

KASNEB

CIFA PART I SECTION 1 FINANCIAL MATHEMATICS PILOT PAPER

September 2015.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question.

QUESTION ONE

- (a) Explain four determinants of working capital of a business organisation. (8 marks)
- (b) The Ministry of Economic Development in a country has provided the following data to estimate the cost of living of several households over a two month period:

Commodity	Quantity (Kg.)		Purchases (Sh.)	
	July	August	July	August
Rice	400	500	12000	16000
Sugar	20	15	2200	1500
Maize	80	100	2000	2800
Beans	90	90	3600	3780

Required:

- (i) Laspeyre's quantity index. (4 marks)
- (ii) Paasche's quantity index. (4 marks)
- (iii) Fisher's ideal index. (4 marks)

(Total: 20 marks)

QUESTION TWO

- (a) Explain four limitations of index numbers. (8 marks)
- (b) The following is the distribution of salaries of 62 employees in a financial institution:

Salary (Sh. '000')	Number of employees
Less than 20	3
20 - 29	5
30 - 39	8
40 - 49	8
50 - 59	12
60 - 69	9
70 - 79	7
80 - 89	4
90 - 99	4
Above 99	2

Required:

- (i) Modal salary. (3 marks)
- (ii) Quartile deviation. (3 marks)
- (iii) Median salary. (3 marks)
- (iv) Percentile seventy (P_{70}) (3 marks)

(Total: 20 marks)

QUESTION THREE

- (a) Maxmin Enterprises has Sh.23,000,000 to invest in either project X or project Y.

The following are the expected cash inflows from each project for four years:

Year	Cash inflows (Sh. '000')	
	Project X	Project Y
1	4000	10000
2	8000	9000
3	12000	6000
4	5000	4000

The cost of capital is 10% per annum.

Required:

- (i) Net present value (NPV) for each project. (10 marks)
- (ii) Advise the management on the project to invest in. (2 marks)
- (b) The data below shows the net profit (loss) and share prices of a sugar producing company in Country X over a five year period.

Year	Net profit (loss)	Share price
	Sh.	Sh.
2010	(2,000,000)	3
2011	980,000	5
2012	1,200,000	8
2013	(500,000)	4
2014	(150,000)	2

Required:

- (i) Karl Pearson's coefficient of correlation (r). (6 marks)
- (ii) Interpret the value of r. (2 marks)

(Total: 20 marks)

QUESTION FOUR

- (a) In harsh economic conditions, the chances of a microfinance collapsing is 40%.

Required:

Determine the probability that out of five microfinances, four or five microfinances will collapse. (8 marks)

- (b) A manufacturing company produces a single product that passes through two departments: assembly and packaging. production is made on order.

The following information relates to the product:

Revenue per unit, $R = 960 - 0.06q$ where q is the quantity sold.

Variable cost per unit in each department:

$$\begin{aligned} \text{Assembly} & \quad VC_A = 18 + 0.08q \\ \text{Packaging} & \quad VC_p = 10.5 + 0.06q \end{aligned}$$

Fixed costs per annum:

$$\begin{aligned} \text{Assembly} & \quad \text{Sh.180,000} \\ \text{Packaging} & \quad \text{Sh.220,000} \end{aligned}$$

Required:

- (i) Total revenue function (TR). (3 marks)
 - (ii) Total cost function (TC). (3 marks)
 - (iii) Profit function and the expected profit. (6 marks)
- (Total: 20 marks)**

QUESTION FIVE

- (a) Explain four principles followed in the construction of graphs. (8 marks)
- (b) Maloba is a hawker at Huruma market. He sells shirts, blouses and shoes. The following information relates to the three items for the first three weeks of July 2015:

		Shirts	Quantity Blouses	Pairs of shoes	Sales Sh.
Week	1	13	20	3	2,340
Week	2	15	12	1	1,900
Week	3	10	15	2	1,750

The selling prices remained the same over the 3-week period. Items are marked up at 25%.

Required:

- (i) Formulate three simultaneous equations. (3 marks)
 - (ii) Determine the selling price and cost price of each item. (9 marks)
- (Total: 20 marks)**
-

www.kasnebnote.co.ke