

To be effective from Year 2016-2017

New Syllabus of Gujarat University for B. Com. **Semester - IV**

CC 210

STATISTICS – IV

Unit 1 : Differentiation (25%)

Definition of derivative of function $Y = f(x)$, Derivatives of some simple functions like $ax+b$, ax^2+bx+c , $1/x$, \sqrt{x} by definition and derivatives of some standard functions like x^n , e^x , a^x , $\log x$ (without proof). Working rules of differentiation (without proof). Sums on the basis of the rules and above referred functions.

Unit 2 : Application of Derivatives (25%)

Definition of second order derivative, Maximum and minimum value of a function and its uses in commerce (business), Sums related to Cost, Revenue and Profit. Application of derivative in economics. Demand – Supply and their laws. Price elasticity of demand and supply, Marginal Revenue, Marginal Cost, Average Revenue and examples related to them.

Unit 3 : Index Numbers (25%)

Meaning and definition of Index Numbers, its uses and limitations. Different methods of obtaining index numbers (Aggregate Expenditure Method, Family Budget Method). Formulae given by different Statisticians (Laspeyer, Pasche, Fisher, Marshall Edgeworth and Dorbish-Bowley). Time reversal Test and Factor Reversal Test for all index numbers, Cost of living Index Number. Related examples.

Unit 4 : Time Series (25%)

Meaning and uses of Time Series, meaning of analysis of time series and its components (Trend, Cyclical Variation, Seasonal Variation, Irregular Variation). Different methods of obtaining trend (Theoretical explanation) Sums of obtaining Trend (by graphical and moving average method only), Seasonal variation and Irregular variation, Seasonal indices and its sums.

Reference Books :

1. Kapoor V.K.: Business Mathematics, Sultan Chand & Sons, New Delhi.
2. Sancheti & Kapoor: Business Statistics, Sultan Chand & Sons, New Delhi.
3. Sancheti & Kapoor: Business Mathematics, Sultan Chand & Sons, New Delhi.
4. Mukhopadhyay, P. Mathematical Statistics, New Central Book Agency, Calcutta.
5. Trivedi and Trivedi: Business Mathematics, Pearson India Ltd. New Delhi.

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CORE ELECTIVE ADVANCED STATISTICS

CE - 203 (B) ADVANCED STATISTICS - V

1. Mathematical Expectation : [25%]

Joint probability distribution of two variables X and Y, their marginal probability distributions, expected values of X+Y and X·Y and their properties, covariance between X and Y, properties of variance for dependent and independent variables, Examples related to these property and its applications.

2. Discrete Probability Distribution - 1 : [25%]

Probability mass function of Binomial distribution, simple applications, deriving mean and variance of Binomial distribution, properties of Binomial distribution, fitting of Binomial distribution and its applied examples. Probability mass function of Poisson distribution as a limiting case of Binomial distribution(without proof), simple applications, deriving mean and variance of Poisson distribution, properties of Poisson distribution, fitting of Poisson distribution

3. Discrete Probability Distribution - 2 : [25%]

Probability mass function of Negative Binomial distribution and Geometric distribution, simple applications, deriving mean and variance of these distributions, and their properties and simple examples, Probability mass function of Hyper-geometric distribution, properties of Hyper-geometric distribution and simple applications,

4. Continuous Probability Distribution : [25%]

Probability Density Function of Normal distribution, deriving mean and variance of Normal distribution, properties of Normal distribution, examples based on it and applied problems of Normal distribution.

Reference Books :

1. Goon. Gupta, Dasgupta : "An outline of Statistical Theory" Vol-1 and II. World Press, Calcutta
2. Sancheti & Kapoor : Business Statistics. Sultan Chand & Sons, New Delhi.
3. S.C. Gupta: "Fundamentals of Mathematical Statistics" Sultan Chand & Sons, New Delhi.
4. Levin and Rubin: "Statistics for Management", Prentice Hall of India Pvt. Ltd. New Delhi.
5. Parimal Mukhopadhyay : "Mathematical Statistics" Books & Allied (P) Ltd.

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CE - 204 (B) ADVANCED STATISTICS - VI

1. Liner Programming : **[25%]**

Introduction to L.P.P. , Structure and Assumptions of a L.P.P., General Mathematical Model of L.P.P., Simple Linear Programming Model Formulation (up to three variables), Important Definitions , Graphical Solution Method , Some Special Cases (Multiple Optimal Solution, Unbounded Solution, Infeasible Solution)

2. Simplex Method **[25%]**

Definition of slack and surplus variables and other basic terms like basic solution, basic feasible solution, initial basic feasible solution, Standard form of L.P.P., Introduction to Simplex Method, Simplex algorithm for solving LPP, Simple Simplex Algorithm (Problems with constraints “ \leq ” and “ $=$ ” types only).

3. Arithmetic Progression and Geometric Progression **[25%]**

Introduction of arithmetic progression and geometric progression, sum of series in arithmetic progression, arithmetic mean, geometric mean, sum of series in geometric progression. Its application based examples.

4. Co - Ordinate Geometry **[25%]**

Definition of slope, Intercept, Conditions for parallel and Perpendicular lines, Equations of a straight line in the following forms:

(i) $y = mx + c$ (ii) $y - y_1 = m (x - x_1)$

(ii) $\frac{x}{a} + \frac{y}{b} = 1$ (iv) $\frac{y - y_1}{y_1 - y_2} = \frac{x - x_1}{x_1 - x_2}$

Simple illustrative examples.

Reference Books :

1. Loomba & N. Paul : Linear Programming Tata Mc Graw Hill, New Delhi.
2. Gass S. I.: Linear Programming Methods & Applications, Mc Graw Hill.
3. J.K.Sharma : O.R. Theory and Applications, Macmillan IndiaLtd.
4. Anderson, Sweeney, Williams, An Introduction to Management Science Quantitative Approach to Decision Making, Cengage Learning India Pvt. Ltd. NewDelhi.
5. Barry Render, Ralph M. Stair , Michael E. Hanna, Quantitative Analysis for Management, Pearson Education(Singapore) Pte.Ltd.