

G 2356

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Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, JUNE 2015

Fourth Semester

Faculty of Science

Branch I (A)—Mathematics

MT 04 E 05—MATHEMATICAL ECONOMICS

(2012 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum Weight : 30

Part A

*Answer any five questions.
Each question has weight 1.*

1. What is the indifference curve analysis ?
2. What is meant by consumer equilibrium ?
3. What are isoquants ? Draw them for a Cobb-Douglas production function.
4. What is the elasticity of substitution for a given production function ?
5. What are the advantages of input-output analysis ?
6. Explain the steps involved in input-output analysis.
7. How difference equations are classified ? Explain with examples.
8. Give two applications of recurrence equations in economic models.

(5 × 1 = 5)

Part B

*Answer any five questions.
Each question has weight 2.*

9. What do you mean by the concept of utility ? Show that the total utility is maximum when marginal utility is zero.
10. Define marginal rate of substitution. Why does it diminish ?
11. (a) What are the factors that can cause a nation's production function to shift over time ?
(b) The production function slopes upward, but its slope declines from left to right. Give an economic interpretation of these properties.

Turn over

12. Define CES production function. Obtain its elasticity of substitution.
13. Discuss the concept of economic region in detail.
14. Explain how Leontief input-output world is derived using matrix algebra.
15. Explain the application of linear difference equation in the general Cob-Web model.
16. A man deposits Rs. 500 regularly at the beginning of each year in an account which earns interest of 5 % p.a. Formulate a difference equation and find the value of the investment at the beginning of the sixth year.

(5 × 2 = 10)

Part C

*Answer any three questions.
Each question has weight 5.*

17. (a) What is a demand curve ? Draw a rough sketch and explain.
(b) Explain : Relative preference theory of demand.
18. (a) List the characteristics of Cobb-Douglas production function.
(b) Stating the conditions, prove Euler's theorem.
(c) Explain how Euler's theorem applies to production function.
19. (a) Bring out the relation between Cobb-Douglas production function and CES production function.
(b) Under what conditions does a Cobb-Douglas production function exhibit decreasing, constant or increasing returns to scale ? Explain.
20. For the economy represented by the table obtain new total output and new labour requirements :

	<i>Ind. P</i>	<i>Ind. Q</i>	<i>Final Demand</i>	<i>Total output</i>
Ind P	180	100	20	300
Ind Q	90	300	110	500
Labour	30	100		

Predicted demands for 5 years in future : 30 for P, 100 for Q.

21. (a) Explain input-output analysis briefly mentioning its limitations.
(b) Compare and contrast the different input-output analysis models.
22. (a) Discuss the application of difference equations in the consumption model.
(b) Explain : The Harrod Model.

(3 × 5 = 15)