

BACHELOR OF ARTS EXAMINATION, 2023

(2nd Year, 2nd Semester)

ECONOMICS**[MICROECONOMICS BII]**

Time : Two Hours

Full Marks : 30

Answer any *five* of the following questions.

6×5=30

1. Two firms, 1 and 2, each produce a good which are perfect complements to each other. Both firms have monopoly power over own product, face marginal costs c_1 and c_2 and sell their output at prices p_1 and p_2 , respectively. The market demand for the composite good is $q = D(p)$, $D' < 0$, where $p = p_1 + p_2$. Suppose firm 1 chooses its price first, and takes into account the effect of its choice on firm 2's price. Show that $p = \frac{c}{(1-1/\epsilon)^2}$, where $c = c_1 + c_2$ and ϵ is the elasticity of demand of the composite good. 6

2. Suppose consumer surplus is given by $U = \theta V(q) - T$; where $q = 0, 1$ or 2 ; $V(0) = 0$, $V(1) = 1$, $V(2) = 7/4$. Unit Production cost is $3/4$. There are two types of consumers: $\theta = 1$ (proportion λ) and $\theta = 2$ (proportion $1 - \lambda$). Consumers may engage in personal arbitrage. Show that monopolist uses pure commodity bundling iff $\lambda < 4/5$. 6

[Turn over

[2]

3. Suppose consumers have a linear demand function and are located uniformly from distance $x = 0$ to $x = 1$ from the plant where production of a monopolist takes place. The transportation cost to distance x is tx ($t > 0$). The free on board (fob) price is the price that covers only production cost of the monopolist (i.e. transportation cost is borne by the consumer).
- Calculate the optimal fob price when discrimination is allowed.
 - Compute the optimal uniform (i.e. non-discriminatory) fob price when the entire market is served.
 - Which arrangement serves the largest market in general? 2+2+2
4. Consider the three-firm oligopoly where the (inverse) market demand is given by $P(Q) = a - Q$ and $Q = q_1 + q_2 + q_3$. Each firm has a constant marginal cost of production, c , and no fixed cost. The firms choose their outputs in the following sequence: firm 1 chooses $q_1 \geq 0$; firms 2 and 3 observe q_1 and simultaneously choose q_2 and q_3 . What is the subgame perfect outcome? 6
5. Give an example of a Nash equilibrium that is not a subgame perfect Nash equilibrium. 6

[3]

6. Consider the following normal form game

		Player 2	
		C	D
Player 1	A	6,6	2,7
	B	7,2	0,0

- Find the Nash equilibria of the game. Give an example of a public randomizing device that ensures a feasible payoff greater than that promised by the mixed strategy Nash equilibrium. 3+3
7. Players 1 and 2 each choose a number from the set $\{1, 2, 3\}$. If the players choose the same number then player 2 pays Re. 1 to player 1; otherwise no payment is made. Each player maximizes her expected monetary payoff. Find the mixed strategy Nash equilibrium of this game. 6