2022

1st Semester Examination

ECONOMICS

Paper : ECO 101

(Advanced Microeconomic Theory)

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any *two* of the following questions : 2×2=4

1. Formulate a problem of constrained optimization for which the Lagrange multiplier can be interpreted as the marginal cost of production.

2. What is a multi-plant multi-market monopoly? What is the condition of equilibrium of such a monopoly firm?

3. Briefly explain the ownership externality.

4. What do you mean by the optimum capital structure of a joint stock company?

P.T.O.

Answer any ***two*** of the following questions : 4×2=8

5. What are the basic features of a perfectly competitive market? Which one of them do you think the most important and why? 2+2

6. Distinguish between a necessary and sufficient condition of an optimization problem. Why are the second order conditions generally explained as sufficient? 2+2

7. Explain the main reasons behind the existence of firms in an otherwise market economy.

8. What is market failure? What are the major forms of market failure? 2+2

Answer any ***one*** of the following questions : 8×1=8

9. What is public good externality? Show how, in the presence of public good externality, the market economy fails to attain the Pareto optimal solution. 2+6

10. What do you mean by an optimum firm? Explain in details different aspects of optimality of a firm. 2+6

Group - B

Answer any ***two*** of the following questions : 2×2=4

11. Write the basic difference between the Bertrand duopoly model and the Cournot duopoly model.

12. Define risk averse and risk loving individual. How can we measure risk?

13. What is fair gamble?

14. What is moral hazard?

Answer any ***two*** of the following questions : 4×2=8

15. Show that there is a unique Nash equilibrium (p_1^*, p_2^*) in the Bertrand duopoly model. Assume that, in this equilibrium, both the firms set their prices equal to cost, that is, $p_1^* = p_2^* = c$ (the symbols have their usual meaning).

16. Show that, in any Nash equilibrium of the Cournot duopoly model with cost, $c > 0$ per unit for the two firms and an inverse demand function $p(.)$ satisfying $p'(q) < 0$ for all $q \geq 0$ and $p(0) > c$, the market price is greater than c (the competitive price) but smaller than the monopoly price. The symbols have their usual meaning.

17. Suppose a firm is not certain what its profits are going to be in the next year but it belives that there is an even chance that they will stay the same as this year and that if they change, there is an equal chance that they will go up by Rs. 100 million or go down by Rs. 100 million. If this year's profit is Rs. 400 million, determine the firm's equilibrium strategy.

18. With a suitable hypothetical example, describe insurance and gambling for two types of individuals, risk averse and risk lover.

P.T.O.

Answer any *one* of the following questions : 8×1=8

19. Derive Nash equilibrium profit and quantity levels in the Cournot model with J firms where each firm has a constant unit production cost of c, and the inverse demand function in the market is $p(q) = a - bq$ with $a > c \geq 0$ and $b > 0$.

20. Consider the following strategy :

$$p_{jt}(H_{t-1}) = \begin{cases} p^m, \text{ if all the elements of } H_{t-1} \textit{ equal } (p^m, p^m) \text{ or } t = 1 \\ c, \text{ otherwise} \end{cases}$$

The strategy constitutes a subgame perfect Nash equilibrium of the infinitely repeated Bertrand duopoly game if and only if discount factor, $\delta \geq \frac{1}{2}$