

(4)

7. Consider a 2 period model where individuals earn labour income $Y = 30000$ from working in period 1 and do not work in period 2. Individuals choose how much to consume in each period. Savings in period 1 earn an interest rate $r = 30\%$. Let C_1 denotes consumption in period 1 and C_2 denotes consumption in period 2. Suppose that individuals have a utility function $U = C_1 C_2$. We assume prices remain same over time and normalised to unity.

- (a) Find out the optimal consumption bundle.
(b) If there is a 20% tax on interest income earned from savings but an unemployment dole of ₹ 10,000 is given in period 2. Find the new budget line and its slope and consumption bundles. 2+4=6

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Ex/ECO/B/C3.1/2024

BACHELOR OF ARTS EXAMINATION, 2024

(2nd Year, 1st Semester)

ECONOMICS

PAPER : ECO/B/C3.1

(Microeconomics BI)

Time : Two Hours

Full Marks : 30

Answer *any five* questions.

1. (a) What are the basic assumptions of Revealed Preference Theory? Using the same, prove that substitution effects are always negative.
(b) Check the validity of the Weak Axiom of Revealed Preferences if he/she chooses bundle $(x_1, x_2) = (10, 3)$ when prices are $(p_1, p_2) = (4, 2)$, but chooses bundle $(y_1, y_2) = (7, 6)$ when prices are $(q_1, q_2) = (3, 15)$.
(c) Using the prices and quantities given in the table below, compute the Paasche quantity index and the Laspeyres price index. In each case, can you tell whether welfare has risen or fallen over time? 3+1+2=6

Period	Quantities		Prices	
	x_1	x_2	p_1	p_2
Base Year	5	6	8	8
Current Year	7	5	5	10

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2. Find the expenditure function where prices are (p_1, p_2) and the utility of consumer is $U = \sqrt{x_1} + \sqrt{x_2 + 1}$. Find out the Hicksian Demand Functions. Then derive the indirect utility function and check for the validity of Slutsky equation.

$$2+1+1+2=6$$

3. (a) Rina was working in an office. Due to good performance, her wages were hiked and at the same time she received an income gift from her father. After this, Rina stopped doing overtime in her office. Explain graphically her budget set and rationality of her decision.

- (b) Suppose a firm's average cost curve is described by the equation $AC = 2q^2 - 16q + 90 + 30/q$. At which output, the firm will cease to produce in a perfectly competitive market?

$$4+2=6$$

4. (a) Define compensating variation and equivalent variation.

- (b) Let the utility function be

$$U = 3(x_1 - 1)^{2/3} x_2^{1/3}$$

Initially, income $I = 100$, $p_1 = 4$ and $p_2 = 1$. Find the measures of compensating variation and equivalent variation when price of first good falls to 2.

$$2+4=6$$

5. If an individual devotes 'a' units of effort in preventative care, then the probability of an accident is $1 - a$ (thus, effort can only assume values in $[0, 1]$). Each individual is an expected utility maximizer with expected utility function

$$p \ln(x) + (1 - p) \ln(y) - a^2$$

where p is the probability of an accident, x is wealth if there is an accident, and y is wealth if there is no accident.

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- (a) If there is no insurance, then $x = 50$, while $y = 150$. Find the amount of effort in preventative care.

- (b) Will the consumers devote less effort if there is a competitive insurance sector that charges fair premium?

- (c) What is Arrow-Pratt measure of risk aversion and what are the possible values it can take?

$$2+2+2=6$$

6. (a) Explain the viability of a firm with falling marginal cost curve in a perfectly competitive market.

- (b) There is a firm with production function

$$q = f(L, K) = L^{1/2} + K^{1/2}$$

This firm is initially stuck in the short run with $K = 16$ which cannot be changed. The wage is $w = 3$ and the price of capital is $r = 4$.

- (a) Find the short-run marginal cost curve and the short-run supply curve.

- (b) If there are 12 firms, and if market demand is $q(p) = 96 - p$, what is the short-run market equilibrium price?

- (c) What is the short-run average total cost? Is this firm making a loss, breaking even, or making a super-normal profit? Illustrate on a two-panel graph, one panel showing the market, the other showing the cost curves of an individual firm.

$$2+1.5+1+1.5=6$$

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[Turn Over]