SHIVAJI UNIVERSITY, KOLHAPUR.

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Accredited by NAAC with 'A^{++}' Grade

CHOICEBASEDCREDITSYSTEM (C.B.C.S.)

Syllabus

For

B.Com. Part – II: Semester IIIandIV
Business Statistics Paper I and II

AS PERNEP2020

Tobeimplementedfromacademicyear2023-24

B. Com. Part – II: Semester – III
BUSINESSSTATISTICS–I

Theory:60Hrs.Marks:50(Credits:04)

CourseOutcomes:
After completion of this course, the studentsenable
    i)to explain the scope of statistics in businessandapply sampling techniques in real life.
    ii)to summarize data by means of measures of central tendency and dispersion.
    iii)to explain the merits and demerits of various measures of central tendency and dispersion.
    iv)to carryout analysis of bivariate data using simple correlation and simple linear regression.

CONTENTS:

Unit 1: Introduction to Statistics   **(15)**
1.1 Meaning of Statistics, Scope of Statistics in business.
1.2 Primary and secondary data, Discrete and continuous variables, Classification and itsbasis, Frequency and frequency distribution, Tabulation. Illustrative problems
1.3 Diagrammatic representation: pie-chart, simple bar diagram, Graphical representation:histogram, ogive curves.Illustrative problems.
1.4 Sampling: Definitions of population, sample, sampling, and census, Principle steps insample survey, Advantages of sampling over census, Methods of sampling: simple randomsampling (with and without replacement), stratified random sampling. Illustrative Examples.

Unit 2: Measures of Central Tendency   **(15)**
2.1 Concept of central tendency, Requirements of a good average.
2.2 Arithmetic mean (A. M.): Definition, Properties of A. M. (without proof), Combined A.M., Merits and demerits. Numerical problems.
2.3 Median and quartiles: Definitions, Merits and demerits of median. Numerical problems.
2.4 Mode: Definition, Merits and demerits, Empirical relation among mean, median, andmode. Numerical problems.

Unit 3: Measures of Dispersion   **(15)**
3.1 Concept of dispersion, Requirements of a good measure of dispersion, Absolute andrelative measures of dispersion.
3.2 Range, Coefficient of range, Merits and demerits of range. Numerical problems.
3.3 Quartile deviation (Q. D.), Coefficient of Q. D., Merits and demerits of Q. D. Numericalproblems.
3.4 Variance,Standard deviation (S. D), Coefficient of S. D., Coefficient of variation, Meritsand demerits of S. D. Numerical problems.

Unit-4: Analysis of Bivariate Data: Correlation and Regression   **(15)**
4.1 Concept of correlation, Types of correlation.
4.2 Methods of studying correlation: Scatter plot, Karl Pearson's correlation coefficient (r),Spearman's Rank correlationcoefficient (R), Interpretation of r (with special cases $r = -1$, 0, and 1), Numerical problems on computationof r and R (with and without ties) forungrouped data.
4.3 Concept of regression, Lines of regression.
4.4 Regression equations, regression coefficients, relation between correlation coefficients andregression coefficient. Numerical problems on ungrouped data.

Reference Books:
1. Gupta S. C. (2017) *Fundamentals of Statistics*, Himalaya Publishing House Pvt. Ltd.
2. Gupta S. P. (2018) *Statistical Methods*, Sultan Chand and Sons.
3. Gupta C. B. and Gupta Vijay (2004) *An Introduction to Statistical Methods*, Vikas Publishing House Pvt Limited.
4. Agrawal B. M. (2014) *Essentials of Business Statistics*, Ane Books Pvt. Ltd.
5. B. L. Agarwal (2006) Basic Statistics, New Age International

B. Com. Part – II: Semester – IV
BUSINESSSTATISTICS: PAPER– II

Theory:60Hrs.Marks: 50(Credits:04)

Course Outcomes
After completion of this course, the students enable to
    i)understand discrete and continuous random variables, their respective probability distributions.
    ii) Identify the applications of Binomial, Poisson and normal distributions.
    iii) Measure trend and seasonal variations in time series data.
    iv) Compute and interpret simple and weighted index numbers.
    v) Construct and apply variable and attribute control charts.

CONTENTS:

Unit 1: Probability Distributions   **(15)**
1.1 Definition of discrete random variable and continuous random variable. Definition of probability mass function (p.m.f.) and probability density function (p.d.f.). Mean and variance of random variable. Illustrative Examples.
1.2 Binomial distribution: Probability mass function, Mean and variance (without proof),Simple numerical problems to find probability and parameters.
1.3 Poisson distribution: Probability mass function, Mean and variance (without proof),Simple numerical problems to find probability and parameters.
1.4 Normal distribution: Probability density function, Mean and variance (without proof),Properties of normal curve, Standard normal distribution, numerical problems to findprobabilities for given area under standard normal curve.

Unit 2: Time Series Analysis   **(15)**
2.1 Definition and uses of time series.
2.2 Components of time series.
2.3 Methods of measuring trend: progressive averages method, moving averages methodand least squares method, Numerical problems.
2.4 Measurement of seasonal variations using simple average method. Numerical problems.

Unit 3: Index Numbers   **(15)**
3.1 Need, meaning, and uses of index numbers.Problems involved in construction of index numbers. Applications of index numbers in share market, price, quantity, and value index numbers.
3.2 Simple index numbers by simple aggregate method and simple average of relatives method (using A. M.). Numerical problems.
3.3 Weighted index numbers by Laspeyre's, Paasche's, and Fisher's formulae. Numerical problems.
3.4 Consumer Price Index (C.P.I.) and Purchasing power of money. Numerical Examples.

Unit 4: Statistical Quality Control   **(15)**
4.1 Concept of statistical quality control (SQC), Advantages of SQC, Types of variability:chance cause variability and assignable cause variability.
4.2 Shewhart control chart and its construction.
4.3 Variable control charts: mean ($\bar{X}$) and range (R) charts. Numerical problems.
4.4 Attributes control charts: control chart for number of defectives (np-chart) for fixed samplesize and control chart for number of defects per unit (c-chart). Numerical problems.

Reference Books:
1. Gupta S. C. (2017) *Fundamentals of Statistics*, Himalaya Publishing House Pvt. Ltd.
2. Gupta S. P. (2018) *Statistical Methods*, Sultan Chand and Sons.
3. Gupta C. B. and Gupta Vijay (2004) *An Introduction to Statistical Methods*, Vikas Publishing House Pvt Limited.
4. Montgomery D. C. (2010) *Statistical Quality Control: A Modern Introduction*, Wiley.
5. Agrawal B. M. (2014) *Essentials of Business Statistics*, Ane Books Pvt. Ltd.
6. Kirchgässner G., Wolters J., Hassler U. (2012) *Introduction to Modern Time Series Analysis (Springer Texts in Business and Economics),* Springer.

7. Parimal Mukhopadhyay (1999) Applied Statistics, Books & Allied(p) l.t.d.

Question Paper structure
(For Business Statistics Paper – I and Business Statistics Paper – II)

Semester-end Examination Marks: 40

All questions are compulsory.
1. MCQ (8 MCQs each for one mark)	(8 Marks)
2. Long Answer Question	(8 Marks)
OR	
2. Long Answer Question	
3. Long Answer Question	(8 Marks)
OR	
3. Long Answer Question	
4. Short Answer Question (2 out of 3)	(8 Marks)
5. Short Notes (2 out of 3)	(8 Marks)

Internal Marks: 10
- SEMESTER III : Group Activity(Data Collection and Problem solving):   (10 Marks)
- SEMESTER IV : Case Study/Oral Examination :   (10 Marks)