

D 93938

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Name.....

Reg. No.....

**FIRST SEMESTER (CBCSS—UG) DEGREE EXAMINATION  
NOVEMBER 2020**

Mathematics

MEC 1C 01—MATHEMATICAL ECONOMICS

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

**Section A**

*Answer at least **eight** questions.*

*Each question carries 3 marks.*

*All questions can be attended.*

*Overall Ceiling 24.*

1. Define Law of Demand.
2. What is meant by Cross elasticity of demand ?
3. Define  $MRS_{xy}$ .
4. Define AFC.
5. Explain the meaning of Short run costs.
6. What is meant by a Point of inflexion ?
7. What is an Indifference map ?
8. Explain the term Shift in demand curve.
9. Explain the meaning of Budget line.
10. What is meant by Constrained optimization?
11. If  $TC = 5Q^2 + 12Q + 14$ , find MC.
12. Define the term Consumer equilibrium.

(8 × 3 = 24 marks)

**Turn over**

**Section B**

*Answer at least five questions.*

*Each question carries 5 marks.*

*All questions can be attended.*

*Overall Ceiling 25.*

13. Derive the relation between MR, AR and elasticity of demand.
14. What is ordinal utility of demand?
15. State the law of equi-marginal utility. If the utility function is  $U = f(q_1, q_2)$  and the budget equation is  $M = p_1q_1 + p_2q_2$ , derive the law of equi-marginal utility.
16. Explain the properties of indifference curves.
17. Explain the conditions for the optimization of the multivariable functions.
18. Assume a four sector economy, where  $Y = C + I + G + (X - M)$ ,  $C = C_0 + bY$ ,  $I = I_0 + aY$ ,  $G = G_0$ ,  $Z = Z_0$ . Find the equilibrium level of income in terms of general parameters.
19. What is marginal productivity? Given the production function  $Q = AL^aK^b$ , show that marginal productivity of labor and capital depends on capital (K) – labor (L) ratio.

(5 × 5 = 25 marks)

**Section C**

*Answer any one question.*

*The question carries 11 marks.*

20. Explain the significance of Lagrange multiplier and optimize the function  $3x^2 - 2xy + 6y^2$  subject to the constraint  $x + y = 36$  using the Lagrange multiplier.
21. Explain cardinal utility analysis of demand. Derive consumer equilibrium using cardinal utility method.

(1 × 11 = 11 marks)