

SX -S 270

2009-10 AB

M205: C B C S: DISCRETE MATHEMATICS AND CODING THEORY

UNIT I

Graphs, digraphs, network, multi graph, elementary results, structure based on connectivity, characterisation, theorems on trees, tree distances, binary trees

Chapters 1, 2 and 3 of text book I

UNIT II: Eulerian graphs, Hamiltonian graphs, Spanning trees, Fundamental cycles, Minimal spanning trees,

(Chapter 4 of text book I)

Kruskal algorithm, Prims algorithm (8.5 of text book II)

UNIT III

Introduction to Coding Theory: Introduction, Basic assumptions, correcting and detecting codes, Information rate, The effects of error detection and correction, Finding the most likely code word transmitted, Some basic algebra, Weight and distance, Maximum likelihood decoding, Reliability of M L D, Error detecting codes, Error corer correcting codes

Articles 1.1 to 1.12 of Chapter 1 of TEXT BOOK IV

UNIT IV

Linear codes: Linear codes, Two Important subspaces, Independence, Basis, Dimension, Matrices, Bases for $C=\langle S \rangle$ and C , Generating matrices and Encoding, Parity check matrices, Equivalent codes, Distance of a Linear code, Cosets, M L D for Linear codes, Reliability of Linear codes

Articles 2.1 to 2.12 of TEXT BOOK IV

TEXT BOOK I: Graph Theory applications By L.R.Foulds, Narosa publishing House, New Delhi

TEXT BOOK II: Discrete mathematical structures by Kolman and Busby and Sharon Ross Prentice Hall of India-2000, (Third Edition)

TEXT BOOK III: Applied Abstract Algebra by Rudolf Lidl and Gunther Pilz, Published by Springer Verlag

TEXT BOOK IV: Coding Theory by D. G. Hoffman, D. A. Lanonard, C. C. Lindroes

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