29. Explain the first and second order condition for the maximization of utility.

30. Write a short note on ordinary demand function. What are the properties of demand function ?

31. Construct a short run supply function for an entrepreneur whose short run cost function is $C = 0.04q^3 - 0.8q^2 + 10q + 5$

32. Briefly discuss profit maximisation in monopoly.   **(4×5=20)**

PART – D

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

33. Explain the substitution and income effects in Slutsky equation.

34. State Cobb – Douglas Production Function. Optimise the following Cobb – Douglas production function subject to the given constraint by finding the critical values.

$q = 10K^{0.7}L^{0.1}$, given $P_K = 28$; $P_L = 10$ and $B = 4000$

35. The mathematical theory of games is an alternative approach that has been applied to small numbers market situations with interdependent outcomes. Explain.

36. State CES Production function. Explain the properties and equilibrium condition.

37. What do you mean by Game theory ? Explain the pure and mixed strategy.

38. Discuss the primal and dual problem in linear programming.   **(2×10=20)**

Reg. No. : ....

Name : ....

IV Semester M.A. Degree (CBSS – Reg./Suppl. (Including Mercy Chance)/Imp.)
Examination, April 2021
(2014 Admission Onwards)
Economics/Development Economics
ECO 4E15 : MATHEMATICAL ECONOMICS

Time : 3 Hours   Max. Marks : 60

PART – A

Answer **all** questions in Part **A**. **All** questions carry **equal** marks.

1. A consumer's ordinary demand function is known as
   a) Keynesian demand function
   b) Kinked demand curve
   c) Individual demand function
   d) Marshallian demand function

2. The shape of isoquant is
   a) Convex to origin
   b) Concave to origin
   c) Straight line
   d) None of the above

3. Kinked demand curve solution is discussed in
   a) Oligopoly   b) Monopoly
   c) Monopolistic   d) Duopoly

4. A duopolistic industry contains
   a) Large number of sellers   b) Only one seller
   c) Two sellers   d) Few sellers

5. Input-output analysis was pioneered by

   a) Hawkin – Simon

   b) Wassily W. Leontief

   c) Harrod – Domar

   d) Marshall

6. The full form of LPP is

   a) Linear Programming Programme

   b) Linear Programming Problem

   c) Linear Programming Penalty

   d) None of the above

7. The quantity which an oligopolist can sell depends upon

   a) His own price decision

   b) Price decision of all members in the industry

   c) Demand from the part of customers

   d) None of the above

8. The possibility of cooperation arises in

   a) Perfect competition

   b) Monopoly

   c) Non-zero-sum games

   d) Zero sum games $(8×½=4)$

PART – B

Answer **any eight** questions from Part – **B. Each** question carries **2** marks.

9. Explain the utility function.

10. What is market rate of return ?

11. Determine the level of homogeneity for the following production function
    $Q = x^2 + 6xy + 7y^2$.

12. Find the marginal propensity to consume MPC = dc/dy.

    $C = 1500 + 0.75Y$

13. Explain the income elasticity of demand.

14. Explain zero sum game.

15. Explain producer's equilibrium.

16. Find the marginal cost.

    $TC = 35 + 5Q – 2Q^2 + 2Q^3$

17. Explain Oligopolistic market condition.

18. Explain the saddle point.

19. The equation for the production isoquant is $16 K^{¼} L^{¾} = 2144$. Find MRTS.

20. What is input-output analysis ?

21. Explain fixed coefficient product function.

22. What are the basic assumptions of linear programming ?

23. What is third degree price discrimination ?

24. What are the assumptions of cardinal utility theory ? $(8×2=16)$

PART – C

Answer **any four** questions. **Each** question carries **5** marks.

25. What do you mean by Linear Expenditure System ?

26. Briefly discuss about the homogeneous and homothetic utility function.

27. Explain indirect utility function.

28. A linear production function contains four activities for the production of one output using two inputs. The input requirements per unit output are

$a_{11} = 1$	$a_{12} = 2$	$a_{13} = 3$	$a_{14} = 5$
$a_{21} = 6$	$a_{22} = 5$	$a_{23} = 3$	$a_{24} = 2$