Reg. No. : ....

Name : ....

Third Semester M.A. Degree Examination, March 2022

Economics

Optional

EC 205 : MATHEMATICAL ECONOMICS

(2018 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

PART – I

Answer **all** questions.

1. Simplex method of solving Linear Programming problems was developed by:

    (a) Koopmans

    (b) Dantzig

    (c) Leontief

    (d) Solow

2. Input-Output Technique was invented by

    (a) Gunnar Myrdal

    (b) Wassily Leontief

    (c) Hollis B. Chenery

    (d) Robert Solow

3. Under which type of market is price stickiness predicted,

    (a) Perfect competition

    (b) Oligopoly

    (c) Monopoly

    (d) Monopolistic competition

4. The slope of total cost curve is

    (a) Marginal cost

    (b) Average cost

    (c) Marginal product

    (d) Average product

5. In a game theory, a situation in which one firm can gain only when another firm loses is called

    (a) Zero sum game

    (b) Non zero sum game

    (c) Positive sum game

    (d) Negative sum game

6. The central idea of VES production functions is

    (a) σ is constant

    (b) σ is unitary

    (c) σ is varying

    (d) Cannot Say

7. Given log Q= 0.8 log K + 0.2 log L, what is the numerical value of elasticity of capital?

    (a) 0.8

    (b) 0.2

    (c) 1

    (d) 1.6

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8. Cobb-Douglas production function $Q = AL^{\alpha}K^{1-\alpha}$ does not possess the characteristics of

   (a) Constant Returns to Scale

   (b) Unit Elasticity of Substitution

   (c) Variable Elasticity of Substitution

   (d) Linear homogeneity

9. For the Marginal Revenue function MR= 20 q + 5, find the Total Revenue when output q is 10

   (a) 10

   (b) 1050

   (c) 205

   (d) 25

10. On a linear demand curve, price elasticity will be

    (a) Constant

    (b) Varying

    (c) Both (a) and (b)

    (d) None of the above

(10 × 1 = 10 Marks)

PART – II

Answer any **seven** questions.

11. Discuss the features of a monopoly market.

12. Explain price discrimination.

13. Distinguish between risk and uncertainty.

14. If the utility function of a consumer is $U = u(x_1, x_2) = x_1^2 x_2^2$. Find the marginal utility of each of the goods.

15. What is a production function?

3

16. Find out the dual of the given primal problem.

Maximise $Z = 60x_1 + 100x_2$

Subject to

$50x_1 + 60x_2 \leq 50$

$20x_1 + 40x_2 \leq 60$

$x_1, x_2 \geq 0$

17. What is technological coefficient matrix?

18. Elucidate the paradox of prisoner's dilemma.

19. State the condition for maxima and minima.

20. Briefly explain the utility function.

(7 × 5 = 35 Marks)

PART – III

Answer any **three** questions.

21. What is input-output analysis? What are its limitations?

22. Discuss dominant strategy and Nash equilibrium in game theory. Briefly explain saddle point.

23. Explain the properties of Cobb-Douglas Production function.

24. Derive the Linear Expenditure system.

25. Maximise :

$Z = 10x_1 + 7x_2$

Subject to $4x_1 + 3x_2 \leq 300$

$2x_1 + 3x_2 \leq 210$

$x_1, x_2 \geq 0$ using simplex method.

(3 × 10 = 30 Marks)