

## M.A. (PREVIOUS) ECONOMICS

### Optional Paper

#### Paper-IX-B

### MATHEMATICAL ECONOMICS

#### Unit I

Cardinal and ordinal utility Analysis; Ordinal utility maximization; Slutsky equation, compensated demand functions, income, substitution, and price effects; Concept of elasticities -generalizations to 'n' variable case; Separable and additive utility functions, homogeneous and homothetic utility functions, constant elasticity of substitution (CES) and transcendental logarithmic utility functions, Indirect utility functions; Linear expenditure system. Numerical applications, Theory of Revealed Preference. Consumer behaviour under risk and uncertainty (N.M. Theorem)

#### Unit II

Production function -homogeneous and non-homogeneous; Properties of Cobb-Douglas and CES Production functions; Concept of VES and trans - Log production function; Simple derivation of short and long run cost functions; Concept of Modern approach to theory of costs; Producer's equilibrium -Laws of return and returns to scale; Constrained optimization of a producer; Generalization to 'n' variable case. Input demand functions.

#### Unit III

Price determination in perfect competition, monopoly, monopolistic competition, duopoly, Pricing of factors of production; Bilateral monopoly. Single market equilibrium- Marshallian and Walrasian equilibrium conditions; General equilibrium models of Walras and Debreu; Conditions of stability of equilibrium.

#### Unit IV

Classical and Keynesian macro economic models : Concept of multiplier and Accelerator: Trade cycle model of Samuelson and Hicks, Goodwin, Kalecki; Stabilization Theory.

Harrod Growth Model; Neoclassical growth model of Solow; Meade growth models with technical progress; Optimal growth; and Mrs. Robinson's golden rule of accumulation; Concept of Endogenous growth.

#### Unit V

Concept of game - Two-person zero-sum game, Pay-off matrix, pure and mixed strategies,

minimax and minimax criteria and Saddle point theorem; Non-constant sum game; Prisoner's dilemma; Linear programming -Primal and dual problem, simplex method; transport and storage problems and applications of linear programming in economics; Input-output analysis -Open and closed systems, Hawkins-Simon conditions.

## BASIC READING LIST

- > Henderson, J.M. and R.E. Quandt (1980), Microeconomic Theory : A Mathematical Approach, McGraw Hill, New Delhi.
- > Chung, J. W. (1993), Utility and Production: Theory and Applications, Basil Blackwell, London.
- > Ferguson, C.E. (1976), Neo-classical Theory of Production and Distribution.
- > Allen, R.G.D. (1974), Mathematical Analysis for Economists, Macmillan Press and ELBS, London.
- > Chiang, A.C. (1986), Fundamental Methods of Mathematical, McGraw Hill, New York.
- > Kothari, C.R. (1992), An Introduction to Operations Research, Vikas Publishing House, New Delhi.
- > Allen, R.G.D. (1976), Mathematical Economics, Macmillan, London.
- > Arrow, K.J. and M. Intriligator (Eds.) (1982), Handbook of Mathematical Economics, Volumes I, II and III, North Holland, Amsterdam.
- > Henderson, J.M. and R.E. Quandt (1980), Microeconomic Theory : A Mathematical Approach, McGraw Hill, New Delhi.

## ADDITIONAL READING LIST

### Unit I & II

- > Chung, J. W. (1993), Utility and Production: Theory and Applications, Basil Blackwell, London.
- > Ferguson, C.E. (1976), Neo-classical Theory of Production and Distribution.

### Unit III

- > Allen, R.G.D. (1974), Mathematical Analysis for Economists, Macmillan Press and ELBS, London.
- > Chiang, A.C. (1986), Fundamental Methods of Mathematical, McGraw Hill, New York.

### Unit IV

- > Abel, A., B.S. Bernanke and B. Mcnabb (1998), Macroeconomics, Addison Wesley, Massachusetts.
- > Barro, R.J. and H. Grossman (1976), Money Employment and Inflation, Oxford University Press, Oxford.
- > Jha, R. (1991), Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd., New Delhi.
- > Jones, H.G. (1976), An Introduction to the Modern Theory of Economic Growth, McGraw Hill-Kogakusha; Tokyo.