

2901/305
STATISTICS
July 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN SECRETARIAL STUDIES

STATISTICS

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of SEVEN questions.
Answer any FIVE questions in the answer booklet provided.
All questions carry equal marks.
Candidates should answer the questions in English.*

This paper consists of 4 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) Outline four advantages of Arithmetic Mean as a measure of central tendency. (10 marks)
- (b) The data below shows ages of employees in two companies, X and Y.

Age in company X	24	28	29	29	29	31	31	34	36	39
Age in company Y	19	21	23	28	22	30	28	30	29	30

- (i) Calculate Karl Pearson's coefficient correlation. (10 marks)
- (ii) Comment on the results in (i) above. (10 marks)
2. (a) Explain four ways in which bias may arise in sampling. (8 marks)
- (b) Amingoh Limited has identified a project that will cost Ksh 20,000,000. According to the forecasts, the project is expected to generate net cash inflows as follows:

Year	Ksh '000'
1	9000
2	8000
3	7000

The company's cost of capital is 12%.

- (i) Determine the net present value (NPV) for this project. (12 marks)
- (iii) Advise the management on whether to invest in the project or not. (12 marks)
3. (a) DY limited has a total of 9 employees. The company intends to select five of the employees to participate in a contest. Determine the number of ways this can be done. (8 marks)
- (b) Highlight six uses of index numbers in statistics. (12 marks)
4. (a) Determine the value of x in the following matrices: (8 marks)
- $$\begin{pmatrix} 1 & x^2 + 12 \\ x + 4 & 3 \end{pmatrix} = \begin{pmatrix} 1 & 7x \\ x + 4 & 3 \end{pmatrix}$$
- (b) Highlight six sources of secondary data. (12 marks)

5. (a) Outline the procedure that should be adopted in interval estimation. (8 marks)

(b) Jamah Limited intends to invest Ksh 115,000 in a project whose expected net cash inflows are as follows:

Year	Ksh '000'
1	50,000
2	40,000
3	30,000
4	20,000

Determine the internal rate of return (IRR) for the project.

(Use the discounting rates of 9% and 11%)

(12 marks)

6. (a) Explain each of the following terms as used in network analysis:

I. An event.

II. Activity

III. Project

IV. Dangling activity

V. Arrow diagram

VI. Critical path.

(12 marks)

(b) The demand for an item is constant at 900 units per year. The unit cost is Ksh 200 and the ordering cost per order is Ksh 150. The annual carrying cost is 12.5% of the cost per unit.

Determine the Economic Order Quantity. (EOQ).

(8 marks)

7. (a) Explain each of the following terms as applied in set theory.

(i) Null set;

(ii) Universal set;

(iii) Equal sets;

(iv) Subset.

(8 marks)

(b) The following data relates to the heights and weights of 10 employees of a firm:

Height (cm)	171	161	167	157	164	169	168	162	159	165
Weight (kg)	64	49	62	49	53	59	60	54	53	6

(i) Draw a scatter graph;

(ii) Comment on the correlation between the height and weight, as indicated by the graph in (i) above.

(12 marks)