



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

**A. M. E. C. E. A**

**MAIN EXAMINATION**

**JANUARY – APRIL 2017 TRIMESTER**

**FACULTY OF COMMERCE**

**DEPARTMENT OF ACCOUNTING AND FINANCE**

**REGULAR PROGRAMME**

**CBF 422: FINANCIAL MODELING AND FORECASTING**

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**Date: April 2017**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and any other TWO Questions**

## **Question One**

- a) Briefly discuss following forecasting methods
  - i) Delphi Technique [3marks]
  - ii) Sales force composite [3marks]
  - iii) Regression analysis [3marks]
- b) Discuss the ingredients of financial modeling [5marks]
- c) Distinguish between vertical and horizontal financial statement analysis [4marks]
- d) Use exponential smoothing technique and the information in the table below to answer the questions that follow.

Year	2011	2012	2013	2014	2015	2016
Loan demand (Ksh “m”)	5	8	12	10	18	15

- i) Find the forecast for 2016 ( $\alpha = 0.6$ ) [8marks]
- ii) The mean square error (MSE) for the forecast [4marks]

### **Question Two**

The marketing manager at Moonlight industries limited believes that the amount of sales that the company makes is related to the number of TV adverts that are placed I the local TV station. The following data relates is collected on Moonlight industries limited

Number of TV adverts	30	25	38	40	32	45	50	60	55
Sales volume (units)	120	135	130	138	140	160	180	200	170

### **Required:**

- a) Prove or disapprove the manager’s believe using regression analysis. What is the strength of the predictive power of the model **[17marks]**
- b) Forecast the sales when the number of TV adverts is 58 **[3marks]**

### **Question Three**

- a) Briefly discuss the components of a time series **[8marks]**
- b) The data below relates to XYZ limited

Year	2013				2014				2015				2016			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sales (Sh “m”)	8	12	10	16	13	17	15	18	20	18	16	19	22	25	23	26

### **Required:**

Using a time series model, forecast as, accurate as possible, the forecast for 2016 quarter 1 **[12marks]**

### **Question Four**

Use Exhibits 1 and 2 below to answer the questions that follow

#### **EXHIBIT 1**

#### **MILAVEC COMPANY**

Income Statements and Statements of  
Retained Earnings  
For the Years Ending December 31

Sales	<b>2016</b> <u>\$900,000</u>	<b>2015</b> <u>\$800,000</u>
Cost of goods sold		
Beginning inventory	43,000	40,000
Purchases	<u>637,000</u>	<u>483,000</u>

Goods available for sale	680,000	523,000
Ending inventory	<u>70,000</u>	<u>43,000</u>
Cost of goods sold	<u>610,000</u>	<u>480,000</u>
Gross margin	290,000	320,000
Operating expenses	<u>248,000</u>	<u>280,000</u>
Income before taxes	42,000	40,000
Income taxes	<u>17,000</u>	<u>18,000</u>
Net income	<u>25,000</u>	<u>22,000</u>
Plus: Retained earnings, beginning balance	137,000	130,000
Less: Dividends	<u>0</u>	<u>15,000</u>
Retained earnings, ending balance	<u>\$162,000</u>	<u>\$137,000</u>

**EXHIBIT 2**  
**MILAVEC COMPANY**  
Balance Sheet as at December 31

	<b>2016</b>	<b>2015</b>
<b>Assets</b>		
Cash	\$ 20,000	\$17,000
Marketable securities	20,000	22,000
Notes receivable	4,000	3,000
Accounts receivable	50,000	56,000
Merchandise inventory	70,000	43,000
Prepaid expenses	4,000	4,000
Property, plant, and equipment (net)	<u>340,000</u> <u>310,000</u>	
Total assets	\$508,000	\$455,000
 <b>Liabilities and Stockholders' Equity</b>		
Accounts payable	\$ 40,000	\$ 38,000
Salaries payable	2,000	3,000
Taxes payable	4,000	2,000
Bonds payable, 8%	100,000	100,000
Preferred stock, 6%, \$100 par, cumulative	50,000	50,000
Common stock, \$10 par	150,000	125,000
Retained earnings	162,000	137,000
Total liabilities and stockholders' equity	\$508,000	\$455,000

**Required**

- a) Use horizontal analysis to determine which expense item increased by the highest percentage from 2015 to 2016 **[4marks]**
- b) Use vertical analysis to determine whether the inventory balance is a higher percentage of total assets in 2015 or 2016. **[4marks]**
- c) Calculate the following ratios for 2015 and 2016. When data limitations prohibit computing averages, use year-end balances in your calculations.
  - i) Working capital **[3marks]**
  - ii) Current ratio **[3marks]**
  - iii) Accounts receivable turnover (assume all sales are on credit) **[3marks]**
  - iv) Inventory turnover **[3marks]**

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