



TECHNICAL UNIVERSITY OF MOMBASA
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SCHOOL OF BUSINESS

DEPARTMENT OF ACCOUNTING AND FINANCE

UNIVERSITY EXAMINATION FOR:
MASTER OF SCIENCE IN FINANCE

UNIT TITLE: FINANCIAL FORECASTING & MODELING
UNIT CODE: BFI 5102
END OF SEMESTER EXAMINATION

SERIES: APRIL 2025

TIME: 3 HOURS

DATE: APRIL 2025

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other **THREE** questions.

Do not write on the question paper.

QUESTION One

Mt Kenya Textile Mills 2023 financial statements are shown below.

Mt Kenya Textile: Balance Sheet as of December 31, 2023 (Thousands of Kenya shillings)

Cash	Sh 1,080	Accounts payable	Sh 4,320
Receivables	6,480	Accruals	2,880

Inventories	9,000	Notes payable	2,100
Total current assets	Sh 16,560	Total current liabilities	Sh 9,300
Net fixed assets	12,600	Mortgage bonds	3,500
Common stock	3,500		
Retained earnings	12,860		
Total assets	Sh29,160	Total liabilities and equity	Sh29,160

Suppose 2024 sales are projected to increase by 15% over 2023 sales.

- a) Determine the additional funds needed. **(10Marks)**
- b) Assume that the company was operating at full capacity in 2023, that it cannot sell off any of its fixed assets, and that any required financing will be borrowed as notes payable. Also, assume that assets, spontaneous liabilities, and operating costs are expected to increase by the same percentage as sales. Use the forecasted financial statements method to develop a pro forma balance sheet and income statement for December 31, 2024. **(10Marks)**
- c) Use an interest rate of 10% on the balance of debt at the beginning of the year to compute interest (cash pays no interest). **(10Marks)**
- d) Use the pro forma income statement to determine the addition to retained earnings. **(10Marks)**

QUESTION Two

Ken Computers makes bulk purchases of small computers, stocks them in conveniently located warehouses, and ships them to its chain of retail stores. Ken's balance sheet as of December 31, 2024, is shown here (millions of Shillings).

Cash	Sh 3.5	Accounts payable	Sh 9.0
Receivables	26.0	Notes payable	18.0
Inventories	58.0	Accruals	8.5
Total current assets	\$ 87.5	Total current liabilities	\$ 35.5
Net fixed assets	35.0	Mortgage loan	6.0
Common stock	15.0		
Retained earnings	<u>66.0</u>		
Total assets	<u>\$122.5</u>	Total liabilities and equity	<u>\$122.5</u>

Sales for 2023 were Sh350 million, while net income for the year was Sh 10.5 million.

Ken paid dividends of Sh4.2 million to common stockholders.

The firm is operating at full capacity. Assume that all ratios remain constant.

- a.) If sales are projected to increase by Sh70 million, or 20%, during 2024, use the AFN equation to determine Ken's projected external capital requirements.

(10Marks)

- b.) Discuss the following qualitative models of Forecasting: -

- i. Delphi Method (3Marks)
- ii. Consumer Panel Survey (3Marks)
- iii. Sales Force Composite (4Marks)

QUESTION Three

Bannister Legal Service generated Sh 2.0 million in sales during 2023, and its year- end total assets were Sh 1.5 million. Also, at year-end 2023, current liabilities were Sh 500,000, consisting of Sh200,000 of notes payable, Sh200,000 of accounts payable and Sh 100,000 of accruals. Looking ahead to 2024, the company estimates that its assets must increase by 75 cents for every \$1 increase in sales. Bannister's profit margin is 5%, and its payout ratio is 60%. How large a sales increase can the company achieve without having to raise funds externally?

(10Marks)

b) Mr. Makau, owner of a business unit is concerned about the sales behaviour of his product. He realizes that there are many factors that might help explain sales, but believes that advertising and prices are major determinants. He has collected the following data;

Sales (Units sold)	33	61	70	82	17	24
Advertising (no.of ads);	3	6	10	13	9	6
Prices (\$)	125	115	140	130	145	140

Required

- i. Calculate the regression equation to predict sales from advertising and Price

(7Maks)

- ii. If advertising is 7 and price is 132, what sales would you predict? **(3marks)**

QUESTION Four

a) Baxter Video Products' sales are expected to increase from \$5 million in 2007 to \$6 million in 2008 or by 20%. Its assets totaled \$3 million at the end of 2007. Baxter is at full capacity, so its assets must grow at the same rate as projected sales. At the end of 2007, current liabilities were \$1 million, consisting of \$250,000 of accounts payable,

\$500,000 of notes payable, and \$250,000 of accruals. The after-tax profit margin is forecasted to be 5%, and the forecasted payout ratio is 70%. Use the AFN formula to forecast Baxter's additional funds needed for the coming year **(10Marks)**

b) The Bata Company's sales are forecasted to increase from Sh1,000 in 2024 to Sh2,000 in 2025. Here is the December 31, 2024, balance sheet:

Cash	Sh 100	Accounts payable	Sh50
Accounts receivable	200	Notes payable	150
Inventories	200	Accruals	50
Net fixed assets	500	Long-term debt	400
Common stock	100		
Retained earnings	250		
Total assets	Sh1,000	Total liabilities and equity	Sh1,000

Bata's fixed assets were used to only 50% of capacity during 2024, but its current assets were at their proper levels. All assets except fixed assets increase at the same rate as sales, and fixed assets would also increase at the same rate if the current excess capacity did not exist. Booth's after-tax profit margin is forecasted to be 5%, and its payout ratio will be 60%. What is Bata's additional funds needed (AFN) for the coming year? **(10Marks)**

QUESTION Five

a) The demand for an item is observed for 15 months and recorded below

Mont	Demand	Month	Demand
1	280	9	309
2	288	10	315
3	266	11	320
4	295	12	332
5	302	13	310
6	310	14	308
7	303	15	320

8	328		
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Required: -

Calculate

- i. 4-monthly moving averages. **(6Marks)**
- ii. What is the forecast for the month of 16 for each one? **(4Marks)**

b) The demand for a particular item during the ten months of a year is as shown below.

The manager is considering how well the exponential smoothing serves as an appropriate technique in focusing the demand of this item. She is testing three values of the smoothing constant; $\alpha=0.2$, $\alpha=0.5$ and $\alpha=0.8$.

Month	1	2	3	4	5	6	7	8	9	10
Demand	213	201	198	207	220	232	210	217	212	225

You are required to:

- a) Calculate forecasted values using each of the given α values, assuming the initial forecast as 208, **(5Marks)**
- b) Calculate MAD for each of these series of estimates and suggest which of them is most appropriate. **(5Marks)**



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