Chapter 1 : Introduction to Advanced Digital Design

1-1 to 1-33

Syllabus

- Comparison of BJT and CMOS parameters
- Design of Basic gates using CMOS : Inverter, NOR, NAND, MOS transistor switches, transmission gates.
- Drawing of complex logic using CMOS (building of logic gate as per the Boolean equation of three variable).
- Estimation of layout resistance and capacitance, switching characteristics.
- Fabrication process : Overview of wafer processing, Oxidation, epitaxy, deposition, Ion-Implementation and diffusion, silicon gate process.
- Basics of NMOS, PMOS and CMOS: nwell, pwell, twin tub process.

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Syllabus

- Introduction to HDL: History of VHDL, Pro's and Con's of VHDL.
- VHDL Flow elements of VHDL(Entity, Architecture, configuration, package, library only definitions)
- Data Types, operators, operations
- Signal, constant and variables (syntax and use).

Syllabus

- Concurrent constructs (when, with, process).
- Sequential Constructs (process, if, case, loop, assert, wait).
- Simple VHDL program to implement Flip Flop, Counter, shift register, MUX, DEMUX, ENCODER, DECODER, MOORE, MEALY machines.
- Test bench and its applications.

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