

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**  
**FACULTY OF COMMERCE**  
**DEPARTMENT OF ECONOMICS**  
**BACHELOR OF SCIENCE HONOURS DEGREE IN ECONOMICS**  
**MICROECONOMICS: EC 213 (2)**  
**DURATION: 3 HOURS**

NOV 2023

**INSTRUCTIONS TO CANDIDATES**

1. Answer any four (4) questions.
  2. The paper carries six (6) questions.
  3. All questions carry equal marks of 25 each.
  4. No cellphones allowed in the exam room.
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**Question 1**

- a. With the aid of well labelled diagrams, explain the effects of the following policy measures on the budget line of a consumer:
  - i. Tax [7 Marks]
  - ii. Subsidy [6 Marks]
  - iii. Rationing [6 Marks]
- b. Use a diagram(s) to explain any 2 factors that lead to an outward shift of the budget line in a parallel fashion. [6 Marks]

**Question 2**

Suppose a consumer's utility function is  $U(x_1, x_2) = x_1^{\frac{2}{3}} + 2x_2^{\frac{1}{3}}$ . Given that the prices for goods  $x_1$  and  $x_2$  are \$1 and \$3 respectively and the consumer's weekly income is \$55.

- i. Find the consumer's optimal consumption bundle. [8 Marks]
- ii. Calculate the price elasticity of demand for good  $x_1$ . [7 Marks]
- iii. Suppose that the government decides to ration consumption of  $x_1$  and institute a policy such that consumption of  $x_1$  beyond 8 units will attract a \$2 price increment. Draw the consumer's budget line and show the coordinates of the kink. [10 Marks]

**Question 3**

A firm's production function of Cobb-Douglas nature is given as:

$$Q = 6L^{0.8}K^{0.4}$$

where  $Q$  is output,  $L$  is labour and  $K$  is capital

- a. Calculate:
  - i. The marginal productivities of Labour and Capital [4 Marks]
  - ii.  $MRS_{KL}$  and comment on your results [4 Marks]
  - iii. The isoquant equation and comment on the returns to scale [4 Marks]
- b. Given that the wage rate is \$3 per hour and the rental rate of capital is \$4. Compute the minimum cost of producing 80 units for this producer. [13 Marks]

**Question 4**

- a. The monopolist faces a demand curve given by  $D(p) = 10p^{-3}$ . Its cost function is  $C(y) = 2y$ .
  - i. Calculate the optimal level of output and price [8 Marks]
- b. With the aid of diagrams, explain the following terms as used in consumer preferences
  - i. Marginal Rate of Substitution (MRS) [4 Marks]
  - ii. Satiation point [4 Marks]
- c. Briefly explain any three (3) types of utility functions [9 Marks]

**Question 5**

- a. Find the Cournot's equilibrium if the market demand and the costs of the duopolists are:  
 $P = 100 - 0.5x$  where  $x = x_1 + x_2$      $C_1 = 5x_1$      $C_2 = 0.5x_2^2$   
 where  $C_1$  is the cost function for firm 1 and  $C_2$  is the cost function for firm 2  
 [12 Marks]
- b. Find the profit for each firm [4 Marks]
- c. Discuss the critiques that are levelled against the Cournot model [9 Marks]

**Question 6**

- a. Suppose that the indifference curves are described by straight lines with a slope of  $-d$ . Given arbitrary prices and money income  $P_1, P_2$  and  $m$ , show how the consumer's optimal choices will look like. [5 Marks]
- b. Explain any three characteristics that are essential in the construction of indifference curves. [5 Marks]

- c. Consider a production function of the form  $Q(X_1, X_2) = 50\sqrt{X_1} + \sqrt{X_2}$ . Does it exhibit constant, increasing or decreasing returns to scale? **[5 Marks]**
- d. Draw angel curves for luxury goods, inferior goods and essential goods. **[5 Marks]**
- e. Suppose a consumer spends all his income of \$m on two goods  $X$  and  $Y$  per week. Given that the price of  $X$  is  $\$p_x$  and the price of  $Y$  is  $\$p_y$ . If the price of  $X$  increases by three times and the price of  $Y$  falls by two times. Illustrate the change on the budget line using a graph. **[5 Marks]**

**END OF PAPER**