

MA Examination 2023
Semester III
Economics
Course OP-1
(Industrial Organization)

Time 3 hrs

Full Marks 40

Questions are of value as indicated in the margin
Answer **any four** questions

1. Consider a monopolist producer selling a durable good that lasts two periods with zero depreciation. Assuming that both the consumer and producer discount the future at the same rate (δ), show that
 - (a) The monopolist who decides to rent/lease the product produces only in period 1 and charges the monopoly price in every period
 - (b) The monopolist who sells the product will produce both in period 1 and period 2 and charge a lower price in period 2 compared to period 1

4+6

2. Consider a situation where a consumer with taste parameter (or 'type') obtains net utility $U = \theta s - p$ if she buys 1 unit (maximum) and $U = 0$ if she does not from consuming quality s at price p . Consumers are distributed in the economy according to Cumulative distribution function $F(\theta)$, on $(0, \infty)$ with $F(0) = 0$ and $F(\infty) = 1$. If there are two firms in the market offering qualities $\theta_1, \theta_2, \theta_2 > \theta_1$, then (assuming that every consumer buys 1 unit and there is sufficient consumer heterogeneity)
 - (a) Find the demand function of each firm
 - (b) Show that the firm selling the higher quality makes more profits

4+6

3. (a) Show in a model of Singh-Vives type of product differentiation that the reaction functions of two firms producing substitute goods and engaged in Bertrand price competition are both upward sloping.
(b) Will the result remain the same if the goods are complements?

6 + 4

4. (a) Explain the double marginalization problem whereby the vertical integration of an upstream and a downstream monopoly generates greater profits than if they operate separately.
(b) Does the problem persist under a vertical duopoly. Explain.

4 + 6

5. Discuss how an incumbent monopolist can deter entry by a potential entrant when there is asymmetric information regarding costs in the Limit Pricing Model of Milgrom and Roberts. Specifically explain how in a Pooling Equilibrium the low cost (inefficient) monopolist charges a first period price that is lower than its ordinary monopoly price to deter entry. 10

6. Consider a market with a linear inverse demand curve

$$p = aq - bQ, \quad Q = \sum_{i=1}^n q_i$$

And $n \geq 3$ firms with identical unit cost c and who engage in Cournot quantity competition. If any $m \leq n$ of these firms merge (horizontally), then

- (a) The profits of the unmerged/ standalone firms always increase
 (b) The joint profits of merged firms are often smaller than the sum of their premerger profit unless a high enough number of firms merge 4+6

7. Consider a monopolist selling in a market with two types of consumers – ‘low demand type’ with probability x and ‘high demand type’ with probability $1 - x$. The monopolist cannot distinguish between these two types of consumers but must sell to both types (to be profitable). Explain why the optimal payment scheme devised by the monopolist

- (a) will yield lower profits compared to the case where he is able to clearly identify the two types
 (b) the high demand type will always obtain some positive consumers’ surplus 4+6

8. (a) Distinguish between drastic and non-drastic innovation.

(b) If the original patent holder for an innovation is not a producer in an oligopoly market, explain why

- i. the patent holder makes the greatest profit by licensing the innovation to one firm in case of drastic innovation so that the market ends up as a monopoly
 ii. in case of a non-drastic innovation the patent holder gains by licensing the innovation to more than one producer. 2+4+4