H. N. G. University , Patan
M.Sc.(CA & IT) – Semester - IV
402: Digital Electronics

Unit: 1

[25%]

Data Representation, Number System

Representation of number System Decimal, Binary ,Binary to octal, Binary to Hexadecimal, Binary to Decimal, Decimal to Binary, Binary Operation (Addition, Subtraction, Multiplication, Division), Hexadecimal, Hexadecimal to Binary, Hexadecimal to Octal, Hexadecimal to Decimal Hexadecimal Operation operation (Addition, Subtraction, Multiplication, Division), Octal, Octal to Binary, Octal to Decimal, Octal to Hexadecimal, Octal Operation(Addition, Subtraction, Multiplication, Division)

Arithmetic: Addition, Subtraction Using 1's and 2's Complement, BCD Code, Addition, Subtraction Using 8421 BCD Code, XS -3 Code, Addition, Subtraction Using XS-3 Code, Error Detection & Error Correction Code, Floating Point Representation of Number

Unit: 2

[25%]

Basic of Digital Computers:

Digital Logic Circuits, Digital Computers : Logic Gates, Logic Circuit , Boolean Algebra, Simplification using Boolean Algebra, K' Map, Simplification using K'map, **Combinational logic circuit :**Half Adder, Full Adder, Binary Adder, 2's Complement Adder-Subtractor, **Sequential Circuit, Types of Sequential Circuit**, Latch: R-S Latch, D-Latch Flip Flop: R-S FF, D-FF,J-K FF, Master Slave J-K FF-Integrated Circuits, Decoders, Multiplexer, Demultiplexer, Registers (Shift Left & Shift Right register), Counter (Asynchronous & synchronous)

Unit: 3

[25%]

Memory:

Types of Memory, RAM, Types of RAM, ROM, Types of ROM Operations – Arithmetic Micro Operations, Logical Micro Operations, Shift Micro Operations, Arithmetic Logical Shift Unit, Addressing Techniques, Types of Addressing Techniques, Instruction Format.

Unit: 4

[25%]

8085 Microprocessor:

Microprocessor Overview, Types of Microprocessor 8085 Microprocessor Architecture, Flags, Types of Flags Types of instruction(1-Byte,2-Byte,3-Byte),Arithmetic instruction, Logical Instruction, Data transfer instruction, Stack instruction, Branch Instruction,I/0 instruction.

Text Books:

1. Digital Electronics by Anand Kumar, 3rd Edition , PHI
2. Computer System Architecture by M. Morris Mano - 3rd Edition - PHI
3. Digital Computer Electronics by Malvino & Brown – 2nd Edition.
4. Microprocessor Architecture Programming and Application by Ramesh S. Gaonkar