PET5H003 DIGITAL SYSTEM DESIGN

MODULE-I

1. **Combinational Logic:** Review of adders, Subtractor, Multipliers, Multiplexers, ROM, PLA, PAL and PLD.
2. **Synchronous Sequential Logic:** Flip-flops, Triggering of flip-flops, Analysis of clocked sequential circuits, State reduction and assignment, Flip-flop excitation tables, Design procedure, Design of counters,

MODULE-II

3. **Finite State Machines:** Finite state model, Memory elements and their excitation functions, Synthesis of Synchronous sequential circuits, Capabilities and limitations of FSM, Design, Modeling and Simulation of Moore and Mealy machines.

MODULE-III

4. **Asynchronous Sequential Logic:** Analysis Procedure, Circuits with latches, Design procedure, Reduction of state and flow tables, Race-free state assignment, Hazards, Design examples.

Module – IV

5. **Designing with Programmable Logic Devices and Programmable Gate Arrays:** Read only memories, Programmable logic arrays, Programmable array logic, Designing with FPGAs, Xilinx series FPGA

Additional Module (Terminal Examination-Internal)

6. **Algorithmic State Machines**: ASM chart, Timing considerations, Control implementation, Control Design with multiplexers, PLAs, etc.

Text Books

1. VHDL: Programming by Example, Douglas L Perry, TMH, 3rd Edition, 2008.
2. Fundamentals of Digital Logic with VHDL design, Stephen Brown, ZvonkoVranesic, TMH, 3rd Edition, 2008.
3. Digital Design Principles, William I Fletcher, Prentice Hall of India, 3rd edition-1980.
4. Reference Books
5. Digital System Design Using VHDL, Chales H. Roth, Cengage Learning India, 2nd Edition,2012.
6. Digital System Design, John Wakerley, Pearson Education, 4th Edition,2008.
7. VHDL, ZainalabedinNavabbi, McGraw Hill Publication, 6th Edition, 2007.