"Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

Department of Statistics

B. Com. II

Semester III and IV, CBCS

Semester	Paper No.	Course Code	Course Title	No. of Credits
III	I	CC - 1051 C	Business Statistics I	04
IV	II	CC - 1051 D	Business Statistics II	04

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR.
B. Com. Part – II CBCS Syllabus with effect from June 2022
STATISTICS: CC - 1051 C
Semester: III Business Statistics – I (Paper I)
Theory: 60 Hours   (Marks-50)

Course Outcomes - At the end of this course students will be able to:

CO1. Apply Statistics in various fields and classify data and representing it graphically.
CO2. Understand concept of population, sample and different methods of sampling.
CO3. Make familiar with statistical measures viz. Measures of Central Tendency and Dispersion.
CO4. Understand the concept of bivariate data and analyze data by using correlation and regression.

Unit	Contents	Hours Allotted
1	A] **Introduction to Statistics:** 1.1 Meaning of the word Statistics. 1.2 Scope of Statistics: In Industry, Economics, and Management. 1.3 Meaning of primary and secondary data. 1.4 Qualitative and Quantitative data, Discrete and Continuous variable, Frequency and Frequency Distribution, Graphical representation of data: Frequency polygon, frequency curve, Histogram, ogive curves. 1.5 Illustrative Examples. **B] Sampling Techniques:** 1.6 Need and meaning, Definitions of Population, Sample, Sampling. 1.7 Advantages of Sampling over Census method. 1.8 Methods of Sampling, Simple random sampling with and without replacement, Stratified random sampling (only concept and real-life examples).	15
2	**Measures of Central Tendency (Averages):** 2.1 Concept of Central Tendency. 2.2 Requirements of good statistical average. 2.3 Arithmetic Mean: Definition, Properties of A.M. (without proof), Combined mean. 2.4 Positional Averages: Median and Mode, Determination of mode andmedian by graph., Partition values (Quartiles and Deciles). 2.5 Empirical relation between Mean, Median and Mode. 2.6 Merits and Demerits of Mean, Median and Mode. 2.7 Numerical examples.	15

3	**Measures of Dispersion:** 3.1 Concept of Dispersion, Requirements of good measures of dispersion. 3.2 Absolute and Relative measures of dispersion. 3.3 Range- Definition, Coefficient of Range. 3.4 Quartile Deviation (Q.D.) Definition, Coefficient of Q.D. 3.5 Mean Deviation (M.D.): Definition of M.D. about Mean,Coefficient of M.D. about mean. 3.6 Standard Deviation (S.D.) and Variance: Definitions, Coefficient of S.D.,Combined S.D. for two groups. 3.7 Coefficient of Variation (C.V.): Definition and its uses. 3.8 Merits and Demerits of Range, Q.D., M.D. and S.D. 3.9 Numerical Examples.	**15**
4	**Analysis of Bivariate data:** **Correlation:** 4.1 Concept and types of correlation. 4.2 Methods of studying correlation, scatter diagram, Karl Pearson's correlation coefficient (r), computation of r for ungrouped data, interpretation of r = -1, r =0, r=+1. 4.3 Spearman's rank correlation coefficient(R), computation of R (with and without tie). **Regression:** 4.4 Concept of regression. 4.5 Lines of regression, regression coefficients. 4.6 Properties of regression coefficients (statement only). 4.7 Numerical examples on correlation and regression.	**15**

Reference Books: -
1) Statistical Methods, by Dr. S. P. Gupta, Sultan Chand and Sons Publication.
2) Introduction to Statistics, by C.B. Gupta.
3) Mathematical Statistics, by H.C. Saxena and J.N. Kapur.
4) Business Statistics, by S.S. Desai.
5) Business Statistics, by G.V. Kumbhojkar.
6) Fundamentals of Statistics, by S.C.Gupta.

Note: Use of non-programmable calculator is allowed.

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VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)
B. Com. Part – II CBCS Syllabus with effect from June 2022
STATISTICS: CC - 1051 D
Semester: IV Business Statistics – II (Paper II)
Theory: 60 Hours   (Marks-50)

Course Outcomes -At the end of this course students will be able to:

CO1. Understand the concept of probability and probability distributions and apply probability distributions in real life.
CO2. Measure trend and seasonal indices in Time series.
CO3. Compute simple and weighted Index numbers.
CO4. Distinguish between process and product control, plotting control charts for variable and attributes**.**

Unit	Contents	Hours Allotted
1	**Probability and Probability Distributions:** **Probability:** 1.1 Trial, Sample Space, Events, Classical definition of Probability. 1.2 Mutually exclusive events, Exhaustive events. 1.3 Complement of an event, Union, Intersection of two events. 1.4 Addition and Multiplication laws of Probability (without proof). 1.5 Conditional probability. 1.6 Examples without use of permutations and computations. **Binomial Distribution:** 1.7 P. m. f., mean and variance (statement only). 1.8 Simple examples to find probabilities and parameters. **Poisson Distribution:** 1.9 P. m. f., mean and variance (statement only). 1.10 Simple examples to find probabilities and parameters. **Normal Distribution:** 1.11 P. d. f., mean and variance (statement only). 1.12 Definition of standard normal variate and its p.d.f. 1.13 Properties of normal curve. 1.14 Examples to find probabilities for given area under standard normal curve.	**15**
2	**Time Series:** 2.1 Definition and uses of time series, components of time series. 2.2 Methods of determination of trend: method of moving averages, method of progressive averages, method of least squares (only for straight line), determination of seasonal variations by simple average method. 2.3 Numerical examples.	**15**

3	**Index Number:** 3.1 Need and meaning of index number. 3.2 Problems involved in construction of index number. 3.3 Price, quantity and value index number. 3.4 Simple (unweighted) index number, weighted index number. 3.5 Laspeyre's, Paasche's and Fisher's index numbers. 3.6 Numerical examples.	**15**

4	**Statistical Quality Control (S.Q.C.):**
	4.1 Concept and need of S.Q.C.
	4.2 Advantages of S.Q.C.
	4.3 Chance and assignable causes, process control and product control.
	4.4 Control chart and its construction.
	4.5 Control charts for variable:Mean and range chart.
	4.6 Control charts for attribute:
	    Control chart for number of defectives (np-chart) for fixed sample size,
	    Control chart for number of defects per unit (C-chart).
	4.7 Numerical examples.
		15

Note: Use of non-programmable calculator is allowed.

Reference Books: -
1) Elements of Statistics by D. N. Elance.
2) Introduction to Statistics, by C.B. Gupta.
3) Mathematical Statistics, by H.C. Saxena and J.N. Kapur.
4) Business Statistics, by S.S. Desai.
5) Business Statistics, by G.V. Kumbhojkar.
6) Fundamentals of Statistics, by S.C.Gupta.
7) Mathematical Statistics, by D.C. Sanchety and V. K. Kapoor.

Structure of Question Paper

Written Examination			Total Marks
Total Marks = 35 Time=2.00 hours * All Questions are compulsory (Based on all Units)			**Total Marks**
Q. No	Nature of Question	Marks	
Q.1	Write short answer	5 Marks	**35 Marks**
Q.2	A. Broad Answer Question **Or** B. Broad Answer Question	10 Marks	
Q.3	A. Broad Answer Question **Or** B. Broad Answer Question	10 Marks	
Q.4	Short notes (Any 2 out of 3)	10 Marks	
	Total Marks	**35 Marks**	

Internal Evaluation			
Sr. No.	Evaluation Type	Marks	
A	**Test 1**	10	30 marks converted in to **15 Marks** (A+B+C)/3
B	Assignment 1	10	
C	Assignment 2	10	
	Total Marks	**30 Marks**	
		Grand Total	**50 Marks**