

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS
EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF COMMERCE
BCOM 433: FINANCIAL MODELING AND FORECASTING
STREAMS: BCOM Y4S1
TIME: 2 HOURS
DAY/DATE: THURSDAY 06/12/2018
8.30 A.M – 10.30 A.M

INSTRUCTIONS

- Answer question one and any other two questions

1. (a) Explain the following terms:

(i) Financial modelling [2 marks]

(ii) Financial forecasting [2 marks]

(b) A financial analyst has gathered the following historic annual returns on stock N for the last 5 years.

Year	Return %
2013	7
2014	9
2015	11
2016	13
2017	15

Required :

- (i) Fit a trend line of the form $y = a + bt$ on the time series data. [4 marks]
- (ii) Hence project the return on the share for the year 2020. [2 marks]
- (c) The following is data on cash flow an investment project for XYZ ltd

Year (t)	Actual cash flows (Y_t) in ksh 000
1	30.0
2	31.5
3	29.0
4	34.5

5	32.0
6	36.0
7	37.5

Suppose you wish to apply exponential smoothing model to predict future cash flows using $\alpha = 0.4$ as the exponential constant.

Required:

(i) Using three period average as the initial forecast, obtain the following predicted cash flows Y'_4 , Y'_5, Y'_6 and Y_7 . [4

marks]

(ii) Calculate the mean square Error (MSE) for the model. [4 marks]

(iii) In order to adjust predictions to large fluctuations in the data, you wish to try a higher value of exponential constant, $\alpha = 0.5$. Which of these two constant would you recommend and why? [4 marks]

(d) Company A and B operate in a competitive phone mobile phone industry. Currently, the two firms A and B the market in the ratio of 60% to 40% respectively of the subscribers. If in every year, 70% of A's subscribers are retained but 30% switch to company B, where as 80% of B's subscribers are retained but 20% switch to company A. It is estimated that the number to subscribers on mobile phone in the industry in two years time will be 5.0 million. What will be the forecast number of subscribers for company A then? [4 marks]

(e) Highlight the assumptions that underlie financial forecasting. [4 marks]

2. (a) Describe the characteristics that distinguish qualitative and quantitative forecasting techniques. [6 marks]

(b) Consider the following income statement for kotecha ltd for the year ended 31st December 2017.

	Ksh '000'
Sales	20,000
Less : costs	16,969.70
Taxable income	3,030.30
Less : taxes	1,030.30

Net income	2,000
Less : dividends	1,000
Additional to rained earnings	1,000

Statement of financial position as at 31st December 2017

	Ksh 000	Ksh 000	Ksh 000
<u>Non current assets</u>			
Plant & equipment (net)			24,000
<u>Current assets</u>			
Cash		1,000	
Accounts receivables		2,000	
Inventory		<u>3,000</u>	
		6,000	
<u>Less: current liabilities</u>			
Accounts payable	6,000		
Notes payable	<u>4,000</u>	<u>(10,000)</u>	<u>(4,000)</u>
			20,000
			=====
<u>Equities and long term liabilities</u>			
Common Stock		4,000	
Retained earnings		10,000	
Long term debt		<u>6,000</u>	20,000
			=====

The following assumptions are to be taken into consideration:

- (i) A corporation tax rate of 34%
- (ii) The statement of financial position items are expected to increase spontaneously with sales except common stock and retained earnings.
- (iii) The company will maintain 50% payout rate for the foreseeable future.

Required :

Prepare a proforma income statement and proforma statement of financial position to forecast the external financing needed to support 10% growth in sales. [14 marks]

3. (a) Explain the following qualitative decision models highlighting strengths and weakness for each.
 - (i) Delphi method [2 marks]
 - (ii) Market research [2 marks]
 - (iii) Jury of executive opinion. [2 marks]

(b) The following information relate to quarterly profit (ksh million) earned by firms in growth enterprise market segment of the NSE.

Year	Q1	Q2	Q3	Q4
2009	5.8	5.1	7.0	7.5
2010	6.8	6.2	7.8	8.4
2011	7.0	6.6	8.5	8.8

Required;

- (i) Centered four quarterly moving average [4 marks]
- (ii) Average seasonal index for each quarter using multiplicative model. [4 marks]
- (iii) Obtain the forecast earnings for earnings for the 3rd quarter of 2012. [6 marks]
- (iv) Suppose the trend equation based on deseasonal data has been estimated as

$$y = 5.982 + 0.1731t, \text{ obtain the forecast earnings for 3}^{\text{rd}} \text{ quarter of 2012.}$$

4. (a) Provide clear meaning of the following term used in financial modeling and forecasting (in each case provide a supporting example)

- (i) Time series and cross-sectional data. [4 marks]
- (ii) Seasonal variation and random variation. [4 marks]

(b) The following information relates to XYZ limited. The current market price of the ordinary share is ksh 10 per share.

Statement of income

	Ksh (000)
Sales	22,000
Cost of goods sold	(9,000)
Trading expenses	(2,000)
Earnings before interest and tax	11,000
Interest	(2,000)
Earnings before tax	9,000
Tax (30%)	(2,700)
Earnings after tax	6,300

Statement of financial position

	Ksh 000
<u>Fixed assets</u>	
Land	9,000
Machinery	7,000
Equipment	5,000

<u>Current assets</u>	
Cash	3,000
Debtor	5,000
Stock	<u>4,000</u>
	<u>33,000</u>
Financed by:	
Ordinary share capital (500,000)	15,000
Preference share capital (200,000)	6,000
Share premium	2,000
Retained earnings	5,000
<u>Long term liabilities</u>	
Debentures	2,500
<u>Current liabilities</u>	
Creditors	1,500
Bank overdraft	<u>1,000</u>
	<u>33,000</u>

Required :

Compute the Altman Z-score for the company and interpret the result obtained. [12 marks]
