of each part working are given as shown below:

(8 marks)

(12 marks)

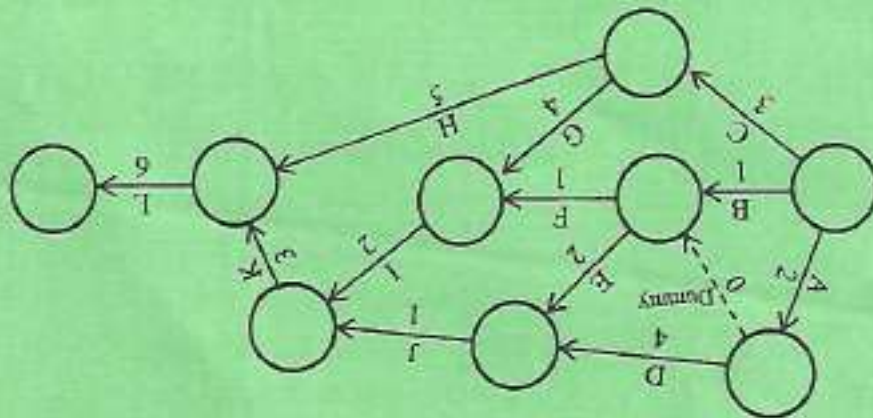
Explain four limitations of statistics.

- (i) critical path;
- (ii) expected project duration.

From the completed network diagram, state the:

Activity	Preceding activity	Duration (weeks)

Fill in the table below concerning the network diagram.



3. (a)

The network diagram shown below is of a project which entails 12 activities, duration given in weeks.

A mechanical engineer went to inspect the working conditions of these engine parts. Calculate the probability of having the following outcomes.

- (i) Only one engine part operating. (2 marks)
 - (ii) Two engine parts are operating. (2 marks)
 - (iii) All the three parts are operating. (2 marks)
 - (iv) No part is operating. (2 marks)
 - (v) At least two parts are operating. (2 marks)
 - (vi) At most two parts are operating. (2 marks)
- (b) Explain **four** functions of a cash flow statement. (8 marks)

5 ✓ (a) Differentiate between the following pairs of terms:

- (i) Point estimator an interval estimator. (4 marks)
 - (ii) Z-test and t-test. (4 marks)
- (b) The blood pressure PmmHg) and the ages, t years, of 7 hospital patients are shown in the table below.

Patient	A	B	C	D	E	F	G
Age (t years)	42	74	48	35	56	26	60
PmmHg	98	130	120	88	182	80	135

Calculate the Product Moment Correlation Co-efficient from the data and give the interpretation of the correlation co-efficient calculated. (12 marks)

6 ✓ (a) Briefly explain the **four** components of time series. (8 marks)

- (b) (i) A company X deposited Ksh 8000 into an account, paying 7% annual interest, compounded quarterly. Calculate the number of years it shall take to earn an amount of Ksh 12,400. (6 marks)
- (ii) A project costs Ksh 1,000, with a three year cash flows of Ksh 500, Kh 300 and Ksh 800, respectively, over the next three years. The required rate of return is 8%. Calculate the Net Present Value (NPV) of the project. (6 marks)

7. (a) The following table shows the levels of gratuity benefits given to a group of mapping assistants at Kenya National Bureau of Statistics.

Gratuity benefits Ksh 000'	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89
Number of mapping assistants (M/A)	50	69	70	90	52	40	11

- (i) Determine the interquartile range for the above data. (8 marks)
- (ii) Determine the minimum value for the top ten per cent (10%). (4 marks)
- (iii) Determine the maximum value for the lower 40% of the gratuity. (4 marks)
- (b) A small college in Kotuu County has 40 students in the Diploma in Social Work class. 16 of the students are men while the rest are women. One morning, 14 of the women went to the college wearing mini-skirts while one quarter of the male students turned up in long trousers called, "I can't reach down". A student was selected at random from the social class. Calculate the probability that the student selected was:

- (i) a man but did not wear the, "I can't reach down", long trouser.
- (ii) a woman and wore a mini skirt. (4 marks)

8. (a) Explain the following terms as commonly used in statistical calculations:

- (i) Class limits; (2 marks)
- (ii) Class boundaries; (2 marks)
- (iii) Class mid points; (2 marks)
- (iv) Class interval. (2 marks)

- (b) The data below shows the exports of manufactured goods of a country during the years 1980 to 1986.

Year	1980	1981	1982	1983	1984	1985	1986
Export (tons)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140
No of export	6	18	32	48	27	13	2

Calculate the:

- (i) mode;
- (ii) median. (12 marks)

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