1903/102
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BUSINESS CALCULATIONS AND STATISTICS
July 2022
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE IN SUPPLY CHAIN MANAGEMENT
CERTIFICATE IN BUSINESS MANAGEMENT
CERTIFICATE IN PROJECT MANAGEMENT
CERTIFICATE IN HUMAN RESOURCE MANAGEMENT
BUSINESS CALCULATIONS AND STATISTICS

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **TWO** sections; A and B.*
*Answer **ALL** the questions in both sections A and B in the answer booklet provided.*
Show all your working.
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.

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SECTION A (40 marks)

Answer ALL the questions in this section in the spaces provided.

1. A father is 4 times as old as his son. He is 11 years older than his wife. The sum of their ages is 124. Determine the son's age. (2 marks)

2. A job can be done in 40 days by 30 men. Determine the number of men that will be required to finish the same job in 15 days. (2 marks)

3. 5% of the value of a property is Ksh 17,500. Calculate 95% of the value of the property. (2 marks)

4. Define the term, applied statistics, as used in statistics. (1 mark)

5. A factory produced 1,250 pans in the first month. The number of pans produced per month increased by 130. Determine the expected number of pans produced in 12 months. (2 marks)

6. A Kenyan bought a car from Zimbabwe for 120,000 Zimbabwean dollars. He sold it in Kenya at a profit of 15%. Given that 1 Zimbabwean dollar is equal to Ksh 9.84, calculate his profit in Kenya shillings. (3 marks)

7. Distinguish between physical type and arbitrary type of statistical units. (2 marks)

8. The cost of a T.V set is Ksh 23,900 on hire purchase terms. A customer bought it by paying deposit of Ksh 2,300 and 16 equal monthly instalments. Calculate the amount of each instalment. (2 marks)

9. A farmer bought a machine at Ksh 110,000. It depreciated at the rate of 15% p.a on reducing balance method. Calculate its value after 3 years. (2 marks)

10. Differentiate between qualitative type of data classification and quantitative type of data classification. (2 marks)

11. The mean age of 15 boys in a class is 19 years. On a day when one of the boys was absent, rest gave their ages as follows: 20, 22, 16, 18, 17, 21, 18, 20, 17, 18, 19, 20, 19, 21. Determine the age of the absent boy. (2 marks)

12. State **two** rules to consider when deciding on the use of range. (2 marks)

13. Three representatives are to be selected randomly from a group of 7 girls and 8 boys. Calculate the probability of selecting the first two representatives being girls and the third one a boy, without replacement. (3 marks)

14. A shopkeeper incurred a loss of 30% by selling an electric iron at Ksh 700. Calculate the profit he would have made had he sold it for Ksh 1,150. (2 marks)

15. State **two** disadvantages of using a pie chart in data presentation. (2 marks)

16. Mary has 21 coins whose total value is Ksh 72. There are twice as many five shilling coins as there are ten shillings coins. The rest are one shilling coins. Determine the number of ten shilling coins. (2 marks)

17. A company insures its vehicles against theft. The total value of the vehicles is Ksh 840,000,000. An annual premium is charged at the rate of Ksh 4 for every Ksh 1,000. Calculate the premium. (2 marks)

18. Define the term, regression, as used in statistics. (1 mark)

19. Highlight **two** methods of constructing a weighted aggregate index. (2 marks)

20. Differentiate the following equation: $Y = 4x^3 + 16x^2 - x + 30$. (2 marks)

SECTION B (60 marks)

Answer ALL the questions in this section.

21. (a) Explain **four** limitations of using index numbers. (8 marks)

    (b) The following table shows the distribution of monthly income of 600 families in a certain city.

Monthly income (Sh) "000"	Number of families
Below - 75	60
75 - 150	170
150 - 225	200
225 - 300	60
300 - 350	50
375 - 450	40
450 and over	20

Using the information above, draw less than ogive curve to presented the data. (7 marks)

22. (a) A saleslady is paid a commission of 2% on sale over Ksh 100,000. She is also paid monthly salary of Ksh 12,000. In a certain month, she sold 360 handbags at Ksh 500 each.

    (i) Determine the saleslady's total earnings that month.

    (ii) In the following month, the saleslady's monthly salary was increased by 10%.

    Her total earnings that month was Ksh 17,600. Calculate:

    (I) total amount of money received from the sale of handbags that month.

    (II) number of handbags sold in that month.

                                                              (9 marks)

(b) The mean salary paid to 1,000 employees in a firm was found to be Ksh 18,000. Later on, after disbursement of the salary, it was discovered that the salary of two employees were wrongly entered as Ksh 29,700 and Ksh 16,500. Their correct salaries were Ksh 19,700 and Ksh 18,500. Determine the correct arithmetic mean.   (6 marks)

23. (a) Explain **four** factors that should be considered when collecting data for a particular investigation.   (8 marks)

(b) The cost of a minibus was Ksh 950,000. It depreciated on book value by 5% per year for the first two years and by 15% per year for the subsequent years.

    (i) Calculate the value of the minibus after 5 years.

    (ii) After 5 years, the minibus was sold at 25% more than its book value. Calculate the gain made out of the sale.

                                                               (7 marks)

24. (a) Two business partners, Kamau and Ochwinjo, contributed Ksh 112,000 and Ksh 128,000, respectively to their business. They agreed to share profits as follows:

- 30% to be shared equally.
- Another 30% of the total profit to be shared in the ratio of their capital contribution, and the balance to be retained for running the business.

If the total profit for the year 2019 was Ksh 86,400. Calculate the amount:

    (i) received by each partner.
    (ii) retained for running the business.

                                                             (6 marks)

(b) In January 2018, a firm employed 120 staff of whom 63 were female. During the year, 14 staff members left and 5 of these were female. The total recruitment during the year was 16, out of whom, 7 were male. During 2019, wastage declined by 4 amongst men compared with 2018 and no female left. 8 more male but 3 fewer female were recruited than the previous year. The total number employed on 1st January 2020, amounted to 138. Present the above information in a tabular form.

(9 marks)

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