Paper Code :1333

B.A. HONOURS IN ECONOMICS

FIRST YEAR HONOURS

Paper – III

QUANTITATIVE TECHNIQUES

Objective: This paper is combination of basic mathematical and statistical techniques. This knowledge enables students for the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory and econometrics models..

UNIT – I

Simple Differential calculus – First and Higher Order derivatives, Maxima and Minima. Partial and Total Derivatives- First and Higher Order derivatives.

Integration – Methods of Integration, Substitution and by Parts, Partial Fraction and Definite Integrals.

UNIT – II

Matrices and their types, Inverse of Matrices. Determinants and their properties. Application of the Matrices and Determinants in solving Simultaneous Equations. Game theory: Saddle Point Solution, Mixed Strategy, Nash Equilibrium.

UNIT – III

Measures of Central Tendency – Mean, Median, Mode. Measures of Dispersion – Range, Mean Deviation, Standard Deviation, Coefficient of Variation, Quartile Deviation, Skewness and Kurtosis.

UNIT – IV

Correlation – Simple Coefficient of Correlation, Karl Pearson and Rank Correlation, Regression Analysis – Simple Regression, Least Square Method,

Time Series Analysis – Concept and Components, Determination of Regular trends: Moving Average Methods and Least Square Method.

UNIT – V

Index numbers – Concept, Index Methods – Laspeyer's, Pasche's and Fisher, Family budget method, Problems in the construction and limitations of Index Numbers, Test for ideal Index Number.

Elementary Probability Theory: concept of permutation and combination, concept of probability, rules of probability (addition and multiplication rules), Conditional Probability and Bayes' rule. Probability Distribution – Binomial, Poison and Normal Distribution (concept).

Basic Reading List

1. Agrawal, D.R. (2015). Mathematics and Statistics in Economics, Vrinda Publications,Delhi.
2. Chiang, A.C. (1986), Fundamental Methods of Mathematical Economics (3rd Edition), McGraw Hill, New Delhi
3. Croxton, Crowden and Klein (1971) –Applied General Statistics, Prentice Hall of India, New Delhi.
4. Gupta, S.P. (2002) – Statistical Methods ,S. Chand and Sons, New Delhi.
5. Madnani, G.M.K.- Arthshastra Me Ganit Ke Prayog .(Hindi Version)
6. Nathuramka L.N. (2016), Arthshastra Me Ganit Ke Prayog, College Book House, Jaipur.(Hindi Version)
7. Nagar, A.L. and Das, R.K. (1993) –Basic Statistics, Oxford University Press, New Delhi.
8. Sydsaeter K.and P. Hammond (2002) *Mathematics for Economic Analysis*, Pearson Educational Asia, Delhi
9. कैलाशनाथ नागर (2002) – सांख्यिकी के मूल तत्व, मिनाक्षी पब्लिकेशन, मेरठ।