



The Co-operative University of Kenya

END OF SEMESTER EXAMINATIONS DECEMBER-2019

EXAMINATION FOR THE DEGREE OF BACHELOR OF COMMERCE

(YR IV SEM II)

UNIT CODE: HBF 2402

UNIT TITLE: FINANCIAL MODELLING AND FORECASTING

DATE: 9th DECEMBER 2019

TIME: 9:00 AM – 11:00 AM

INSTRUCTIONS:

- Answer question **ONE (compulsory)** and any other **TWO** questions

QUESTION ONE

- (a) The following are results from a multiple regression model estimated by fourth year students at The Co-operative University of Kenya using data on stock prices from the Nairobi Security Exchange

$$R_t = -261.7155 + 5.8830R_{t-1} - 2.9570R_{t-2} + 0.7794R_{t-3} - 2.4277R_{t-4} + 1.5287R_{t-5} + 0.7207R_{t-6} + 7.978R_{t-7}$$

$$se = 30.2916 \quad 3.069 \quad 4.338 \quad 0.4576 \quad 1.551 \quad 1.6556 \quad 0.2734 \quad 4.3712$$

$$R^2 = 0.95018$$

Where R_t = Current Security's Return

R_{t-n} = Previous Security's Returns

se = Standard error

R^2 = Coefficient of Determination

Required:

- (i) Compute the t-values associated with the intercept term and the slope coefficients (7 marks)
- (ii) Which is the most significant intercept term? Justify your answer (3 marks)
- (iii) Given the P-value for the overall model as 6.83633E-07 repeat (c) above and interpret your results (2 marks)
- (iv) Given the P-values for the slope coefficients as 1.54738E-02, 0.50839, 0.11428, 0.14347, 0.37373, 2.17666E-02, 9.29598E-02 repeat (d) above and interpret your results (7 marks)
- (b) What do you understand by the term "pro-forma financial statements" (3 marks)
- (c) Explain the benefits of financial planning (8 marks)

QUESTION TWO

- (a) Write explanatory notes on each of the following terms as used in financial modelling and forecasting (8 marks)
- (i) The Delphi technique
- (ii) Executive Opinions

- (iii) Sales force polling
- (iv) PERT

(b) Kolale Ltd has a current sales level of Sh 12,000,000. It has established that sales will be growing at 10% per annum for the next several years. Current assets, fixed assets, creditors and accruals vary directly with sales in the proportions of 60%, 30%, 15% and 5% respectively. On the other hand, income statement bear the following ratios to the level of sales; cost of sales 40%, Administration expenses 15%, Selling expenses 10% and other expenses 15%. The company retains 100% of profits and does not fall in the income tax bracket. Any surplus would be invested in the marketable securities while a deficit would be sourced externally. The current capital structure has been established as follows:

Share capital	5,000,000
Long term loans	3,500,000
Retained earnings	2,000,000

Required: Prepare the proforma income statement and statement of financial position after two years (12 marks)

QUESTION THREE

- (a) Explain the Assumptions underlying percentage of sales method (4 marks)
- (b) The following has been extracted from the books Churchil Traders Trial balance as at 31.07.2016.

	Dr.(Sh)	Cr.(Sh)
Sh 27 ordinary share capital		27,000
Land	20,000	
Buildings	90,000	
Fistures and fittings	12,000	
Bank interest	3,500	
Sales and Purchases	1,030,000	1,364,000
Rents, rates and insurance		43,900
Creditors and debtors	98,333	85,816
Wages and salaries	62,700	
Administrative expenses	4,876	
Provision for doubtful debts		
Buildings		22,500
Fixtures and fittings		7,000
Provision for doubtful debts		2,000
Advertising	26,497	
10% long term loan		155,500
Bank	27,060	
Stock at 1 august 2015	568,250	
Debenture interest paid	7,500	
	<u>1,950,716</u>	<u>1,950,716</u>

Additional information

- i). Sh 14,000 is to be written off as bad debt and a general provision of 5% of the remaining balance is to be provided for
- ii). The company's shares are selling at Sh 10 in the security market
- iii). Closing stock at 31.07.2016 was valued at Sh 482,250
- iv). The company's loan is secured on the company's buildings
- v). Depreciation is still to be provided at 10% of cost for both buildings and fixtures and fittings.
- vi). The following expenses as at 31.07.2016 are yet to be paid
 - Insurance Sh 2,137
 - Administration Sh 1,475
- vii). The following Prepayments for expenses at 31.07.2016 need to be taken into account
 - Rates Sh 5,496
 - Advertising Sh 12,000

Required: Use the Altman Z score Model of financial distress prediction to forecast the possibility of business failure of the firm for the coming financial year using the discriminant function ($Z\text{-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$) and advise the managers of the business accordingly. (16 marks)

QUESTION FOUR

- (a) An analysis of representatives' car expenses shows that the expenses are dependent on the miles travelled (X_1) and the type of journey (X_2). the general form is ($Y = a + b_1X_1 + b_2X_2$) Calculations have produced the following values (where y is expenses per month)

$$Y = 86 + 0.37x_1 + 0.08x_2$$

$$r^2_{x_1} = 0.78$$

$$r^2_{x_2} = 0.16$$

$$R = 0.88$$

Required: Interpret the above values (6 marks)

- (b) The directors of your company wish to make a serious study of the heating costs of the block. The data for the last sixteen quarterly periods are tabulated as follows.

Heating costs in £

	Quarter			
Year	Q1	Q2	Q3	Q4
2011	1730	1554	1504	1630
2014	1950	1595	1540	1700
2015	1860	1709	1574	1790
2016	1910	1721	1640	1560

Required

- (i) Assuming the additive model calculate the trend of heat costs using the method of moving averages (6 marks)

- (ii) Estimate the seasonal deviations from trend (4 marks)
 (iii) Estimate the heating costs for 2017 and comment on any factors affecting the reliability of your forecast (4 marks)

QUESTION FIVE

- (a) You have been appointed the manager at Koremo Ltd in charge of revenue and cost forecasting. For the past financial year the income statement of Bamboo Ltd shows the following:

Sales (3,000 units)	30,000	
Direct Material	9,000	
Direct Labour	6,000	
Variable production overhead	3,000	
Fixed overhead	8,000	<u>(26,000)</u>
Profit		<u>4,000</u>

Additional information

Only one product is produced and no changes in stock took place. For the coming year the following changes are expected:

1. The unit selling price is to increase to Sh 10.30
2. The sales volume should increase by 5%
3. Unit material cost will go up by 6%
4. Labour rates are expected to be 4% higher
5. Fixed costs to increase to Sh 9,200

Required: Calculate the revised Profit Figure (14 marks)

- (b) Explain the assumptions of Ordinary least Squares (OLS) (6 marks)