

## CC - 205 FUNDAMENTAL STATISTICS - I

**Objective :** Students should be aware with the basics of preliminary mathematical statistics.

### 1. **Function Limit and Continuity :** [25%]

Concept of a function of single variable (linear, quadratic and exponential function only) Domain, co-domain and range of a function, Concept of real function, Application of function to cost, demand, revenue, profit function, break - even point, Concept of limit of a function, Rules of limit, Simple examples where  $f(x)$  is in a polynomial or rational function of two polynomials. Continuity of  $f(x)$ , where  $f(x)$  is a polynomial of  $x$ , rational function of, two polynomials of  $x$ .

### 2. **Differentiation :** [25%]

Definition of a differentiation, Derivative of functions  $\frac{1}{x}$ ,  $\sqrt{x}$ ,  $ax+b$ ,  $ax^2+bx+c$  by using definition, Rules of derivatives (without proof) and their examples by using the standard functions in the form  $x^n$ ,  $a^x$ ,  $\log x$ ,  $e^{ax}$ .

### 3. **Probability :** [25%]

Definition of random experiment, sample space, different types of events, Mathematical definition of probability, classical, relative frequency and subjective approach to probability, Addition and multiplication rules of probability and other corollaries of it (without proof), Simple numerical examples only, Bayes' theorem (without proof) and its application up to three events.

### 4. **Mathematical Expectation and Moments :** [25%]

Meaning of a random variable, Definition of probability distribution of random variable, Definition of mathematical expectation of discrete random variable and its properties (without proof), definition of variance, co variance, simple applied examples on it. Definition of Raw and Central moment and its uses Relation between first four raw and central moments (without proof), Concept of coefficient of Skewness and Kurtosis and their interpretations, Simple examples for obtaining the measures by using raw data, grouped data and probability 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. 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. Trivedi and Trivedi: Business Mathematics, Pearson India Ltd. New Delhi.