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

SUPPLEMENTARY PAPER

TIME: 3 HOURS

DATE: JULY 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

Coral's Investment Company 2023 financial statements are shown below.

Coral's Investment Company: Balance Sheet as of December 31, 2023 (Thousands of Shillings)

Cash	Ksh 1,800	Accounts payable	Ksh 7,200
Receivables	10,800	Notes payable	3,472
Inventories	12,600	Accruals	2,520

Total current assets	Ksh 25,200	Total current liabilities	Ksh. 13,192
Net fixed assets	21,600	Mortgage bonds	5,000
Common stock	2,000		
Retained earnings	26,608		
Total assets	**Ksh 46,800**	**Total liabilities and equity**	**Ksh. 46,800**

Coral's Investment Company: Income Statement for December 31, 2024(Thousands of Shillings)

Sales	Ksh. 36,000
Operating costs	30,783
Earnings before interest and taxes	Ksh. 5,217
Interest	717
Earnings before taxes	Ksh 4,500
Taxes (40%)	1,800
Net income	Ksh 2,700
Dividends (60%)	Ksh 1,620
In addition to retained earnings of	Ksh 1,080

a) Assume that the company was operating at full capacity in 2023 with regard to all items *except* fixed assets; fixed assets in 2023 were being utilized to only 75% of capacity. By what percentage could 2024 sales increase over 2024 sales without the need for an increase in fixed assets? **(15Marks)**

b) Now suppose 2024 sales increase by 25% over 2023 sales. How much additional external capital will be required? **(10Marks)**

c) Write down the Additional formula (AFN formula). **(5Marks)**

d) How does the AFN formula compare to the projected balance sheet method? **(10Marks)**

QUESTIONS Two

a) How would you make a choice between selected values of smoothing constants for making forecasts**?** **(5marks)**

b) Ashish, 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 **(8maks)**

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

QUESTION Three

From the data relating to profit (in Khs '000) given below, obtain the profit forecasts as per the instruction given.

Year	**Profit**	**Year**	**Profit**	**Year**	**Profit**	**Year**	**Profit**
2004	48	2008	58	2012	61	2016	70
2005	53	2009	63	2013	68	2017	76
2006	55	2010	68	2014	58	2018	83
2007	56	2011	60	2015	63	2019	88

Required:

Calculate the profit forecasts using: -

a) 4–year moving averages. **(10 Marks)**

b) 5-yearly moving averages. **(10Marks)**

QUESTION Four

The data on average monthly sales (in thousands of Khs) of a company are given as follows:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	46	45	44	46	45	47	46	43	40	40	41	45
2020	45	44	43	46	46	45	47	42	43	42	43	44
2021	42	41	40	44	45	45	46	43	41	40	42	45

Assuming there is no trend,

a) Compute the monthly seasonal indices. **(15 Marks)**

b) Using these indices, prepare the monthly sale schedule for the year 2022 if the total sales for the year are projected to be Khs. 560,000. **(10Marks)**

QUESTION Five

A Company recently embarked on an in-store promotional campaign, with displays of its antacid featured prominently in the supermarkets. The company also ran its usual radio and television commercials. Over a period of 10 weeks, the company kept track of its expenditure on radio and television advertising, variable X_1 as well as its expenditure on in-store displays, variable X2, the resulting sales for each week in the area studied were recorded as the dependent variable Y. The company analyst hypothesized a linear regression linking sales volume with the two independent variables. Using the following data (all values in thousands of shillings), fit the desired regression equation.

Y :	72	76	78	70	68	80	82	65	62	90
X_1 :	12	11	15	10	11	16	14	8	8	18
X_2 :	5	8	6	5	3	9	12	4	3	10

Estimate the sales if:

a) X_1 = Khs 13,000. **(6Marks)**

b) X_2 = Khs= 7,000. **(4Marks)**

c) How effective is forecasting as a planning technique? **(10Marks)**

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