B.A /B.Sc. 6th SEMESTER
STATISTICS
DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE)
OPTION - I

ST620DA: STATISTICS: STATISTICAL INFERENCE AND INDUSTRIAL STATISTICS

CREDITS: THEORY: 4, PRACTICAL: 2
MAXIMUM MARKS: THEORY: 60; PRACTICAL: 30

THEORY (4 CREDITS)

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 (Without proof) 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 ($\bar{X}$-chart)), Range Chart (R- chart) and Standard Deviation Chart (S or σ 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.

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. 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.

PRACTICAL (2 CREDITS) **MAXIMUM MARKS: 30**

1. Construction of $\bar{X}$-Chart
1. Construction of R-Chart
2. Construction of S- Chart
3. Construction of P- Chart
4. Construction of np-Chart
5. Construction of c-Chart.

B.A /B.Sc. 6th SEMESTER
STATISTICS
DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE)
OPTION - II

ST620DB: STATISTICS: APPLIED STATISTICS

CREDITS: THEORY: 4, PRACTICAL: 2
MAXIMUM MARKS: THEORY: 60; PRACTICAL: 30

THEORY (4 CREDITS)

UNIT I

Economic statistics: Index number, its definition and applications. Price relatives and quantity or volume relatives, link and chain relatives, Problems 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, 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 –IV

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.

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.
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2. Cowden D.J (1960): Statistics Methods in Quality Control, Asia Publishing Society.

PRACTICAL (2 CREDITS) **MAXIMUM MARKS: 30**

1. Construction of index number by Laspeyre's, Passche's and 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.