15CS202 DIGITALSYSTEM DESIGN

Unit –III

COMBINATIONAL LOGIC

FOUR MARKS

1.Find the Minterm list equation for each output variable in a 9's complement combinational circuit.

2.Construct a truth table indicating the input & output variables of Multiplier circuit.

3. Design a circuit that will find 2's complement of a four bit binary number.

4.Summarize the following terms.

i)Fan-out ii) $I_{cc}H$ iii)V_{OH} iv)T_{pLH}

5.Draw the Logic symbol for a 3 to 8 decoder.

6. Determine the decoder logic circuit for the given Boolean function.

A=f(x,y)=∑(0,3)

7.Sketch the logic symbol of 10 line BCD encoder.

8.Draw the resulting logic diagram of full adder.

9.Construct and simplify the output equations of full subtractor.

10.Realize the following Boolean equations with as few IC's possible.

T=(w,x,y,z)=∑(0,2,,4,6,8,10,12,14)

11.Make and list any five differences between encoder and Priority encoder.

12.Sketch a block diagram for four bit Comparator.

TEN MARKS

1.Illustrate the functions of BCD decoders its Logic diagram.

2.Draw the logic diagram for a 2 to 4 logic decoder with an active low encode enable and active high data outputs.

3.Sketch a diagram illustrating the logic symbol for a 8 to 1 digital multiplexer.

4.Realize the following Boolean functions using the appropriate multiplexer , whose data inputs are connected directly to logical 1 and 0 levels. X=f(a,b,c)=∑(0,1,3,5,7).

5.Show how a full adder can be madeto subtract.

6.Draw the block diagram for single –cell look-ahead carry adder.Label all inputs and outputs.

7.Realize the followimg function with decoder. $A=f(x,y)=\sum(0,3)$; $B=f(x,y)=\sum(1)$.

8.How will you perform three bit addition using combinational circuit. Draw the combinational circuit and explain with an example.

9.Describe cascading full adders with an example circuit.

10.Draw and explain the BCD adder circuit for four bit bcd number.

11.Design the Binary comparator logic circuit and explain with an example.