DIGITAL LOGIC THEORY

Paper Code	**CEN-302**
Course Credits	**4**
Lectures / week	**3**
Tutorial / week	**1**
Course Description	**UNIT – I**

Introduction, Binary numbers, Base-conversions, Octal and hexadecimal numbers, complements, binary codes, concept of fixed and floating point numbers, Axiomatic definition of Boolean Algebra, Basic Theorems and properties, Boolean functions and representation in canonical and standard forms, SOP and POS forms, other logic operations, Digital logic gates.

UNIT- II

Karnaugh map methods, limitations of K-maps for larger variables, POS-simplification, NAND/NOR implementation, other 2-level implementations, Don't-care conditions, Tabular method.

UNIT- III

Standard gate assemblies, Hardware aspect of arithmetic logic functions, Half-Adder, Full-Adder, Binary Adder/Subtractor, Decimal Adder, Magnitude Comparator, Demultiplexer, Multiplexer, Encoder, Priority Encoder, Parity Checker/Generator, ROM, PALs and PLAs.

UNIT- IV

Definition and state representation, Flip-Flops, RS, D, JK-M/S, their working characteristics, State Tables, Excitation Tables and triggering, Asynchronous and Synchronous Counters-Design and Analysis, Counter Applications, Description and Operations of Shift Registers, Shift Register/Counters.

UNIT – V

Introduction to Architecture and organization of digital computer, ALU, I/O-Unit, Control Unit, CPU, Microprocessor and Microcomputer, Data and Instruction Formats.

References / Text Books:

- Digital Circuits Design by Morris Mano (4rd Edition).
- W.I. Fletcher, "An Engineering Approach to Digital Design", PHI
- R.J. Tocci, "Digital Systems: Principles, and Applications", PHI
- T.C. Bartee, "Digital Computer Fundamentals", McGraw Hill

Computer Usage / Software Requires: