Lab Practice - I (404206)

VLSI and Electronics System Design

Teaching Scheme: **Examination Scheme:** OR: 50Marks
Practical: 4 Hrs/week TW:50Marks

VLSI Design

List of the Experiments:

Group A: To write VHDL code and test bench, synthesis, simulate and down load in to PLD, for the following (Any four).

1. To design of ALU to Perform – ADD, SUB, AND, OR, 1's compliment, 2's Compliment, Multiplication and Division.
2. To design of Sequence Detector (Finite State Machine- Mealy and Moore Machines).
3. To generate ramp/square waveform using DAC.
4. To measure the period of a signal.
5. To design lift/traffic light controller.
6. To design of 4-bit binary, BCD counters (synchronous/ asynchronous reset).

Group B: To prepare CMOS layout in selected technology, simulate with and without capacitive load, comment on rise and fall times. (Any four)

1. CMOS Inverter and also observe VTC and calculate switching threshold.
2. CMOS 3-input NAND, 3-input NOR.
3. 2:1 MUX by conventional method and by using Transmission gates. Compare them.
4. CMOS Combinational logic for minimum 5 variables.
5. D/ T Flip flop.
6. Single bit SRAM cell.

Electronics System Design

List of Experiments: (Any 6 experiments)

1. Design and implement Power supply (Estimation of current requirement)
2. Design of SPAN ZERO circuit
3. Design and implement of Transducer interface using Whetstone Bridge
4. Study of Error budget analysis
5. ADC Interface with microcontroller for temp transducer

6. DAC interface to generate triangular/sine waveform
7. Interfaces- LED, HB LED, LCD, Relays with microcontroller
8. Case study for deciding appropriate Microcontroller for given application
9. PCB Design for Mixed Signal Circuit (Involving ADC and Signal Conditioning)
10. DC analysis of given circuit
11. AC analysis of given circuit
12. Sensitivity analysis for given circuit
13. Reliability calculations from given data