CSE 1002: DISCRETE MATHEMATICS

(Classes with effect from 13.08.2019)

REQUIRED COURSE TEXTBOOK:

1. DISCRETE MATHEMATICS AND ITS APPLICATIONS BY K.H.ROSEN(7^{TH} EDITION)
   No Other Textbooks will be used or entertained.

Course format: 4 Classes / week/, 1 hr. / Class = 4 credits
Grading - external: 60 % Theory Exam
Grading - internal: 15 % Mid Term + 10% quizzes +10% assignments + 5% attendance = 40 %

Lesson Plan

Lecture Hour	Topics	Chapters Rosen	Problems to be discussed in class and Assignment problems
1	**Syllabus** Grading, Assignments, Examinations, Attendance **Introduction** Introduction to Discrete Mathematics, Discrete Structures, Introduction to Logic, Propositional Logic	Chapter 1(1.1)	Example-8,9
2	Propositional Logic	Chapter 1(1.1)	Exercise-No.3,7,8,23 Assignment-No.9,24,36
3	Propositional Equivalences	Chapter 1(1.2)	Exercise-No.14,17,26,30 Assignment-No.15,18,19,22,23,24,25,29
4	Predicates and Quantifiers	Chapter 1(1.3)	Example-1,3,8,9,14,23,27
5	Predicates and Quantifiers	Chapter 1(1.3)	Exercise-No.1,5,9,25 Assignment-No.6
6	Nested Quantifiers	Chapter 1(1.4)	Example-1,2,3,6,9,12 Exercise-No.1,3 Assignment-No.2,4
7	Rules of Inference	Chapter 1(1.5)	Example-3,4,5,6,7,8,9,15,16
8	Rules of Inference	Chapter 1(1.5)	Exercise-No.3,5,7 Review Questions.8,9 Assignment-No.4,6,8
9	Introduction to Proofs	Chapter 1(1.6)	Example-1,3,7,10,11 Exercise-No.1,9,17 Assignment-No.2,18
10	Sets	Chapter 2(2.1)	Example-13,14,16,18 Exercise-No.7,17,19 Assignment-No.8,9,18,23
11	Set Operations	Chapter 2(2.2)	Example-10,11,14 Exercise-No.16,19,20

12	Functions	Chapter 2(2.3)	Example-6,8,9,10,12,13,14,17,18,21,27,28
13	Functions	Chapter 2(2.3)	Exercise-No.1,4,10, 14,18 Assignment-No.5,12,15,19
14	Sequences and Summations	Chapter 2(2.5)	Theorem1 Example-5,6,7,9,10,11,13,15 Exercise-No.1,3,13,15,17 Assignment-No.2,4,18
15	Algorithms(Searching& Sorting Algorithms)	Chapter 3(3.1)	Example-3,4, 5
16	Algorithms	Chapter 3(3.1)	Exercise-No.13,34,38 Assignment-No.14, 35, 39
17	The Growth of Functions	Chapter 3(3.2)	Example-1, 2,10,12 Exercise-No.1,2,3.10,22,23
18	Complexity of Algorithms, Time Complexity	Chapter 3(3.3)	Example-2,3
19	The Integers and Division	Chapter 3(3.4)	Example-4, 6, 8 Exercise-No.16, 28, 29 Assignment-No.17
20	Primes and Greatest Common Divisors	Chapter 3(3.5)	Theorem 2 Example-3, 13, 14, 15 Exercise-No.10, 12, 24, 26 Assignment-No.11, 13
21	Integers and Algorithms	Chapter 3(3.6)	Example-1,2,3,4,5,6,7,9,11,12
22	Integers and Algorithms	Chapter 3(3.6)	Exercise-No.1,4,5,19,21,24 Assignment-No.2,3, 20,22,23
23	Applications of Number Theory	Chapter 3(3.7)	Theorem 2,3,4,5 Example-1,3,4,10
24	Applications of Number Theory	Chapter 3(3.7)	Exercise-No2,4,6,12,32 Assignment –No1,3,5,11
25	Applications of Number Theory(Cryptography)	Chapter 3(3.7)	Example-11,12 Exercise-No.46
26	Matrices	Chapter 3(3.8)	Example-9,10,11 Exercise-No.5,18,30
27	Mathematical Induction	Chapter 4(4.1)	Example-3, 6, 8 Exercise-No.5,6,7,15,20,31,32 Assignment-No.8,21,33,34
28	Strong Induction and Well-Ordering	Chapter 4(4.2)	Example-2, 4 Exercise-No.5,6
29	Recursive Definitions and Structural Induction	Chapter 4(4.3)	Example-2,4,5 Exercise-No.6,7,9 Assignment-No.8
30	The Basics of Counting	Chapter 5(5.1)	Example-2,4,6,7,11,18 Exercise-No.10,22,25,26 Assignment-No.21,27
31	The Pigeonhole Principle	Chapter 5(5.2)	Example-5,10,11 Exercise-No.2,24

32	Permutations and Combinations	Chapter 5(5.3)	Example-1,5,12, 13,14,15 Exercise-No.11,13,20,,23,33 Assignment-No.12,24,34
33	Binomial Coefficients	Chapter 5(5.4)	Corollary 1,2 Example-2,3,4 Exercise-No.1,4,6,8 Assignment-No.2,7
34	Generalized Permutations and Combinations	Chapter 5(5.5)	Example-4,5,7,9 Exercise-No.6,7,9,14
35	Relations and their Properties	Chapter 7(7.1)	Theorem 1 Example-6,7,9,10,12,15,16,17,22 Exercise-No.6,24 Assignment-No.7, 25
36	Representing Relations	Chapter 7(7.3)	Example-3,5,6 Exercise-No.9,13,14 Assignment-No.10,15
37	Equivalence Relations	Chapter 7(7.5)	Theorem 1,2 Example-3, 6, 9,14
38	Equivalence Relations	Chapter 7(7.5)	Exercise-No.35,37 Assignment-No.36
39	Partial Orderings	Chapter 7(7.6)	Example-12,14,18,19,20
40	Partial Orderings	Chapter 7(7.6)	Exercise-No.20,22,33 Assignment-No.21,23,34