

**Unit I****Chapter 1 : Minimization Techniques 1-1 to 1-46**

Syllabus : Logic design minimization technique : Minimization of Boolean function using K-Maps (upto 4 variables) and Quine - McCluskey method, Representation of signed number - Sign magnitude representation, 1's complement and 2's complement form, Sum of product and product of sum form, Minimization of SOP and POS using K-Maps.

Exemplar / Case study : Digital locks using logic gates.

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<p>Syllabus : Code converter - BCD, Excess-3, Gray code, Binary code, Half-adder, Full adder, Half subtractor, Full subtractor, Binary adder (IC 7483), BCD adder, Look ahead carry generator, Multiplexers (MUX) : MUX (IC 74153, 74151), Cascading multiplexers, Demultiplexers (DEMUX) - Decoder (IC 74138, IC 74154), Implementation of SOP and POS using MUX, DMUX, Comparators (2 bit), Parity generators and checker.</p> <p>Exemplar / Case study : Combinational logic design of BCD to 7 segment display controller.</p>			2.3.9	Full Subtractor using Half Subtractors	2-16
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Unit III

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<p>Syllabus : Asynchronous counter, Synchronous counter, Ring counter, BCD counter, Johnson's counter, Modulus of the counter (IC 7490).</p>



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Unit III

Chapter 6 : Synchronous Sequential Circuit Design

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Unit IV

Chapter 7 : Algorithmic State Machines 7-1 to 7-30

Syllabus : Finite State Machines (FSM) and ASM, ASM charts, Notations, Construction of ASM chart and realization for sequential circuits.

Exemplar / Case study : Waveform generator using MUX controller method.



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Unit IV

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Unit V

Chapter 9 : Logic Families

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Syllabus : Classification of logic families : Unipolar and bipolar logic families, Characteristics of digital ICs : Fan-in, Fan-out, Current and voltage parameters, Noise immunity, Propagation delay, Power dissipation, Figure of Merits, Operating temperature range, Power supply requirements.

Transistor - Transistor logic : Operation of TTL NAND gate (Two input), TTL with active pull up, TTL with open collector output, Wired AND connection, Tristate TTL devices, TTL characteristics.

CMOS : CMOS inverter, CMOS characteristics, CMOS configurations - Wired logic, Open drain outputs.

Exemplar / Case study : To study the various basic gate design using TTL/CMOS logic family.

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Unit VI

Chapter 10 : Introduction to Computer Architecture

10-1 to 10-28

Syllabus : Introduction to ideal microprocessor – Data bus, Address bus, Control bus, Microprocessor based systems – Basic operation, Microprocessor operation, Block diagram of microprocessor, Functional units of microprocessor – ALU using IC 74181, Basic arithmetic operations using ALU IC 74181, 4-bit multiplier circuit using ALU and shift registers, Memory organization and operations, Digital circuit using decoder and registers for memory operations.

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