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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATIONS, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE (MATHEMATICS)
KFI 2201: BUSINESS ECONOMICS

DATE: 5TH DECEMBER, 2024
TIME: 8:30AM-10:30AM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE: COMPULSORY (30 MARKS)

Maximizing Consumer Utility and Production Efficiency at FreshBite Juice Ltd.

FreshBite Juice Ltd. is a medium-sized company located in a growing urban area in Kenya. The firm specializes in producing a range of natural fruit juices and smoothies using locally sourced fruits. FreshBite's mission is to provide healthy, affordable beverages that appeal to health-conscious consumers, while maintaining efficiency in its production processes to remain competitive in a fast-evolving market. FreshBite's target consumers are primarily young professionals and middle-income families who value health and wellness. These consumers derive high utility from FreshBite's products, particularly because they are perceived as healthier alternatives to sugary, carbonated drinks. However, the price of FreshBite's products is higher than conventional soft drinks due to the quality of ingredients used and the absence of artificial additives. Consumers in this market segment face a trade-off between price and quality. While they gain utility from consuming healthier beverages, they also have budget constraints, which makes price an important factor in their purchasing decisions. FreshBite's marketing strategy focuses on educating consumers about the long-term health benefits of natural juices, aiming to increase the perceived utility of its products relative to other beverages in the market. In an effort to maximize consumer utility, FreshBite offers product bundles and promotions, such as discounts on bulk purchases or loyalty programs, to increase the quantity of juice purchased without significantly lowering prices. The firm also surveys consumers regularly to understand their preferences and adjust flavors and sizes according to demand.

FreshBite faces the challenge of producing its juice efficiently while managing fluctuating demand. The demand for FreshBite's juices is seasonal, peaking in the hot summer months and declining during cooler periods. Additionally, demand is influenced by external factors such as health trends and the entry of new competitors in the health drink market. To optimize production, FreshBite uses a short-run production function, where it adjusts inputs (such as labor and raw fruits) based on current demand forecasts. The firm operates with both fixed inputs (machinery, factory space) and variable inputs (labor and raw materials). In the short run, FreshBite focuses on minimizing production costs while meeting demand by adjusting the number of workers and the volume of fruits ordered from suppliers.

To improve its demand forecasting, FreshBite uses a combination of historical sales data, market trends, and consumer surveys. By analyzing these factors, the firm forecasts both short-term demand for the next quarter and long-term trends over the next few years. In the past, inaccurate demand forecasts have led to overproduction, resulting in waste, or underproduction, causing stockouts and lost sales. Therefore, the firm is investing in better demand forecasting models to more accurately predict consumer behavior and avoid such inefficiencies. As FreshBite expands its operations, it aims to benefit from economies of scale. Initially, when FreshBite was a small operation, production costs per unit were high due to the limited use of machinery and manual labor in production. However, as the firm has grown, it has invested in more advanced equipment and automated processes, reducing the cost per unit of juice produced. FreshBite has also expanded its distribution channels, moving from direct sales at juice bars to partnerships with supermarkets and online delivery platforms. This expansion has allowed the firm to produce and sell larger quantities, further lowering its average cost of production. By producing larger quantities, the firm is able to negotiate better prices from fruit suppliers, lowering the cost of raw materials and benefiting from purchasing economies of scale. However, FreshBite must also be cautious about diseconomies of scale, which can occur as the firm grows larger. As production volumes increase, FreshBite faces challenges in managing quality control, logistics, and communication within its growing workforce. To mitigate these risks, the company has introduced better management practices and invested in technology to streamline its operations.

Basing your arguments on the case study, respond to the questions that follow:

a) Suppose FreshBite Limited experiences shortcomings during the production process due to economies of scale. Use the information to;
   i) Discuss economies of scale the company enjoys in its production activities during the period. **(3 Marks)**
   ii) Discuss diseconomies of scale to the company as it expands during the period **(3 Marks)**
   iii) Elaborate on costs incurred by the company as it expands **(2 Marks)**

b) The management of the company is faced with decision making challenges on quantity to produce and prices to charge. Given demand equation assist the management make a decision: $Q_h = 1600 - 5P_h + 10P_m - 8P_Y + 0.01M$, where P_h =Kshs 200 is the price of hops, P_m = Kshs.180 the price of Malt, P_y =Kshs.80 and M= Kshs. 1000 is the income level of the company.
   i) Forecast for the management the quantity of smoothies to produce **(2 Marks)**
   ii) Price elasticity of demand for smoothies and interpret the value **(3 Marks)**
   iii) Cross price elasticity with respect to fruit juice hence relationship between the two goods **(3 Marks)**
   iv) Income elasticity, determine whether it is elastic or inelastic **(2 Marks)**

c) Suppose FreshBite engages in production of a substitute good to a rival firm and the commodity demand function given as $P = 200 - 5Q$ and a cost equation: $C = 150 + 5Q^2 + 60Q$. Advice the management on quantity to produce and price to charge in order to break-even **(6 Marks)**

d) Businesses are confronted with decision making that require knowledge of business economics. Discuss the usefulness of Business economics knowledge to business management of FreshBite **(6 Marks)**

QUESTION TWO: (20 MARKS)

a) Discuss operational problems managers usually faces while discharging their duties while at the same time considering the interest of the company **(10 Marks)**

b) A consumer has a utility function given as: $U(X,Y) = 2XY$ and a budget constraint as $P_X X + P_Y Y = M$, demonstrate that at utility maximization by the consumer, the ratio of marginal utilities of the two goods equals to ratio of the prices **(10 Marks)**

QUESTION THREE: (20 MARKS)

a) Economic activities have improved in the country resulting to increase in demand for goods and services. Illustrate and discuss factors that have resulting to this surge in demand **(10 Marks)**

b) Discuss various types of costs a manager faces in the management of business **(10 Marks)**

QUESTION FOUR (20 MARKS)

a) Government plays key roles in a market economy, discuss how can it regulate businesses to ensure fair competition and consumer protection in the economy **(10 Marks)**

b) Discuss factors management should consider before undertaking any investment decision in a company **(10 Marks)**

QUESTION FIVE: (20 MARKS)

a) There are situations in which demand curve disobeys the law of demand. Discuss these situations **(6 Marks)**

b) A firm has a production function of the form of $Y = 2(L^{0.5}K^{0.5})$ and a cost constraint $4L + 5K = 400$. As an intern in the firm, the manager has approached to determine the optimal inputs that will ensure maximum output for the firm **(8 Marks)**

c) Discuss internal economies of scale that a business entity enjoys **(6 Marks)**