Revised Syllabus for the session 2020-21

STATISTICS

There shall be two Theory papers in Statistics, each of three hours duration, carrying 70 marks
in first year and 70 marks in second year and two practical papers carrying 30 marks in first
year and 30 marks in second year respectively, each of three hous duration.
The examination for paper- I and practical examinations will be held at the end of the first year
and examination for paper-II and practical examination will be held at the end of second year
respectively.

Pattern of Questions

Theory:

Group-A: Objective type questions

1. Multiple choice questions (Compulsory).
2. Very short type questions (Compulsory).

Group-B: Short answer type questions

1. 8 questions to be answered out of 12.

Group-C: Long answer type questions

1. 3 questions to be answered out of 5 questions.
2. 1 question will be set up from each unit.

Practical :

1. Solution of problems – 24 Marks
2. Record – 3 Marks
3. Viva-Voce – 3 Marks

DETAILED SYLLABUS

+2 FIRST YEAR SCIENCE

(TO BE COVERED IN FIRST YEAR CLASS)

Theory – 70 Marks
3 Hours Duration

Unit-I BASIC MATHEMATICS:

Fundamental Principle of Counting, Factorial n (n!). Permutation and Combination. Binomial

Theorem for positive Integral indices. General and Middle terms in Binomial Expansion, Simple Applications,

Unit-II PROBABILITY THEORY-I:

Definition of Probability:- Classical, Empirical and Axiomatic Approach, Sample Space and
events, Concepts of sets. Correspondence between sets and events. Probability by direct
enumeration. Laws of addition and multiplication, Conditional Probability and independence of events.

Unit-III PROBABILITY THEORY-II:

Concept of Random Variable. Discrete and Continuous random Variables and their probability
distribution. Mathematical expectation of random variables.
Addition and Multiplication laws of expectation. Variance of Sum of Random Variables.

Unit-IV STATISTICAL METHODS-I:

Definition. Scope and Limitations of Statistics. Collection of Data: Primary and Secondary Data. Classification of Data. Tabulation of Data: One-Way and Two-Way Tables. Presentation of Data: Diagrams-Simple. Multiple. Subdivided and percentage bar diagrams, pie diagrams, Graphs-Frequency curve. Frequency Polygon. Ogives and Histogram.

Unit-V STATISTICAL METHODS-II:

Frequency distributions. Measures of Central Tendency: Arithmetic Mean. Geometric Mean.
Harmonic Mean. Median and Mode. Quartiles. Measures of Dispersion:
Range. Inter-Quartile range. Quartile Deviation. Mean absolute deviation. Standard Deviation.
Coefficient of Variation and. Moments: Raw and Central moments of various
orders. Skewness and its different measures. Kurtosis and its measure based on moments.

PRACTICAL- 30 Marks

3 Hours Duration

The candidate is required to answer any four out of six questions to be set. Each question
carries six marks. The Practical Records should be maintained in blue/black ball pen only.

Diagrammatic Representation of Data : Simple, multiple, sub-divided and percentage bardiagrams, pie diagrams. Graphical Representation of data- Histogram. Frequency Polygon and Cumulative Frequency Curve. Arithmetic Mean. Median. Mode. Mean. Partition Values, Standard Deviation, mean absolute deviation. Coefficient of variation. moments, skewness & kurtosis.

Books Recommended:

1. Bureau's Higher Secondary (+2) Statistics, Part-I, Published by Odisha State Bureau of
Text Book Preparation and Production, Bhubaneswar.

+2 SECOND YEAR SCIENCE

(TO BE COVERED IN FIRST YEAR Class)

Theory – 70 Marks

3 Hours Duration

Unit-I STATISTICAL METHODS-II:

Bi-variate Frequency Distribution, Simple Correlation, Computation of Correlation Coefficient

and its interpretation using Probable Error. Rank Correlation (including ties). Linear Regression, Regression Coefficients and their Properties.

Unit-II PROBABILITY DISTRIBUTIONS:

Bernoulli. Binomial and Poisson Distributions with properties and applications (derivation of

mean and variance only). Normal distribution, its properties and applications (mathematical

proofs excluded).

Unit-III SAMPLING METHODS:

Finite Population Sampling : Sample. Population. Sampling units, sampling frame. Principal

Steps in sample Surveys. Census versus Sample Survey. Idea about questionnaire and schedule, sampling and non-sampling errors. Idea on simple random sampling with and without replacement. Methods of Drawing Random Samples; Lottery Method and Random Number table Method. Estimation of Population mean and Variance.

Unit-IV TIME SERIES:

Definition, uses and components of Time Series, Measurement of trend: Freehand Semi-

Average. Moving Average and Least Squares Method

Unit-V INDEX NUMBERS:

Need meaning and uses of Index Numbers, Important steps in the construction of index number. Problems in the selection of items. Idea of base year and Current Year. Average System of Weighing. Weighted index number: Laspeyre’s, Paasche’s and Fisher’s ideal index numbers. Unit. Time Reversal, Factor Reversal and Circular Tests. Base shifting splicing and deflating of index, numbers.

PRACTICAL – 30 Marks

3 Hours Duration

The candidate is required to answer any four out of six questions to be set. Each question

carries six marks. The Practical Records should be maintained in blue/black ball pen only.

Measurement of trend by moving averages and by Least Square (Straight line only) method.

. Computation of index numbers by weighted average of price

relatives: Laspeyre's Paasche's and Fisher's Formula: Coefficient of Correlation, Coefficient of Regression.

Books Recommended:

1. Bureau's Higher Secondary (+2) Statistics, Part-II, Published by Odisha State Bureau

of Text Book Preparation and Production, Bhubaneswar.