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**BUSINESS CALCULATIONS AND
STATISTICS**

July 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**CRAFT CERTIFICATE IN PROJECT MANAGEMENT
CRAFT CERTIFICATE IN SUPPLY CHAIN MANAGEMENT
CRAFT CERTIFICATE IN BUSINESS MANAGEMENT**

MODULE I

BUSINESS CALCULATIONS AND STATISTICS

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **TWENTY FOUR** questions in **TWO** sections: **A** and **B**.*

*Answer **ALL** the questions in both sections in the answer booklet provided.*

*Show **ALL** your workings.*

Maximum marks for each part of a question are as shown.

*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.**

SECTION A (40 marks)

Answer **ALL** the questions in this section.

1. The list price of a radio is Ksh. 4,000. The radio was sold at Ksh. 3,540. Determine the percentage discount allowed. (2 marks)
2. A business lady invested Ksh. 170,000 in a bank at a simple interest rate of 6% per annum. Calculate the number of years it will take for the investment to amount to Ksh. 210,800. (2 marks)
3. A car dealer bought a car at Ksh. 560,400 and sold it at a profit of 16%. Determine the selling price of the car. (2 marks)
4. A residential house in Bali County is valued at Ksh. 6,500,000. The yearly rates are charged at Ksh. 4 for every Ksh. 1,000. Determine the amount of annual rates payable. (2 marks)
5. Stocks of goods valued at Ksh. 800,000 are insured at the rate of $2\frac{1}{2}\%$ per annum. Determine the annual insurance premium payable. (2 marks)
6. State the difference between Laspeyre's index and Paasche's index. (2 marks)
7. Assume that the price of a litre of petrol in Kenya is Ksh. 110.04 while the price of petrol per litre in England is £0.95. Determine the country that sells petrol at a cheaper price.
Take £.1 = Ksh. 140. (2 marks)
8. Determine the next two terms in the following sequence: 4, 9, 15, 22,,, (2 marks)
9. John bought a motorbike on hire purchase terms by paying a deposit of Ksh 25,000 and the balance was to be paid in 24 equal monthly instalments of Ksh 3,125. Determine the hire purchase price of the motorbike. (2 marks)
10. State **two** functions of statistics in decision making. (2 marks)
11. A factory employed 90 unskilled workers, 70 semi-skilled and 140 skilled workers. Present the information using a pie-chart. (2 marks)
12. Differentiate between primary data and secondary data, as methods of data collection. (2 marks)
13. Differentiate $y = 2x^2 - 4x + 10$, with respect to x and determine the value of the derivative when $x = 3$. (2 marks)
14. State **two** advantages of tabulating data. (2 marks)

15. Peter and Ali shared an amount of Ksh. 52,100. Ali's share was $\frac{2}{3}$ of the amount received by Peter. Determine the amount that Peter received. (2 marks)
16. A trader bought 20 shirts at Ksh. 220 each and 10 shirts at Ksh. 250 each. Determine the average price of the shirts. (2 marks)
17. Define each of the following terms as used in probability theory:
- (i) Mutually exclusive events;
(ii) Independent events. (2 marks)
18. State **two** methods used to determine a regression line for a set of bivariate data. (2 marks)
19. In a given set of data, $\sum f(x - \bar{x})^2$ is 24 and the standard deviation is 2. Determine the number of items in the set of data. (2 marks)
20. A trader bought 4 bags of maize at Ksh. 3,600 each, 6 bundles of maize meal at Ksh. 1,200 each and 2 bags of sugar at Ksh. 4,750 each. He was charged a 16% Value Added Tax on total cost. He gave the cashier Ksh. 37,000. Determine the amount of balance that he received. (2 marks)

SECTION B (60 marks)

Answer ALL the questions in this section.

21. (a) Abdi wishes to invest Ksh. 100,000 and he has two options, I and II.
- Option I** - To invest in a fixed deposit account with a merchant bank at a simple interest rate of 10% per annum for 3 years.
- Option II** - To invest in a fixed deposit account with a housing finance company at a compound interest rate of 10% per annum for 3 years. Advise Abdi on the best option to invest in. (8 marks)

- (b) In the month of August 2016, a manufacturing company had 100 employees and their average monthly wage was Ksh. 20,000. In the month of November, 2016, the company increased its labour force by 10% and the monthly wage bill increased to Ksh 2,100,000.

Determine the:

- (i) additional number of employees;
- (ii) average monthly wage for the new employees;
- (iii) new average monthly wage bill for all the employees of the company.

(7 marks)

22. (a) A civil servant earns a basic salary of Ksh. 65,050 per month and a house allowance of Ksh 12,000 per month. He pays tax as per the table below:

Total Income per month (Ksh.)	Tax rate, %
First 10,164	10
Next 9576	15
Next 9,576	20
Next 9,576	25
Over 38,892	30

He is entitled to a monthly personal tax relief of Ksh. 1,162. Calculate his net salary per month.

(8 marks)

- (b) A trader arrived in Kenya and had 2,000 Sterling Pounds, £, 5,000 US dollars, 100,000 Japanese Yen (JPY) and 20,000 South African Rands. He converted all the currency to Kenya shillings and was charged a bank commission of 2%. He also paid Ksh. 500,000 for customs duty for goods he had brought to Kenya to sell.

Determine the balance the trader had in Kenya shillings. Take:

£ 1	=	Ksh. 140
1 US Dollar	=	Ksh. 86.58
100 JPY	=	Ksh. 85.67
1 SA Rand	=	Ksh. 7.70

(7 marks)

23. (a) The table below shows the price indices of items consumed in a region in the year, 2010:

Food item	Weight	Price Index
Maize	4	185
Wheat	3	200
Potatoes	1	150
Milk	2	180
Meat	2	140
Sugar	3	210
Tea	2	162
Cooking fat	1	200
Rice	2	170

(i) Calculate the cost of living price index for the year 2010.

(ii) Comment on the result in (i) above.

(7 marks)

- (b) The table below shows the distribution of weights, in kilograms of units of product K_1 , sold by a distributor in one day.

Weight kg "00"	1 - 6	7 - 12	13 - 18	19 - 24	25 - 30
Number of units of K_1	1	4	7	6	2

Determine the standard deviation of the weights.

(8 marks)

24. (a) Highlight **four** limitations of using statistics in business decision making. (8 marks)

- (b) In a production process, for every batch of 6 items produced, 2 are defective. A random sample of 3 items is selected from the batch.

Determine the probability that the sample has:

- (i) no defective item;
- (ii) one defective item;
- (iii) at least one defective item.

(7 marks)

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