

## B.A/ B. Sc-III Semester-V

### Paper-I (ST-501)

Time: 3 Hours

M.M.:B. Sc: 40+10\*

B.A: 28+7\*

\* Internal Assessment

### Applied Statistics

**Note :** There will be nine questions in all. Question No.1 will be compulsory covering whole of the syllabus and comprising 5 to 8 short answer type questions. Rest of the eight questions will be set from the four units uniformly i.e. two from each unit. The candidate will be required to attempt five questions in all selecting one question from each unit and the compulsory one. All the questions will carry equal marks except the compulsory question, the distribution of marks for which will be as follows:-

B.Sc.8 marks and B.A. 6 marks.

#### UNIT-I

**Index Number :** Definition, problems involved in the construction of index numbers, calculation of index numbers- simple aggregate method, weighted aggregates method, simple average of price relatives, weighted average of price relatives, link relatives, chain indices, value index numbers, price and quantity index numbers.

#### UNIT-II

Laspeyre's, Paasche's, Marshall- Edgeworth and Fisher's index numbers, time and factor reversal tests of index numbers, consumer price index number and its uses. Base shifting, splicing and deflating of index numbers.

#### UNIT-III

**Time Series Analysis :** Definition, components of time series-trend, seasonal variations, cyclic variations, irregular component, illustrations, additive and multiplicative models, determination of trend: graphic method, semi- averages method, method of curve fitting by principle of least squares, moving average method. Analysis of seasonal fluctuations, construction of seasonal indices using method of simple averages, ratio to trend method and ratio to moving average method.

#### UNIT-IV

**Demographic methods :** Sources of demographic data- census, register, adhoc survey, hospital records, measurement of mortality, crude death rate, specific death rate, standardized death rates, complete life tables and its main features, assumptions, descriptions and construction of life tables, uses of life tables, stationary and stable population, measurement of fertility- crude birth rate, general fertility rate, specific fertility rate, total fertility rate, measurement of population growth, gross reproduction rate, net

reproduction rate.

### **Books recommended**

<b>S. No.</b>	<b>Title of Book</b>	<b>Name of author</b>	<b>Publisher</b>
1.	Applied General Statistics	Croxton F.E., Cowden D.J. & Kelin S.	Prentice Hall
2.	Demography	Cox P.R.	Cambridge Uni. Press
3.	Technical Demography	Ramakumar R.	New Age International
4.	Fundamentals of Applied Statistics	Gupta S.C. & Kapoor V.K.	Sultan Chand & Sons

## B.A/ B. Sc-III Semester-V

### Paper-II (ST-502)

Time: 3 Hours

M.M.:B. Sc: 40+10\*

B.A: 28+7\*

\* Internal Assessment

### **Numerical Methods and Fundamentals of Computers**

**Note :** There will be nine questions in all. Question No.1 will be compulsory covering whole of the syllabus and comprising 5 to 8 short answer type questions. Rest of the eight questions will be set from the four units uniformly i.e. two from each unit. The candidate will be required to attempt five questions in all selecting one question from each unit and the compulsory one. All the questions will carry equal marks except the compulsory question, the distribution of marks for which will be as follows:-

B.Sc.8 marks and B.A. 6 marks.

#### **UNIT-I**

**Numerical Methods:** Concept of interpolation and extrapolation, difference tables, methods of interpolation, Newton's formula for forward and backward interpolation with equal intervals, Lagrange's method of interpolation, Divided differences.

#### **UNIT-II**

Numerical integration, General quadrature formula for equidistant ordinates, Trapezoidal rule, Simpson's  $1/3^{\text{rd}}$  and  $3/8^{\text{th}}$  formulae.

#### **UNIT-III**

**Basics of Computer:** Introduction, origin, development, uses and limitation of computers. Types of computers, computer structure, input-unit, CPU, output unit, secondary storage, High Level and low level languages, compiler and interpreter.

**Computer Arithmetic :** Floating point representation of numbers, arithmetic operations with normalized floating point numbers. Number systems- Binary, decimal, octal and hexadecimal number systems and their conversions into each other. Binary arithmetic's, (Addition, subtraction, multiplication & division).

#### **UNIT-IV**

**Flow charts and Algorithms:** Concepts of flow chart, algorithm and programming. Flow charts and algorithms for the following: Mean, Standard Deviation, Coefficient of Correlation, Straight line fitting. Trapezoidal rule, Simpson's  $1/3$  and  $3/8^{\text{th}}$  rules.

### **Books recommended**

<b>S. No.</b>	<b>Title of Book</b>	<b>Name of author</b>	<b>Publisher</b>
1.	Computer Fundamentals	Sinha P.K.	BPB Publication
2.	Introductory Methods of Numerical Analysis	Sastry S.S.	Prentice Hall
3.	Computer Based Numerical Algorithms	Krishnamurthy E.V. & Sen S.K.	Affiliated East West Press
4.	Computer Oriented Numerical Methods	Rajaraman V.	Prentice Hall