Unit - I

Chapter 1 : Logic Gates & Boolean Algebra 1-1 to 1-22

Syllabus : Logic gates : Symbol, Diode/Transistor switch circuit and logical expression, Truth table of basic gates (AND, OR, NOT), Universal gates (NAND and NOR) and special purpose gates (EX-OR, EX-NOR), Boolean algebra : Laws of Boolean algebra, Duality theorem, De-Morgan's theorems.

Syllabus : Logic families : Characteristics of logic families : Noise margin, Power dissipation, Figure of merit, Fan-in and Fan-out, Speed of operation, Comparision of TTL, CMOS, ECL, Types of TTL NAND gate.

Syllabus : Standard Boolean representation : Sum of Product (SOP) and Product of Sum (POS), K-map reduction technique for the Boolean expression : Design of arithmetic circuits and code converters using K-map : Half and full adder, Gray to binary and binary to gray (up to 4 bits).

Syllabus : Multiplexer and Demultiplexer : Working, Truth table and applications of multiplexers and demultiplexers.

Syllabus : Basic memory cell : RS-latch using, NAND and NOR, SR flip flops : SR-flipflop, Clocked SR flip flop with preset and clear, Drawbacks of SR flip flop. JK flip flops : Clocked JK flip flop with preset and clear, Master slave JK flip flop, D and T type flip flop, Excitation table of flip flops.

Syllabus : Addressing modes, Instruction set (Data Transfer, Logical, Arithmetic, Branching, Machine Control, Stack operation, Boolean), Assembly language programming (ALP), Software development cycle - Editor, Assembler, cross compiler, linker, locater, compiler, Assembler directives - ORG, DB, EQU, END, CODE, DATA.

UNIT - V

Syllabus : Memory interfacing : Program and Data Memory, I/O Interfacing : LED, Relays, Keyboard, LCD, Seven Segment display, stepper motor, Square Wave generation using port pins of 8051. Water level controller, Stepper motor control for clockwise and anticlockwise rotation, Traffic light controller.

List of Practicals

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