CSE333:COMBINATORIAL STUDIES-I

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: solve vaious problems on propositional logic, first order logic, sets, relations, functions, partial orders, lattices, and groups.

CO2 :: identify and use fundamental concepts of graph theory and formulae of Combinatorics to solve problems.

CO3 :: make use of theories and formulae to solve problems of matrices, determinants, linear equations, eigenvalues, eigenvectors, and LU decomposition.

CO4 :: apply fundamental concepts of limits, continuity, differentiability, maxima and minima, mean value theorem, and integration in order to solve complex problems.

CO5 :: demonstrate the ability to solve problems on random variables, uniform, normal, exponential, poisson and binomial distributions, mean, median, mode, standard deviation, conditional probability, and Bayes theorem.

CO6 :: demonstrate the ability to solve problems on numerical computation, numerical estimation, numerical reasoning, and data interpretation.

Unit I

Discrete Mathematics : propositional logic, first order logic, sets, relations, functions, partial orders, lattices, groups

Unit II

Graphs : connectivity, matching, coloring

Combinatorics : counting, recurrence relations, generating functions

Unit III

Linear Algebra : matrices, determinants, system of linear equations, eigenvalues, eigenvectors, LU decomposition

Unit IV

Calculus : limits, continuity, differentiability, maxima and minima, mean value theorem, integration

Unit V

Probability : random variables, uniform, normal, exponential, poisson and binomial distributions, mean, median, mode, standard deviation, conditional probability, Bayes theorem

Unit VI

Numerical Ability : numerical computation, numerical estimation, numerical reasoning, data interpretation

Text Books:

1. WILEY ACING THE GATE: ENGINEERING MATHEMATICS AND GENERAL APTITUDE by ANIL K. MAINI, VARSHA AGRAWAL, NAKUL MAINI, WILEY

References:

1. ADVANCED ENGINEERING MATHEMATICS by R K JAIN, NAROSA PUBLISHING HOUSE

2. FUNDAMENTALS OF MATHEMATICAL STATISTICS by GUPTA S.C. , KAPOOR V.K., SULTAN CHAND & SONS (P) LTD.

3. DISCRETE MATHEMATICS, WITH GRAPH THEROY AND COMBINATORICS by T VEERARAJAN, Tata McGraw Hill, India