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Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS–UG)

Economics

ECO 5B 10—MATHEMATICAL ECONOMICS

(2019 Admissions)

Time : Two Hours and a Half Maximum : 80 Marks

Section A (Short Answer Questions)

Answer at least **ten** *questions.*
Each question carries 3 marks.
All questions can be attended.
Overall Ceiling 30.

1. Define production function
2. Given the utility function $u = xy + 4x + 5y$, find the marginal utility of x and y.
3. What is meant by elasticity of demand ?
4. Define Mathematical Economics.
5. What do you mean by factor intensity ?
6. Distinguish between homogenous products and heterogeneous products.
7. What is meant by economic model ?
8. Define Marginal Rate of Substitution.
9. Distinguish between primal and dual problem in linear programming.
10. Explain homogeneous production function.
11. What is meant by linear programming ?
12. State Euler's theorem.
13. What is optimal solution ?
14. What do you mean by a production possibility curve ?
15. Calculate MPC :

Income	Consumption
200	150
300	220

(10 × 3 = 30 marks)

Turn over

061

Section B (Short Essay/Paragraph Questions)

Answer at least **five** *questions.*
Each question carries 6 *marks.*
All questions can be attended.
Overall Ceiling 30.

16. What is meant by discriminating monopoly ? Briefly explain the necessary conditions f discrimination.

17. Define AR and MR. Illustrate the relationship between AR and MR with the help of a di

18. Explain utility function. Show the first and second order conditions for consumer equilibri given utility function $U = f(Q_1, Q_2)$ and the budget constraint $M = P_1Q_1 + P_2Q_2$.

19. Explain the meaning and significance of Lagrange multipliers.

20. Solve the following linear programming problem using graphical method :

Maximize $z = x_1 + 1.5\,x_2$

subject to the constraint
$$2x_1 + 2x_2 \le 16$$
$$x_1 + 2x_2 \le 12$$
$$4x_1 + 2x_2 \le 28$$
$$x_1, x_2 \ge 0.$$

21. Discuss the economic applications of optimization technique.

22. The demand curve of a monopolist is given by $p = \frac{50 - x}{5}$. Find the marginal revenue output. What is marginal revenue when $x = 25$?

23. Explain input output analysis. What are the features of input-output analysis ?

(5 × 6 = 3

Section C (Essay Questions)

Answer any **two** *questions.*
Each question carries 10 *marks.*

24. Explain Cobb Douglas production function. State and prove the properties of Cobb production function.

25. Discuss the conditions for profit maximization. Consider $TC = Q^3 - 8Q^2 + 120$ $TR = 1200Q - 5Q^2$. Find the profit maximizing output.

26. Explain the meaning and characteristics of perfect competition. Assume that a perfectly co firm faces a price of Rs. 9 and has a total cost function $C = 2Q^2 + 2Q + 15$. What quanti the firm produce in the short run ?

27. Explain price elasticity of demand. What are the degrees of elasticity ? Suppose price from 40 to 45 and demand falls from 200 to 150. Calculate price elasticity of demand.

(2 × 10 = 2