6TH SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (DSEs)
OPTION-I

ST616DA: STATISTICS: STATISTICAL INFERENCE AND INDUSTRIAL STATISTICS -I

CREDITS: THEORY-4, PRACTICAL-2

UNIT-I

Statistical Inference, parameter, Parameter space, Statistic and its sampling distribution. Types of Estimation (Point and Interval· estimation).Estimate and estimator. Requirements of a good estimator with examples.Unbiasedness, consistency, efficiency and sufficiency. Statement of Neyman-Factorization theorem with examples.

UNIT-II

Methods of Estimation: Maximum likelihood Estimation (MLE), method of moments, method of minimum chi-square and method of least square. Examples on MLE and method of moments.

UNIT-III

Statistical quality control and its uses. Chance and assignment causes of variation. Process and Product control, 3σ limits. Control chars for variables; Mean Chart (X-chart)), Range Chart (R-Chart) and Standard Deviation Chart (S or o Chart).

UNIT-IV

Control chart for attributes; Control Chart for Fraction Defective (p-chart), Control. Chart for number of defectives (np-chart), Control Chart for number of defects per unit (C-chart) for uniform sample size. Introduction to computers. Concept of single sampling plan. Basic set of an electronic computer (CPU, input & output devices). Importance of computers in statistics.

Practical

1. Construction of X, R and S- charts.
2. Construction of np, p and c-charts.

REFERENCES:

1. S.C Gupta and V.K Kapoor: Fundamentals of Applied Statistics.
2. Grant E.L (1964): Statistical Quality control, McGraw Hill.
3. Duncan A.J (1974): Quality Control and Industrial Statistics, Tarapolwal and sons.
4. Rajaramsn, V (1981): Computer Oriented Numerical Methods, Prentice Hall.
5. S.C Gupta and V.K Kapoor: Fundamentals of Mathematical Statistics. S.Chand, New Delhi.
6. Brownlee K.A (1960): Statistical Theory and Methodology in Science and Engineering, John Wiley and Sons.

ADDITIONAL REFERENCES:

1. Gupta and Mukhopadhay P.P: Applied Statistics, Central Book Agency.
2. Cowden D.J (1960): Statistics Methods in Quality Control, Asia Publishing Society.

6TH SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (DSE)
OPTION-II

ST616DB: STATISTICS: APPLIED STATISTICS-II

CREDITS: THEORY-4, PRACTICAL-2

UNIT-I

Economic statistics: Index number: its definition application, of index number. Price relatives and qua ntity or volume relatives, link and chain relatives, Pr oblems involved in computation of index number, use of averages, simple aggregative and Weighted average methods, Lasperey's, Passche's and Fisher's index numbers, time and factor reversal tests of index number.

UNIT-II

Time series Analysis: Time series - Introduction, Components of Time Series: Secular trend, Periodic changes, and irregular component. Analysis of time series using mathematical models. Uses of time series.

UNIT-III

Measurement of Trend: Methods of determination of trend by graphical, semi-averages, least squares and moving average methods- Determination of seasonal indices by simple average , ratio to trend methods and ratio to moving average. Method.

UNIT-V

Vital statistics - Introduction - definition, uses, source of vital statistics - registration method, Census method - rates and ratios, crude death rates - age specific death rate, standardized death rates - crude birth rate, age specific fertility rate, general fertility rate, total fertility Rate. Gross reproductive rate and net reproductive rate.

Practical

1. Construction of index number by Lasperey's, Passche's anti Fisher's method.
2. Computation of reversal tests.
3. Measurement of trend by graphical method.
4. Measurement of trend by least square method.
5. Measurement of trend by moving average method
6. Determination of trend by moving averages and Ratio -To-Trend method.
7. Construction of seasonal indices.
8. Computation of various mortality rates.
9. Computation of various fertility rates.

REFRENCES:

1. S.C Gupta and V.K Kapoor: Fundamentals of Applied Statistics.
2. Grant E.L (1964): Statistical Quality control, McGraw Hill.
3. Duncan A.J (1974): Quality Control and Industrial Statistics, Tarapolwal and sons.
4. Rajaramsn, V (1981): Computer Oriented Numerical Methods, Prentice Hall.
5. S.C Gupta and V.K Kapoor: Fundamentals of Mathematical Statistics. S. Chand, New Delhi.
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