BSc (IT)

DSC-2: Computer Fundamentals and Digital Electronics (LTP::4:0:2) 6 Credits

Unit-I

Computer, History of Computer, General Architecture of a Computer, Generations, I/O devices, Memory devices, Instructions, System software, Application software. Program Translators – Assembler, Compiler, and Interpreter. Programming languages -Machine Level language, Assembly level language, High level language.
Program development life cycle: Problem definition, analysis, Design, Coding, Testing and debugging, Documentation and maintenance . Algorithm- Features, simple examples. Flowchart –Symbols used in a flowchart, suitable examples,

Unit-II

Number Systems – Introduction- Decimal, Binary, Octal and Hexadecimal. Inter- Conversions, Addition, Subtraction, Multiplication and Division in Binary Number System. 1's and 2's Complement method in Binary Number System. Subtraction using 1's and 2's Compliment, Weighted Number System, Binary Coded Decimal (BCD), Addition of BCD Numbers.

Unit-III

Boolean Algebra: Basic laws, DeMorgan's theorem, Duality theorem, Sum Of Product method and Products Of Sum method. Karnaugh map (Upto 4 Variables, Don't Care Condition). Fundamentals of Gates: Basic gates, Derived gates and Universal gates (Design).

Unit-IV

Combinational and Sequential logic circuits - Half adder, Full adder, Half -subtractor and Full-subtractor. Flip-Flops - SR, D, JK, JK Master Slave, T Flip-flops, Introduction to encoders, decoders and multiplexer, Introduction to counters and Registers.

Text Books:

1. Digital fundamentals-Thomas.D.Floyd. Malvino Leach, digital principles and application (4^{th} edition)
2. Computer System Architecture (3^{rd} edition) Morris Mano PHI.
3. Computer Organization – by V.Carl Hamacher, Z.G.Vranesic, and S.G.Zaky, 3rd Edition. McGraw Hill,
4. Computer Organization & Design, (3rd Edition) by – D.A.Patterson & J.L.Hennessy – Morgan Kaufmann Publishers (Elseviers)