

Prof Sukanta Poria

Business Mathematics & Statistics
Part I [Hons + Genl] [Paper: C15G]

Sl No	Topics Name	Module	No of Lecture	Period [Month]
1	Introduction:- Definition of Statistics; Importance and scope of Mathematics and Statistics in business decisions; Limitations.	I	2	July
2	Permutations – Definition, Factorial notation; Theorems on permutation, permutations with repetitions; Restricted permutations.	I	2	July - Aug
3.	Combinations – Definition; Theorems on combination; Basic identities; Restricted combinations.	I	4	Aug
4	Set Theory:- Definition of Set ; Presentation of Sets; Different types of Sets- Null Set , Finite and Infinite Sets , Universal Set , Subset , Power Set etc.; Set operations ; Laws of algebra of Sets .	I	6	Aug – Sept
5	Logarithm – Definition, Base and index of logarithm, general properties of logarithm, Common problems.	I	4	Sept
6	Binomial Theorem – Statement of the theorem for positive integral index, General term, Middle term, Equidistant terms, Simple properties of binomial coefficient.	I	4	Sept
7	Compound Interest and Annuities: Different types of interest rates; Concept of Present value and amount of sum; Types of annuities; Present value and amount of an annuity; including the case of continuous compounding; Valuation of simple loans and debentures; Problems relating to sinking funds.	I	8	Oct
8	Collection, Classification and Presentation of Statistical Data – Primary and Secondary data; Methods of data collection; Tabulation of data; Graphs and charts; Frequency distributions; Diagrammatic presentation of frequency distributions.	I	6	Nov
9	Moments, Skewness and Kurtosis – Different types of moments and their relationships; Meaning of skewness and kurtosis; Different measures of Skewness and Kurtosis	II	6	Nov -Dec
10	Correlation and Regression –Scatter diagram; Simple correlation coefficient; Simple regression lines; Spearman’s rank correlation ; Measures of association of attributes.	II	8	Dec - Jan
11	Interpolation:- Finite differences; Newton’s forward and backward interpolation formula; Lagrange’s interpolation formula	II	6	Jan - Feb

Advanced Mathematics
Part II Hons [Paper A32A]

Sl No	Topics Name	Module	No of Lecture	Period [Month]
1	Functions: Definition of functions; Classification of functions; Different types of functions(excluding Trigonometrical functions); Bounded functions; Monotonic functions; Even and odd functions; Parametric form of a function; Composite functions; Graphical representation of functions.	II	4	Aug
2	Limit and Continuity : Elementary ideas of limit and continuity through the use of simple algebraic functions.	II	6	Aug - Sept
3.	Probability Theory – Meaning of probability; Different definitions of probability; Conditional probability; Compound probability; Independent events; (excluding Bayes' Theorem).	II	10	Sept - Oct
4	. Differentiation: Derivative and its meaning; Rules of differentiation; Geometrical interpretation; Significance of derivative as rate measure; Second and higher order derivatives; Partial derivatives up to second order; Homogeneity of function and Euler's theorem; Total differentials; Differentiation of implicit function with the help of total differentials	II	8	Oct
5	Applications of Derivative: Maximum and minimum values ; Cost function ; Demand function ; Profit function;Increasing and decreasing functions ; Rate measure Applied problems on Average cost (AC), Average variable cost (AVC), Marginal cost (MC), Marginal revenue (MR).	II	8	Oct - Nov
6	Integration: Integration as anti-derivative process; Standard forms; Integration by substitution, by parts and by use of partial functions; Definite integral; Finding areas in simple cases; consumers and producers surplus; Nature of commodities learning curve.	II	8	Nov
7	Determinants: Determinants of a square matrix up to third order ; Elementary properties of determinants ; Minors and Co-factors ; Adjoint of a determinant ; Cramer's Rule (not more than three variables).	II	6	Nov - Dec
8	Matrix: Definition of matrix ; Types of matrices ; Operations on matrices (addition, subtraction, multiplication); Adjoint of a matrix; Inverse of a matrix ; Solution of a system of linear equations by matrix inversion method (not more than three variables).	II	8	Dec - Jan