



**CHRISTIAN SERVICE UNIVERSITY COLLEGE
KUMASI
CSUC SCHOOL OF BUSINESS
DEPARTMENT OF ACCOUNTING & FINANCE
BACHELOR OF BUSINESS ADMINISTRATION
End of Second Semester Examination, 2021/2022 Academic Year
Level 300
CSBF 324: MANAGERIAL ECONOMICS**

JUNE, 2022

[100 marks]

INSTRUCTIONS TO CANDIDATES:

- Answer TWO Questions only. **Question ONE** and any other question
- Write your answer on the answer sheets provided

Examiner: Osei-Anim Reindolph

Question 1 (Compulsory)
(60marks)

A

Advertisement and sales are two important elements which are vital for the growth of an organization. Lakamuun incorporated is a company that specializes in the production of chromocoat papers. The weekly expenditure on adverts (x) and the weekly sales (y) are presented in the table below.

<i>Weekly sales (GH¢)</i>	<i>Weekly adverts (GH¢)</i>
5000	350
6000	413
3500	230
8000	631
4500	285
6000	321
7000	431
8500	461
8100	313
8100	303

Required

(a) Compute

i. Covariance **8marks**

ii. Coefficient of correlation **6marks**

iii. Interpret your findings **1marks**

(b) Estimate the least square line using least square method $\hat{y} = b_0 + b_1x$ **5marks**

(c) Using the regression line above estimate the following

(i) Weekly sales if an expenditure of GH¢2150 is spent on adverts. **2marks**

(ii) How much should be spent on adverts if GH¢64500 was generated as sales. **2marks**

(d) Base on the above estimations in C above, what recommendations would you make to Lakamuun Inc. **1mark**

B

The president of a fast growing firm has authorized the building of a small plant to manufacture a new product. The production engineer has estimated that the total cost function for this product is:

$$TC_1 = 100,000 + 1,500Q + 3Q^2$$

where TC is measured in Ghana cedis and Q is measured in units of output per year. Before the decision to build this plant was made, the general manager suggested that an alternative plant design having the following total cost equation

$$TC_2 = 140,000 + 1,000Q + 2.5Q^2$$

would be more economical. Should the firm build the alternative plant? Assume that the firm has the required capital.

15marks

C

Lakamuun Inc. is a company which manufactures a small household appliance at its plant in Gyinyase for distribution in the Osino district. The production department of the plant has estimated the following total cost function for this product:

$$TC = 200 + 25Q - 2.8Q^2 + 0.12Q^3$$

Where Q is in thousands of output and total cost are measured in thousands

The firm's market research indicates that the demand for this product is expressed by the following demand equation:

$$Q = 35.7 - 0.714P$$

Where Q is in thousand units of product and P is the price in Ghana cedis per unit.

The firm's management would like to know

- i. the profit-maximizing output **5 marks**
- ii. price of the product and **3 marks**
- iii. the maximum profit at this level of operation. **2marks**

D

Ofori Ansah is a manager at Time Tools Company, a nation-wide supplier of tools and accessories to independent electricians and plumbers. A study of annual demand in several regional markets suggests the following

Demand function for a popular socket wrench set:

$$Q = -500 - 10P + 0.001Pop + 0.05Y + 20A$$

Where Q is quantity, P is price (¢), Pop is population, Y is disposable income per person (¢), and A is advertising measured in terms of personal selling days per year by Time Tools' sales staff.

- i. Determine the demand curve faced by Time Tools in a typical market where
 $Pop = 1,000,000$, $Y = \text{¢}10,000$, and $A = 200$ days **3marks**
- ii. Calculate the quantity demanded at prices of ¢250, ¢275, and ¢300 **3marks**
- iii. Calculate the prices necessary to sell 2,000, 3,000, and 4,000 units **3marks**
- iv. What general conclusion(s) can be made about your answers in I and II **1mark**

Question 2

- a) Last year, Jane quit her ¢60,000 per year job as a Branch Operating Manager for a leading bank in Ghana to buy a small hotel on Lake Bosomtwe. The purchase price of the hotel was ¢350,000, which she financed by selling a tax-free government of Ghana bond that earned 10% per year. Jane's total operating expenses and revenues were ¢100,000 and ¢200,000, respectively.
 - i. Calculate Jane's accounting profit. **[4 marks]**
 - ii. Calculate Jane's economic profit. **[6 marks]**
- b) Charity Afriyie, Chief Financial Officer, has been asked by Samuel Dankyi, Chief Executive Officer and cofounder of Dankyi & Brempong Ltd. (D&B), to analyze two capital investment projects (projects *A* and *B*), which are expected to generate the following profit streams:

Profit streams for Projects *A* and *B* (in ¢ thousands)

Year [Period]	Profit from Project A	Profit from Project B
2018 [1]	¢100	¢350
2019 [2]	200	300
2020 [3]	250	200
2021 [4]	300	100
2022 [5]	325	100

Profits are realized at the end of each period. Assuming that D&B is a profit maximizer, if the discount rate for both projects is 12%, which of the two projects should be adopted?

[10 marks]

c)

Question 3

- a. Copy and complete [*i.e. show workings*] the following table and use that information to answer the questions that follow.

Workers Employed (L)	Total Output (Q)	Marginal Product (MP)	Price of Product (P)	Value Marginal Product (MVP)	Total Revenue (TR)
1	25		¢ 2	¢	¢
2	70		2		
3	110		2		
4	145		2		
5	172		2		
6	191		2		
7	199		2		
8	199		2		

[4marks]

- i. Over what range of employment do increasing marginal returns exist? [3marks]
- ii. Over what range of employment do decreasing marginal returns exist? [2marks]
- iii. If the labour cost per unit is ¢38, how many workers must the firm hire and how much output should it produce? Explain your answer. [2marks]
- iv. Distinguish between *economies of scale* and *diseconomies of scale*. [2marks]

b. The only choice variable is Q . The total benefit function is $B(Q) = 100Q - 2Q^2$ and the Total cost function is $C(Q) = \frac{1}{3}Q^3 - 6Q^2 + 52Q + 80$

- i. What is the marginal benefit and marginal cost functions? [2marks]
- ii. Set up the net benefit function and then determine the level of Q that maximizes net benefit. (Use the positive value of Q .) [2marks]
- iii. What is the maximum level of net benefit? [3 marks]

Question 4 (20marks)

A. The demand equation for a popular brand of fruit drink is given by the equation

$$Q_x = 10 - 5P_x + 0.001I + 10P_y$$

where: Q_x = monthly consumption per family in gallons

P_x = price per gallon of the fruit drink

I = median annual family income

P_y = price per gallon of a competing brand of fruit drink

- i. Interpret the parameter estimates. [5marks]

- ii. If $P_x = \text{¢}5$, $I = \text{¢}20,000$ and $P_y = \text{¢}6$, calculate the monthly consumption (in gallons) of the fruit drink. [3 marks]

- iii. Suppose that median annual family income increased to $\text{¢}30,000$. How does this change your answer to part b? [2marks]

B. How will each of the following changes in demand and/or supply affect equilibrium price and equilibrium quantity in a competitive market; that is, *do price and quantity rise, fall, or remain unchanged?* Use supply and demand curves to verify your answers.

- i. Supply decreases and demand is constant.
- ii. Demand decreases and supply is constant.
- iii. Supply increases and demand is constant.
- iv. Demand increases and supply is constant.
- v. Demand increases and supply decreases. [10 marks]

Question 5(20marks)

- a) Given the following data, calculate forecasts for the months of May, June, and July using a *three-month moving average* and an *exponential smoothing* forecast with an alpha of 0.7. Assume a forecast of 61 for the month of April:

Month	Actual Sales	Forecast 3-Month Moving Average	Forecast Exponential Smoothing
January	56		
February	76		
March	58		
April	67		
May	75		
June	76		
July			

[6 marks]

- b) G.R. Foods Distributors specializes in the wholesale distribution of food items, such as corn and dry beans. As a manager of this firm, you are concerned about an article you read in today's *Daily Graphic* indicating that supply of all food items are expected to increase by 15% next year as a result of government of Ghana's flagship policy of '*Planting for Food and Jobs*'. You are concerned about the impact this will have on G.R. Dry Foods. What do you think is likely to happen to the price of the products G.R. Foods sells? Why? Illustrate your answer on demand and supply curves diagram.

[4marks]

Formulas

$$PV = \frac{A}{[1+r]^t} \quad F_{t+1} = A_t \quad F_{t+1} = \frac{\sum A_t}{n} \quad F_{t+1} = \sum C_t A_t \quad F_{t+1} = \alpha A_t + (1-\alpha)F_t$$

- c) Explain *four* major characteristics of perfectly competitive market. [4marks]
- d) Suppose that the total cost (TC) and demand equations for a monopolist is given by the following expressions:

$$TC = 500 + 20Q^2$$

$$P = 400 - 20Q$$

Index Number Signature

- i. What are the profit-maximizing price and quantity? **[5marks]**
- ii. Given your answer in 'i' above, what is the firm's maximum profit? **[1mark]**