Syllabus:

1.      Number systems. Number base conversion, Binary codes for decimal digits and code conversion. Error detecting codes- Parity and Hamming codes. Other coding systems - Seven segment code, Alpha Numeric codes like ASCII, EBCDIC, ISCII and Unicode.                                                            **[4L]**

2.      Digital Arithmetic: Addition and subtraction of unsigned binary numbers. Complement arithmetic; n’s complement and (n-1)’s complement. Representation of signed binary numbers ; sign-1’s complement and sign-2’s complement, Addition and subtraction of signed binary numbers. Other binary arithmetic- BCD, NBCD, Excess-3 BCD.                                               **[6L]**

3.      Boolean Algebra: Truth table, logic operations- AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR. De Morgan’s theorem. Minimization of Boolean functions - Karnaugh Veitch map method and Quine-McCluskey’s method. Digital Logic Gates.                                                                                **[6L]**

4.      Combinational logic circuit design: Half-adder, Full-adder, Encoder, Decoder, Multiplexer, de-multiplexer, parity generator, parity checker, priority encoder, magnitude comparator.                                                                            **[8L]**

5.      Sequential logic circuit design: Flip-flops - SR, JK, Master slave JK, D and T. Registers- serial-in-serial-out, serial-inparallel-out, parallel-in-serial-out, shift registers, circulating shift registers and their applications. Counters - Synchronous, asynchronous, up, down and modulo-n. Finite state machines (FSM) - state table, state diagram, Mealy and Moore machines, state minimization, implementation with flip-flops.                                        **[12L]**

6.      Different logic families- Diode Logic, DCTL, RTL, IIL, DTL, HTL, TTL, ECL, MOS & CMOS – their operations, characteristics and specifications.

**[8L]**

7.      Timing circuits- 555 timer & its use in monostable and astable mode.    **[2L]**                                           

**8.**      Memory devices: semiconductor main memory RAM, ROM, EPROM, EAPROM etc. Secondary storage device principles.                                **[6L]**                                                                                                                  

9.      Analog digital interfacing: Different D/A and A/D conversion techniques