

2428/204  
STATISTICS  
Oct./Nov. 2021  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN SOCIAL WORK AND COMMUNITY DEVELOPMENT  
MODULE II

STATISTICS

3 hours

INSTRUCTIONS TO CANDIDATES

*You should have the following for this examination:*

*Answer booklet;*

*Mathematical tables;*

*Calculator.*

*This paper consists of EIGHT questions.*

*Answer a total of FIVE questions.*

*All questions carry equal marks.*

**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.**

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**Turn over**

- ✓ (a) State and explain **four** functions of social statistics. (8 marks)
- (b) The quality controller in XY Limited had an accurate record of the lengths of brooms produced in January 2016. The following data shows these records.

Broom lengths (cm)	201-250	251-300	301-350	351-400	401-450	451-500	501-550
No. Brooms	25	36	49	80	51	42	30

Calculate the standard deviation of the lengths of the brooms. (12 marks)

2. (a) Highlight **four** advantages of tabulation of data. (8 marks)
- (b) In a football competition, two referees were asked to rank the ten participating teams using the professional assessment skills. The results obtained were given as shown in the table below.

Teams	A	B	C	D	E	F	G	H	I	J
1 <sup>st</sup> Referee	6	1	3	7	8	2	4	5	10	9
2 <sup>nd</sup> Referee	5	3	4	6	7	1	8	2	9	10

Calculate the Rank Correlation Co-efficient and comment briefly on the value obtained. (12 marks)

3. (a) Explain the following terms as used in the elements of probability?
- (i) Events (2 marks)
- (ii) Conditional probability (2 marks)
- (iii) Mutually exclusive events (2 marks)
- (iv) Independent events. (2 marks)
- (b) The following are the monthly sales made by Kwega Limited for the year 2004.

Month	Sales
January	450
February	440
March	460
April	410
May	380
June	400
July	370
August	360
September	410
October	450
November	470
December	490
January	460

From the above information, determine the following:

- (i) Three monthly moving averages; (2 marks)
- (ii) Six monthly moving averages; (3 marks)
- (iii) Twelve monthly moving average. (3 marks)
- (c) Highlight **two** limitations of moving averages. (4 marks)
4. (a) Explain the following terms as used in network analysis:
- (i) Network; (2 marks)
- (ii) Event; (2 marks)
- (iii) Activity. (2 marks)
- (b) The following are marks scored by 50 students in an examination.

~~20, 30, 32, 21, 28, 38, 58, 40, 43~~  
~~41, 55, 49, 47, 44, 53, 61, 66, 62~~  
~~72, 80, 77, 63, 69, 70, 64, 73, 88~~  
~~89, 81, 92, 84, 91, 99, 96, 84, 97~~  
~~21, 30, 60, 80, 54, 60, 70, 82, 70~~  
~~25, 30, 70, 41, 93~~

- (i) Prepare a frequency distribution table, using the exclusive method, with a class interval of 10, starting with 20-30.
- (ii) Calculate the mean mark. (14 marks)

5. (a) Highlight **four** economic advantages of taking a sample rather than a census in a survey. (8 marks)

(b) The following contingency table presents data collected by a researcher.

	Men	Women	Boys	Girls	Total
Kenyans	332	318	29	27	706
Ugandans	1,360	104	35	18	1,517
Total	1,692	422	64	45	2,223

If one person is selected at random, find the probability that the person selected:

- (i) is either a man or woman; (3 marks)
- (ii) is either a Kenyan or a Ugandan. (3 marks)
- (iii) is either a boy or a girl or a woman. (3 marks)
- (c) The probability that a customer visiting a hotel will order for ugali and fish is known to be 0.4. If 15 customers visit the hotel one day, calculate the probability that 10 of them shall order for ugali and fish. (3 marks)
6. (a) Bakery Limited made an investment of Ksh. 200,000 which is expected to generate the following cash inflows in six years.

Year	1	2	3	4	5	6
Cash inflow (Ksh)	70,000	60,000	55,000	40,000	30,000	25,000

- (i) Compute the payback period of the investment. (10 marks)
- (ii) The management wants to recover the initial investment in 3 years or less. State whether the investment should be accepted or not. (2 marks)
- (b) Highlight **four** characteristics of a good estimator. (8 marks)

7. (a) In 1985, five firms registered the following economic growth rates: 28%, 32%, 41%, 18% and 36%.  
Calculate the geometric mean growth rate. (6 marks)
- (b) Highlight six steps followed in conducting ABC analysis. (12 marks)
- (c) Explain the concept of 'carrying costs'. (2 marks)
8. (a) Explain the following measures of dispersion:
- (i) Quartile deviation; (2 marks)
  - (ii) Range; (2 marks)
  - (iii) Average deviation; (2 marks)
  - (iv) Variance. (2 marks)
- (b) A learning institution is considering building a storey classes. The following activities and time estimates relate to the project.

Activity	Preceding activity	Duration in months
A	-	4
B	-	1
C	A	3
D	B	2
E	A	4
F	D, E	2
G	B	5
H	C, F	2
I	G, H	3

- (i) Draw a network diagram for the project. (12 marks)
- (ii) Determine the:
- (I) critical path;
  - (II) expected project duration.

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