

Department of Mathematics

Syllabus:

Class:

F.Y. B.Com.

Semester:

I

Paper:

UBCOMFSI.6

Nomenclature:

MATHEMATICAL AND
STATISTICAL TECHNIQUES.

Revision and Objective:

- **Why Revision?**

- There is a Rapid expansion of knowledge in subject matter areas and improved instructional method
- during last decade. There are considerable curricular revisions happening at the high school level.
- Application of Mathematics and Statistics are widely used in industry and business. Keeping this in mind,
- a revision of syllabus required in accordance with the growth of subject of at the high school level and
- emerging needs of industry and its application.
- **Objective:**
- The main objective of this course is to introduce mathematics and statistics to undergraduate students
- of commerce, so that they can use them in the field of commerce and industry to solve the real life
- problems.

Section: I

- **MATHEMATICS**

Unit I: Shares and Mutual Funds

- a. **Shares:** Concept of share, face value, market value, dividend, equity shares, preferential shares, bonus shares. Simple examples.
- b. **Mutual Funds:** Simple problems on calculation of Net income after considering entry load, dividend, change in Net Asset Value (N.A.V.) and exit load. Averaging of price
- under the Systematic Investment Plan (S.I.P.)

Unit II: Permutation, Combination and Linear Programming Problems.

- a. **Permutation and Combination:** Factorial Notation, Fundamental principle of counting,
- Permutation as arrangement, Simple examples, combination as selection, Simple
- examples, Relation between r
- $n C$ and r
- $n P$ Examples on commercial application of
- permutation and combination.
- b. **Linear Programming Problem:** Sketching of graphs of (i) linear equation $Ax + By + C$
- $= 0$ (ii) linear inequalities. Mathematical Formulation of Linear Programming Problems
- upto 3 variables. Solution of Linear Programming Problems using graphical method up to
- two variables.

Section: II

Statistics

Unit III: Summarization

Measures

- a. **Measures of Central Tendencies:** Definition of Average, Types of Averages: Arithmetic Mean, Median, and Mode for grouped as well as ungrouped data. Quartiles, Deciles and Percentiles.
- Using Ogive locate median and Quartiles. Using Histogram locate mode. Combined and
- Weighted mean.
- b. **Measures of Dispersions:** Concept and idea of dispersion. Various measures Range, Quartile
- Deviation, Mean Deviation, Standard Deviation, Variance, Combined Variance.

Unit IV: Elementary Probability Theory.

- a. **Probability Theory:** Concept of random experiment/trial and possible outcomes; Sample Space and Discrete Sample Space; Events their types, Algebra of Events, Mutually Exclusive and Exhaustive Events, Complimentary events.
- Classical definition of Probability, Addition theorem (without proof), conditional probability.
- Independence of Events: $P(A \cap B) = P(A) P(B)$. Simple examples.
- b. **Random Variable:** Probability distribution of a discrete random variable; Expectation and Variance of random variable, simple examples on probability distributions.

Unit V: Decision Theory.

- Decision making situation, Decision maker, Courses of Action, States of Nature, Pay-off and
- Pay-off matrix; Decision making under uncertainty, Maximin, Maximax, Minimax regret and
- Laplace criteria; simple examples to find optimum decision. Formulation of Payoff Matrix.
- Decision making under Risk, Expected Monetary Value (EMV); Decision Tree; Simple
- Examples based on EMV. Expected Opportunity Loss (EOL), simple examples based on EOL.

Reference Books:

1. Business Mathematics By D. C. Sancheti and V. K. Kapoor, Sultan Chand & Sons, 2006, Chapter 1, 5, 7, 9 &10.
2. Statistical Methods - S.G. Gupta (S. Chand & Co.
3. Business Mathematics & Statistics : B Aggarwal, Ane Book Pvt. Limited
4. Business Mathematics : D C Sancheti & V K Kapoor, Sultan Chand & Sons
5. Business Mathematics : A P Verma, Asian Books Pvt. :Limited.

Additional Text Books:

Mathematical and Statistical Techniques by
SHETH publication , RELIBLE publication etc.