**Assignment No-3**

**Unit 2**

1. What is a Combinational Logic Circuit?
2. What is SOP and POS? Convert the following expression into its standard forms:

Y=ABC+AC+B

Y=(B+C).(A+D).(B+D) 

1. What is K-map? Explain the rules to simplify.
2. For the logical expression given below draw the K-map and obtain the simplified logical expression:

Y = Σm (1, 3, 5, 7, 8, 10, 14). **Realize the minimized expression using the NAND gates**.

1. Simplify the following expressions using K-map :

Y = Σm (0, 1,2, 4,5, 6)

Y = Σm (0, 2, 4,5)

1. For the logical expression given below draw the K-map and write **POS** expression

Y = Σm (1,2, 3, 6,, 8,9, 12, 13). Realize the minimized expression using the NOR gates.\*\*\*\*\*\*

1. Define Half Adder. Draw Circuit and write truth tables also.
2. Design a full adder circuit using K –Map technique.
3. Draw and Write the Boolean equation and draw a logic diagram for the logic that will have output as Y and inputs A,B,C.  
   The logic performs the following operation:  
   1.Y=1   
   when A=B=C=0  
   and when A=B=1 and C=0  
   3.Y=0 for all other cases.
4. explain the Half subtractor.
5. Draw a block diagram of 4:1 Multiplexer and write its truth table.
6. Draw block diagram of 8:1 Multiplexer.
7. Necessity of Multiplexer and Applications of it.
8. What is a Demultiplexer? explain 1:4 demux.
9. Obtain 1:8 line demultiplexer using two 1:4 line demultiplexers.

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