CC – IX : Digital Electronics

Unit I - Number System and Logic Gates

Binary, octal, decimal and hexadecimal number systems – code conversion – weighted binary code – Non –weighted binary code – Gray code – Error detection code – Alphanumeric code.

Boolean algebra – Fundamental concepts – Basic laws of Boolean algebra – Duality theorem de Morgan's theorem – Basic logic gates – universal gates.

Unit II - Simplification of Logic Expressions

Introduction to combinational logic – SOP and POS forms of expressions – Minterms and maxterms – Reducing Boolean expressions using Boolean laws – Karnaugh map – Karnaugh map Simplification – Incompletely specified functions.

Unit III Combinational Logic Systems

Half adder – Full adder – Half Subtractor – Full subtractor – Full subtractor 2's complement adder, subtractor circuit – BCD adder – Decoder – Encoder – Multiplexer – Demultiplexer.

Unit IV – Sequential Logic Systems

R-S flip flop using NAND gates – R-S flip flop using – Master slave – J-K flip flop – 3 bit register using flip flops – controlled shift register – Counters – Up counter – Down counter – Ring counter – Mod – 10 counter.

Unit V – Digital Instrumentes, A/D, and D/A conversion

Time – Interval meter – Frequency meter – Digital volt meter – Digital filter – Signal correlators – Digital oscillators A/D and D/A conversion – Flash converter

Books for Study :

1. Digital computer electronics – Albert Paul Malvino – TMH
2. Digital Electronics – Tokheim – Schaum Series
3. Basic Electronics for Scientists – James J.Brophy - McGraw Hill International Series – 1990 – V edn.

Books for Reference:

1. Modern digital electronics – R.P. Jain – TMH.