

## VLSI DESIGN

### Unit I:-

Review of Logic Design fundamentals:- Combinational Logic, k-maps, designing with NOR and NAND gates. Hazards in combinational Networks. Mealy sequential network design. Moore sequential network design, synchronous design, machine design.

Introduction to VHDL:- VHDL description and combinational network. Modeling flip flops multiplexes using VHDL processes. Compilation and simulation VHDL code . Modeling sequential machines , variables, signals and constants , arrays, VHDL operator functions and procedures, packages and libraries .

### Unit II :-

Attributes, multivolume logic and signal resolutions, IEEE 1164 standard logic , generics , generate statements, synthesis of VHDL codes, synthesis examples, files and TEXTIO.

### Unit III:-

Designing with programmable logic devices ROM, PLA's, PAL's , PLD's, designing with programmable gate arrays . FPGA's , CPLD's,( Complex programmable logic devices) Floating point arithmetic multiplication and other operations.

### Unit IV:-

Hardware testing and design:- Combinational logic testing , sequential logic testing , scan testing , boundary scan, built-in self test.

### Unit V:-

Design examples and case studies :- USART design, micro- controller design, design of microcontroller CPU, Filter design etc.

### BOOKS:-

1. VHDL Primer by Bhaskar
2. Digital System design using VHDL by Charles Roth
3. Modern VLSI Design system on silicon by Wayne Walf