



Date: 09. 04. 2008

Time: 4.00 pm – 5.30 pm

Answer All Questions

When answering part d of question 1 please detach the given diagram in next page and attach to the answer sheet.

Q1.

Consider the following truth table

A	B	C	D	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	0
1	0	1	0	X
1	0	1	1	0
1	1	0	0	X
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

- Find the Minimum expression for F by using K-MAP method.
- Draw a circuit diagram for F by using Basic Gates (NOT, 2 input AND, 2 input OR)
- Draw a circuit diagram for F using ONLY 2 input NAND gates.
- By using the given drawing diagram in the last page draw a complete electronic circuit for Function F. (Use ONLY 2 input NAND Gates).

Q2.

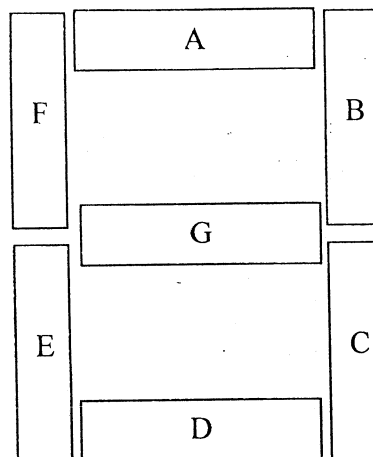
- Simplify the following Boolean expression using *algebraic* method or *K-Map* method.

1. $(A + B) \cdot \overline{A \cdot B}$

2. $\overline{A \cdot (B + A)}$

- b. You need to design special type of 2 input pattern display system. This display system contains two inputs named X and Y. The system used two 7 segment displays to show the output. Outputs of all the patterns are given bellow.

X	Y	Output
0	0	
0	1	
1	0	
1	1	



Display 1

X	Y	A1	B1	C1	D1	E1	F1	G1
0	0		1	1	1	1	1	0
0	1		1	1				
1	0		1	1				
1	1		1	1				

Display 2

X	Y	A2	B2	C2	D2	E2	F2	G2
0	0		1	1				
0	1		1	1				
1	0		1	1				
1	1		1	1				

- Complete the two truth tables for two 7 segment displays.
- Write all the output functions for each of the two displays.
- Draw the circuit diagram for a one 7 segment display.
- What are the changes you can do to create 3 input pattern display systems?

Q3.

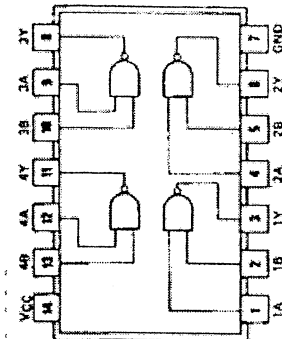
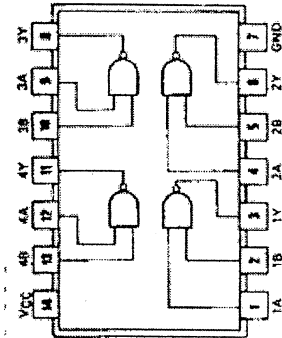
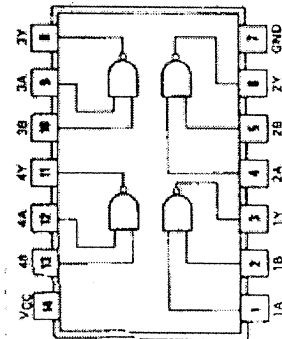
- Briefly explain the following digital components.
 - Multiplexers
 - Decoder
 - J-K Flip-flops
- Create 16 -1 multiplexer using 4-1 multiplexers.
- "Counters can be used as a frequency divider" Do you agree with this statement. Explain briefly using suitable circuit and output diagrams.
- Assume that you have a 100Hz Clock. Create a 25Hz Clock circuit by using above 100Hz clock. (you can use any digital gates and Flip-flops)

*** All right reserved ***

REG NO:

+5V

- A
- B
- C
- D



F

0V