Chapter 2

Hardware Design Issues

1) Design a combinational circuit for the given problem whose description is given as: y is 1 if a is 1 , or b and c are 1 . z is 1 when b or c is 1, but not both(or a, b and c are 1).

2) Design a 2-bit magnitude comparator with output less than, greater than and equal. Start from a truth table, use k-map to minimize logic and draw the final circuit.

3) Construct a pulse divider. Slow down your pre-existing pulse so that you output a 1 every four pulses detected.

4) Design a single purpose processor that calculates LCM of two numbers input from the user.Include FSMD, datapath and FSM in design.

5) Design a single purpose processor that calculates x to the power n.(x^n).

6) Design a single purpose prcoessor that calculates Fibonacci series upto n places.

7) Design a single purpose processor that calculates factorial of 'n'.

8) How do you optimize a single purpose processor? Explain the steps for optimizing single purpose processor with example.