

Preface to Chapter

Chapter Pages Number -

FILL THIS SECTION WITH BI-COLUMN TOC USING TCOL BOX

Contents	
1 Logic	1
1.1 Proposition	1
1.2 Proof	2
1.3 DTC Axioms	4
1.4 Induction	4
2 Number Systems	6
2.1 Factors	6
2.2 Base Systems	8
2.3 Cyclicity and Last Digits of a large Number	9
2.4 Fermat's Little Theorem	14
2.5 HCF, LCM	15
3 Graph Theory and Structures	17
3.1 Isomorphism	17
3.2 Spanning Trees of Graphs	18
3.3 Bipartite Graphs	19
3.4 Colouring and Paths	19
3.5 Tree	20
3.6 Planar Graph	20
3.7 Directed Graphs	20
3.8 Relations and Partial Orders	21
4 Counting	23
4.1 Sets and Asymptotic	23
4.2 Recurrence	26
4.3 Combinatorial Problems	29
4.4 Generating Functions	30
4.5 Infinite Sum	31
5 Probability	32
5.1 Events and Probability Space	32
5.2 Conditional Probability	33
5.3 Independence	34
5.4 Random Variable and Distributions	34
5.5 Expectations	35
5.6 Discrete	36
5.7 Random Walks	36
6 Statistics	37
6.1 Terminologies	37
6.2 Measure of Central Tendency	38
6.3 Measure of Variability	38
6.4 Normal Distribution	38
6.5 Inferential Statistics	38
7 Linear Algebra	39
7.1 Vector Space V	39
7.2 Matrices	41
7.3 System of Linear Equations	45
7.4 Linear Transformation	46
8 Applied Linear Algebra	47
8.1 Vectors from the context of Application	47
8.2 Matrices from the context of their Application	48
8.3 Calculus For Linear Algebraic Applications	53
8.4 Applied Machine Learning	53