

CHUKA

UNIVERSITY



UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF CERTIFICATE IN PROCUREMENT  
AND LOGISTICS MANAGEMENT AND CERTIFICATE IN BUSINESS  
MANAGEMENT**

**CPLM 00131: BUSINESS MATHEMATICS**

**STREAMS: CPLM (Y1S1) (ODEL)**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 14/04/2025**

**2.30 P.M. – 4.30 P.M.**

**INSTRUCTIONS**

- **Answer Question ONE and any other TWO questions**

**QUESTION ONE**

a) Distinguish between the following terms as used in business mathematics:

- Discounting and Compounding (3 marks)
- Simple interest and Compound interest (3 marks)
- Primary data and Secondary data (3 marks)

b) The table below shows the marks obtained by students in a Business Mathematics class:

<b>Marks</b>	<b>No. of Students</b>
0 – 20	5
20 – 40	12
40 – 60	25
60 – 80	18
80 – 100	10

**Required:**

- Calculate the mean marks. (2 marks)
- Determine the median marks. (3 marks)

iii) Calculate the standard deviation. (4 marks)

iv) Compute the coefficient of variation. (2 marks)

c) A businesswoman invests Ksh. 10,000 at the beginning of each year for 5 years in a savings plan that offers a compound interest rate of 8% per annum. Calculate:

i) The total amount accumulated at the end of the 5th year. (3 marks)

ii) The total interest earned over the 5 years. (2 marks)

d) A trader purchased 150 items at a total cost of Ksh. 45,000. If the trader wishes to make a profit of 25% on the selling price, determine the selling price per item. (5 marks)

### QUESTION TWO

a) Explain three methods of collecting primary data in business research. (6 marks)

b) A company purchased a machine on hire purchase terms. The cash price of the machine is Ksh. 120,000. The hire purchase terms require a down payment of 20% of the cash price and 12 monthly installments of Ksh. 10,000 each. Calculate:

i. The hire purchase price of the machine. (3 marks)

ii. The total interest paid on the hire purchase plan. (3 marks)

iii. The rate of interest charged per month on the hire purchase plan. (5 marks)

c) On 1st January 2023, a company had an opening stock worth Ksh. 50,000. During the year, the company purchased goods worth Ksh. 300,000. On 31st December 2023, the closing stock was valued at Ksh. 40,000. If the sales for the year were Ksh. 500,000, calculate the profit or loss realized. (3 marks)

### QUESTION THREE

a) Business Mathematics plays a crucial role in decision-making. Discuss five objectives of business mathematics in managing a business. (5 marks)

b) The table below shows the income tax rates for a certain year:

Monthly Taxable Income (Ksh.)	Tax Rate (%)
Up to 12,000	10
12,001 – 24,000	15
24,001 – 36,000	20
36,001 – 48,000	25
Above 48,000	30

An employee earns a basic salary of Ksh. 40,000, a house allowance of Ksh. 8,000, and a transport allowance of Ksh. 5,000 per month. The employee is entitled to a personal relief of Ksh. 1,408 per month. Calculate:

- i) The monthly taxable income. (3 marks)
  - ii) The net income tax paid per month. (6 marks)
  - iii) The net monthly salary. (2 marks)
- c) Differentiate between ordinary annuity and annuity due, giving relevant examples. (4 marks)

**QUESTION FOUR**

- a) Explain the term carrying charge as used in hire purchase agreements. (2 marks)
- b) A Kenyan importer purchased 5,000 units of a product from China at a cost of USD 20 per unit. The following additional costs were incurred:
  - Freight: Ksh. 100,000
  - Insurance: Ksh. 50,000
  - Customs duty: Ksh. 30 per unit

Given that 1 USD = Ksh. 150, calculate:

- i) The total cost of the consignment in Kenyan shillings. (4 marks)
- ii) The selling price per unit if the importer wishes to make a profit of 20% on the total cost. (6 marks)
- c) A businessperson invested Ksh. 200,000 in a fixed deposit account that offers compound interest. If the amount grew to Ksh. 300,000 after 4 years, calculate the annual interest rate compounded quarterly. (4 marks)
- d) Explain four measures of dispersion in statistics. (4 marks)