

## **B.Sc. 201**

### **Digital Electronics**

#### **Unit I:**

Digital Systems and binary numbers, Number base conversions, Octal & Hexadecimal numbers, complements of numbers, Signed binary numbers, Binary Fixed- Point Representation, Arithmetic operation on binary numbers, Overflow & underflow. Binary codes

#### **Unit II:**

Digital logic gates, Boolean Algebra-Axiomatic definition, truth tables, theorems and properties, Boolean functions, canonical and standard forms. Gate level minimization- K-Map method, 2, 3 and 4 variables map, POS and SOP simplification, Don't care conditions, NAND and NOR Implementations

#### **Unit III:**

Combinational Logic: Combinational circuits, analysis and design procedure, binary adder-subtractor, binary multiplier, magnitude comparator, Decoders, Encoders, Multiplexres, Parity Generation and Checking

#### **Unit IV:**

Sequential Logic: Sequential circuits, Storage elements-Latches and Flip-Flops (SK, D, JK, T), Analysis of clocked sequential circuits- state equations, state tables, state diagrams, Flip-Flop input equations, Design procedure, excitation tables.

#### **Unit V:**

Registers, shift registers, Counters, ripple counters, synchronous counters, Memory- RAM, ROM, Programmable Logic Array (PLA)

### **References:**

1. "Modern Digital Electronics": -by R.P. Jain
2. Digital logic and Computer design By Morris Mano
3. Digital Electronics : John C. Morris
4. Digital Electronics Principals and Integrated circuits: Anil K. Maini