

2902/204 2909/204

2908/204 2920/204

QUANTITATIVE METHODS

November 2018

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN SALES AND MARKETING
DIPLOMA IN HUMAN RESOURCES MANAGEMENT
DIPLOMA IN ROAD TRANSPORT MANAGEMENT
DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY**

MODULE II

QUANTITATIVE METHODS

3 hours

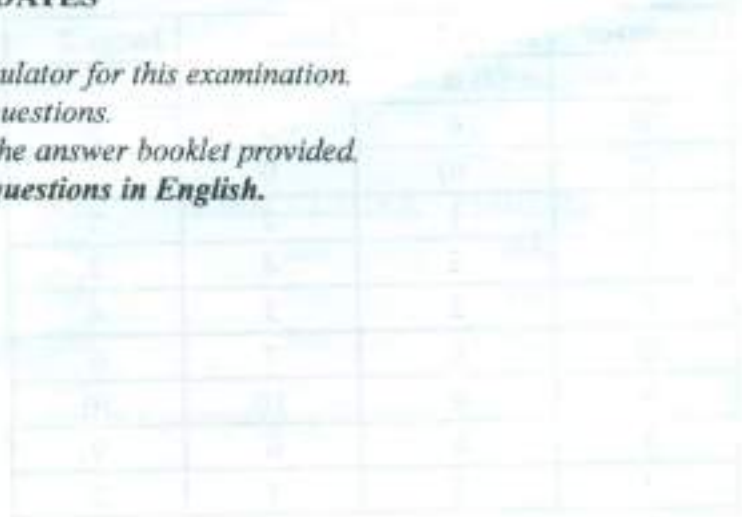
INSTRUCTIONS TO CANDIDATES

You should have a scientific calculator for this examination.

This paper consists of SEVEN questions.

Answer any FIVE questions in the answer booklet provided.

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) Explain five advantages of using interview as a method of data collection. (10 marks)
- (b) A company advertised for a position of a Managing Director. The number of applicants for the position were 50, out of which 10 were shortlisted for interview. Determine the probability that an applicant selected at random will be:
- shortlisted for interview;
 - shortlisted for interview and employed as the Managing Director;
 - employed as the Managing Director, given that he has been shortlisted for interview;
 - shortlisted for interview and not employed as the Managing Director;
 - not shortlisted for interview.
- (10 marks)

2. (a) Differentiate between each of the following terms as used in financial mathematics:
- perpetuity and annuity;
 - ordinary annuity and annuity due.
- (8 marks)
- (b) The following are the ranks awarded to ten employees in a company by three judges X, Y and Z according to their performance.

Employee	Judge X	Judge Y	Judge Z
A	4	8	8
B	7	5	5
C	10	9	7
D	1	2	1
E	5	4	3
F	2	3	4
G	6	7	6
H	9	10	10
I	8	6	9
J	3	1	2

- Calculate Spearman's rank correlation coefficient for each pair of judges.
 - Based on the results in (i) above, determine the pair of judges that were most consistent in their ranking.
- (12 marks)

- 3/ (a) Explain five reasons for classification of data. (10 marks)
- (b) The following information shows the distribution of salaries of employees in a company:

<u>Salary (Ksh 000's)</u>	<u>Number of employees</u>
10-20	4
20-30	24
30-40	16
40-50	12
50-60	16
60-70	6
70-80	10
80-90	8
* 90-100	4

Determine the:

- (i) mean salary;
- (ii) median salary;
- (iii) standard deviation.

(10 marks)

4. (a) Explain five reasons that make sampling to be preferred to census in the collection of data. (10 marks)
- (b) The following information shows the contribution to the national income in millions of shillings by three sectors of an economy:

<u>Year</u>	<u>MINING</u>	<u>AGRICULTURE</u>	<u>FISHING</u>
2015	150	550	300
2016	200	950	100
2017	280	700	420

Present the information in a percentage component bar chart. (10 marks)

5. (a) Explain the **four** components of a time series. (8 marks)
- (b) The following information shows the number of years of experience of ten salespersons and their respective annual sales.

<u>Years of experience</u>	<u>Annual sales (Ksh 000)</u>
8	200
6	180
4	100
10	500
7	180
4	120
6	200
7	220
14	600
8	240

- (i) Determine the regression equation of annual sales on years of experience.
- (ii) Based on the result in (i) above, estimate the annual sales of a sales person with 12 years of experience. (12 marks)

- (a) Explain **five** rules that should be followed when drawing graphs to present information. (10 marks)
- (b) The following is a distribution of profits in millions of shillings of 159 companies in the same industry.

<u>Profit (Ksh millions)</u>	<u>Number of companies</u>
0-5	10
5-10	17
10-15	28
15-20	40
20-25	35
25-30	20
30-35	9

Calculate the:

- (i) quartile deviation;
- (ii) percentile 70 (P_{70}).

(10 marks)

✓ (a) Explain the meaning of each of the following terms as used in financial mathematics:

- (i) interest;
- (ii) principal;
- (iii) discounting;
- (iv) compounding;
- (v) sinking fund.

(10 marks)

(b) The following are the sales of a company for the first ten months of the year 2017:

<u>Month</u>	<u>Sales (Ksh. million)</u>
January	20
February	18
March	22
April	35
May	27
June	28
July	38
August	33
September	31
October	41

- (i) Using three-period moving averages, determine the trend values of the sales.
- (ii) Based on the results in (i) above, comment on the trend of the sales.

(10 marks)

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