

**SARDAR PATEL UNIVERSITY**  
**B. Com. Semester - III**  
**UB03DCOM65 Advanced Statistics – V**  
**Syllabus with Effect from June, 2020**

**Total Credit : 3**

**1: Principle of Mathematical Induction and Binomial Theorem [25%]**

Meaning of Principle of Mathematical Induction and Simple illustrative problems based on it. Binomial expansion of  $(x \pm a)^n$  where  $n$  is a positive integer, Characteristics of Binomial expansion, its application in simple examples.

**2: Multiple and Partial Correlation and Regression : [25%]**

Definition and concept of Partial and Multiple Correlation (three variables), Concept Multiple Regression equations, Numerical example.

**3: Sampling Methods - 1 : [25%]**

Meaning of population and sample, need for sampling, Definition of population size and sample size, points to be considered for determining sample size, Theoretical description of different sampling methods (i) Non probabilistic sampling methods- convenience, quota, judgmental, purposive (ii) Probabilistic sampling methods- simple random sampling method, stratified random sampling method, systematic sampling method, two stage sampling method, cluster sampling method, sequential sampling method, and their comparisons.

**4: Sampling Methods - 2 : [25%]**

Verification of various results- (i) mean of sample mean is an unbiased estimator for sample mean (ii) verification of the formulae for variance of sample mean (iii) sample variance is an unbiased estimator for population variance, (for with replacement and without replacement simple random sampling) Simple numerical examples for stratified random sample- to verify the result that the stratified random sample mean is an unbiased estimator for population variance and calculation of the variance of stratified sample mean, Simple numerical examples for systematic sample- to verify the result that the systematic random sample mean is an unbiased estimator for population variance and calculation of its variance.

**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. David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Statistics For Business and Economics, South-Western Cengage Learning India Pvt. Ltd. New Delhi.
4. Levin and Rubin, Statistics for Management, Prentice Hall of India Pvt. Ltd. New Delhi.
5. Parimal Mukhopadhyay, Theory and Methods of Survey Sampling, Perntice Hall of India, New Dlehi.
6. Amir D Aczel, Jayavel Sounderpandian, Complete Business Statistics, Tata Mc Graw Hill, New Delhi.