C. U. SHAH UNIVERSITY

FACULTY OF: Computer Science
DEPARTMENT OF: M.Sc(CA & IT)
SEMESTER : II
CODE: 4CS02DEC1
NAME: Digital Electronics

Sr. No	Subject Code	Subject Name	Teaching Hours/Week				Credits	Evaluation Scheme/Semester						Total Marks
								Theory			Practical			
								Sessional Exam		University Exam	Sessional Exam		University Exam	
			TH	TU	PR	TOTAL		Marks	Hrs	Marks	Marks	Hrs	Total Marks	
1	4CS02DEC1	Digital Electronics	5	0	0	5	5	30	1.5	70	30	1.5	50	150

Objectives

• To study various number systems and to simplify the mathematical expressions using Boolean functions.
• To study design and implementation of combinational circuits
• To study the design of various synchronous and asynchronous circuits.
• To expose the students to various memory devices.

Prerequisites

• Basics of Number Systems and Elementary Algebra

Course Outlines

Sr.No	Course Contents	No of Hours
1	**Binary System:** Digital computer and digital systems, Binary Number, Number base conversion Octal and Hexadecimal Number, complements, Binary Codes, Binary Storage and register, Binary Logic, Integrated Circuit	6
2	**Boolean Algebra and Logic Gates :** Basic Definition, Axiomatic Definition of Boolean Algebra, Basic Theorem and Properties of Boolean Algebra, Minterms And Maxterms, Logic Operations, Digital Logic Gates, IC digital Logic Families	7
3	**Combinational Logic :** Introduction, Design Procedure, adder, subtractor, Code Conversion, Universal Gate	7

4	**Sequential Logic:** Introduction, Flip-Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip-Flop Excitation Tables, Design Procedure, Design of Counters, Design with State Equations	12
5	**Registers, Counters and the Memory unit :** Introduction, Registers, Shift Registers, Ripple Counters, Synchronous Counters, Timing Sequences, Memory Unit	10

Learning Outcomes

• The students would be able to design and implement simple digital circuits after studying this course. They will also be adept with the basics of sequential circuits and memory units which in turn will benefit them while studying Microprocessors and Microcontrollers.

Books Recommended

1. Digital Logic and Computer Design By M Morris Mano - Pearson Education
2. Principle of digital Electronics By Malvino & Leach - Tata Mcgraw Hill
3. Modern Digital Electronics By R.P.Jain - Tata McGraw-Hill