M.A./M.Sc. 1st Semester Exam., 2024

ECONOMICS

(Advance Microeconomic Theory)

PAPER — ECO-101(A + B)

Full Marks : 50

Time : 2 hours

Answer **all** questions

The figures in the right hand margin indicate 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

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

2. What is product-mix optimality ? State the condition for attaining such optimality. 1 + 1

3. Briefly explain why the PPF (Production Possibility Frontier) of a country is normally concave to the origin.

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

Answer any **two** of the following questions :

4 × 2

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

6. What is Market failure ? What are the main reasons for market failure ?   2 + 2

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7. What is public good externality ? Show how in the presence of public good externality the market economy fails to attain the Pareto optimal solution. $1 + 3$

8. Define 'team production'. Discuss how it explains the existence of 'firms' in an otherwise market economy. $1 + 3$

Answer any **one** of the following question :
                                                            8×1

9. Derive the conditions for the attainment of Pareto optimality in a two factor (L & K), two commodity (X & Y) and two individual (A & B) economy. Show how all these conditions are automatically satisfied if all relevant markets are perfectly competitive.
                                                            $6 + 2$

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

(4)

Answer any **two** questions : 2×2

11. Write the sales of any firm in the Bertrand model of price competition within duopoly framework.

12. What is sub-game perfect Nash equilibrium ?

13. Distinguish between risk and uncertainty.

14. What is adverse selection ?

Answer any **two** questions : 4×2

15. Show that there is a unique Nash equilibrium (p_1^*, p_2^*) in the Bertrand duopoly model. In this equilibrium, both firms set their prices equal to cost : $p_1^* = p_2^* = c$, where c is the cost of production per unit of output.

(Continued)

16. The strategies described in as follows :

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

Prove that it constitutes a sub-game perfect Nash Equilibrium of an infinitely repeated Bertrand duopoly game if and only if the discount rate $\delta \geq \dfrac{1}{2}$.

17. Determine the equilibrium of a firm with the trade-off between risk and uncertainty.

18. Suppose an individual with an income of Rs. 800 is offered a fair gamble that gives Rs. 100 with probability 1/2 and takes away Rs. 100 with probability 1/2. Draw and explain the utility functions by considering individual's different attitudes towards risk.

(Turn Over)

(6)

Answer any **one** question : 8×1

19. There are two firms in an industry producing identical products. The demand function is presented by $p = 100 - 0.5 \, (q_1 + q_2)$ where q_1 and q_2 stand for output levels of the two firms. Let $c_1 = 5q_1$ and $c_2 = 0.5q_2^2$ represent their cost functions. Derive the Cournot reaction functions of the two firms and their equilibrium outputs. Find also the price and profit earned by the firms. Determine the equilibrium output levels if the objective of the two firms is to maximise their joint profits. $(2 + 2) + 2 + 2$

20. Discuss the cost of insurance and cost of gambling by considering a person who buys insurance and also gambles.

[Internal Assessment — 10 Marks]

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