**Syllabus**

**Section A**

**Number Systems and Boolean algebra**: Decimal, Binary, Octal and Hexadecimal number system, inter conversion of Decimal, Binary and Hexadecimal numbers. BCD numbers, BCD addition and subtraction. BINARY ARITHMETIC

De Morgan’s theorem, standard POS and SOP forms, min-term and max-term representation of Boolean functions, simplification of Boolean functions using K-maps.

**Section B**

**Combinational Circuits and Flip Flop**: Half and Full adders, Half and Full Subtractor, Multiplexer, De-multiplexer, Encoder, Decoder, Priority Encoder, Magnitude comparator, Code converter, Binary Multiplier, Latches, R-S, J-K and Master-Slave, T and D flip flops, Conversion of flip flops.

**Section C**

**Sequential Circuits and Finite state machines**: Shift registers, Ring counter, Ripple and Synchronous counter, Modulo-N counter, Decade counters, Digital to Analog converter (binary weighted register and ladder types) and Analog to Digital converter (using D/A converter and comparator), Design of synchronous FSM, Algorithmic State Machines charts.

**Section D**

**8051 Architecture and Programing**: Internal Block Diagram, CPU, ALU, address, data and control bus, Working registers, SFRs, Clock and RESET circuits, Stack and Stack Pointer, Program Counter, I/O ports, Memory Structures, Data and Program Memory, Addressing mode, 8051 Instruction set, Instruction timings. Data transfer instructions, Arithmetic instructions, Logical instructions, Branch instructions, Subroutine instructions, Bit manipulation instruction, Assembly language programs.

**Text/Reference Books:**

1. R.P. Jain, “Modern digital Electronics”, Tata McGraw Hill, 4th edition, 2009. EBOOK
2. Morris Manno, “Digital Circuits and Logic Design”, Prentice Hall of India Pvt. Ltd., New Delhi.
3. W.H. Gothmann, “Digital Electronics- An introduction to theory and practice”, PHI, 2nd edition, 2006.
4. Herbert Taub and Donald Schilling, “Digital Integrated Electronics”, McGraw Hill Book Co
5. D.V. Hall, “Digital Circuits and Systems”, Tata McGraw Hill, 1989
6. M. A. Mazidi, J. G. Mazidi and R. D. McKinley, “The8051Microcontroller and Embedded Systems: Using Assembly and C”, Pearson Education, 2007. SECTION D
7. K. J. Ayala, “8051 Microcontroller”, Delmar Cengage Learning, 2004.