RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SECOND SEMESTER EXAMINATION, MAY 2023

FIRST YEAR [BATCH 2022-25]

Date : 24/05/2023 **ECONOMICS [HONOURS]**

Time : 11 am – 1 pm **Paper : CC3** Full Marks : 50

Group - A

Answer **any three** questions : [3×5]

1. Can the imposition of a price ceiling on a monopolist result in a shortage? Explain.
2. Why is there a social cost to monopoly power? If the gains to producers from monopoly power could be redistributed to consumers, would be social cost of monopoly power be eliminated? Explain briefly.
3. What is meant by intertemporal price discrimination? Explain and give two examples of it.
4. Why would a firm that incurs losses, choose to produce instead of shutting down?
5. True or false: A firm should always produce at an output at which long-run average cost is minimized. Explain.

Answer **any one** question : [1×10]

6. a) A competitive industry consists of 10000 firms each having a short run total cost function $c = 0.4q^3 - 2q^2 + 5q + 10$. Find the short run supply curve of the industry.

   b) A monopolist faces the demand function Q = 53 – P, and it has a constant marginal cost of 5. Find his degree of monopoly power. Calculate his maximum profit and the amount of deadweight loss. (5+2+3)

7. Suppose the market for widgets can be described by the following equations:

   Demand: $P = 10 - Q$; *Supply*: $P = Q - 4$

   where P is the price in dollars per unit and Q is the quantity in thousands of units. Then:

   a) What is the equilibrium price and quantity?

   b) Suppose the government imposes a tax of $1 per unit to reduce widget consumption and raise government revenues. What will the new equilibrium quantity be? What price will the buyer pay? What amount per unit will the seller receive?

   c) Suppose the government has a change of heart about the importance of widgets to the happiness of the American public. The tax is removed and a subsidy of $1 per unit is granted to widget producers. What will the equilibrium quantity be? What price will the buyer pay? What amount per unit (including the subsidy) will the seller receive? What will be the total cost to the government? (2+4+4)

Group - B

Answer **any three** questions : [3×5]

8. Two firms produce homogeneous outputs with cost functions $C_1 = q_1^2$ and $C_2 = 2q_2^2$ and the inverse demand function is given by $p = 100 - q_1 - q_2$. Then show that in the Cournot–Nash equilibrium, firm 2 makes higher profit than at the joint profit maximizing equilibrium.

9. Using the market demand function P = 30 – q for two identical costless duopolists, show that the first mover has an advantage.

10. Suppose there are two homogeneous firms having constant marginal cost c(>0). The inverse demand function of the market is given by, $p = a - b\,Q$; $Q=\sum_{i=1}^{2} qi$, Calculate the Cournot-Nash equilibrium. What is the impact of **b** on social welfare of the economy? (2+3)

11. How does Sweezy's kinked demand curve model explain price rigidity in an oligopolistic market?

12. Consider a restricted version of an ultimatum game in which the Proposer is given \$10. In the first stage of the game, the Proposer may choose to offer either \$1 or \$5 to the Responder. In the second stage, the Responder may choose to accept or reject the Proposer's offer from the first stage. If he accepts, the Proposer gives the offered amount and keeps the rest of the \$10. If the Responder rejects the offer, neither receives anything.

    a) In the second stage, what is the Responder's best response to the Proposer's offer of \$5? Of \$1? Explain.

    b) Taking into account the Responder's best responses in the second stage of the game, what strategy does the Proposer choose in the first stage? Explain.

Answer **<u>any one</u>** question : [1×10]

13. Consider a two-firm industry producing two differentiated products having the following demand functions $p_i = \alpha - q_i - \gamma q_j$; i,j=1,2; i≠j, and constant marginal cost **m**(>0). Then prove the following results:

    a) The market price under Cournot is higher than it is under Bertrand competition.

    b) The more differentiated the products are, the smaller the difference between the Cournot and Bertrand prices.

    c) Now suppose that firm 1 is a leader and firm 2 is a follower. In this case, what will the equilibrium quantity be of each firm? Compare the result with Cournot-Nash equilibrium. (4+2+4)

14. A problem on Game Theory: Consider a village populated by just two villagers, who must choose whether or not to participate in a road maintenance project intended to improve the connection between their village and a larger market town. Assuming that each villager's utility is equal to the benefits he receives from road use less the hours he works, this road maintenance game may be summarized in the table below:

	If Villager 2:	
If Villager 1:	Does not participate	Participates
Does not participate	0,0	R-L,R
Participates	R-L,R	R−L/2, R −L/2

    a) Assume that R −L < 0 but R −L /2 >0. Does Villager 1 have a dominant strategy? Explain.

    b) Is this game a prisoners' dilemma sort of game? Explain.

    Suppose two villagers know that they are going to play the game two times (in two years). Consider the grim strategy "I will participate in the first year. In the second year I will participate if both of us participated in the first period, but I will not participate if either of us did not participate."

    c) Is the outcome in which both players choose the grim strategy a possible equilibrium of the game? Why or why not?

    d) More generally, is any outcome in which either player participates in the first year a possible equilibrium in this game? Why or why not? (2+2+3+3)

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