Mid-term Test Remedial-Teaching for ***Practice of Digital System*, NHU CSIE-1A, By C-C Tsai, May 2, 2018**

ID: _____ Name:_____ Score: _____

Note: Each problem has one point.

1. Please **give briefly description in function** for the following four instruments.

(a) **DMM**:

(b) **Power Supply**:

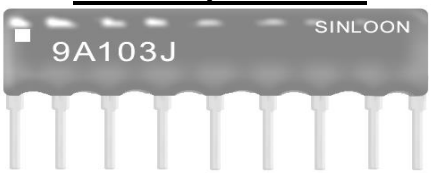
(c) **Function Generator**:

(d) **Oscilloscope**:

2. Please use **DMM** to **check a longer wire whether was broken or not**.

3. In your experiments by using **TTL/CMOS gates with V_{CC}/V_{DD}=5V**, please give your measured volts for typical logic "1" and "0".
   logic "1" = _____V and **logic "0" = _____V**

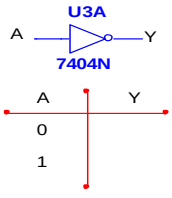
4. Please **mark the pin number** of a **packed-resistor** and **draw down their internal resistor network**.

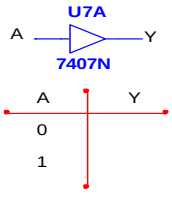


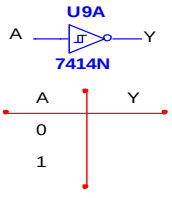
5. Please use DMM to **check a LED whether is OK** or **damaged**.

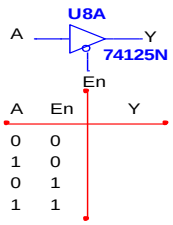
6. Please **mark the pin number and their Vcc and Gnd** for the following two **typical ICs**.

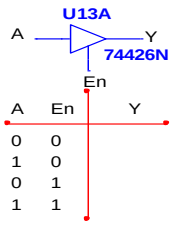
7. Please fill the following **truth tables for each logic gate**.



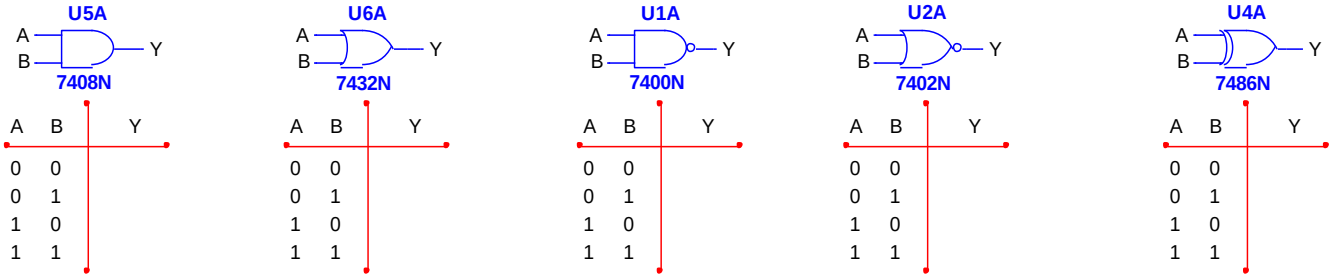




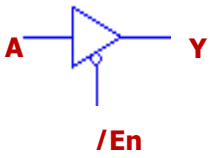




8. Please fill the following **truth tables for each logic gate**.

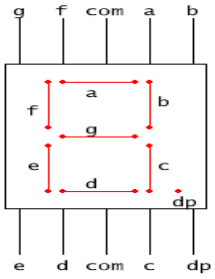


9. Please fill the following **truth tables for each logic circuit**.

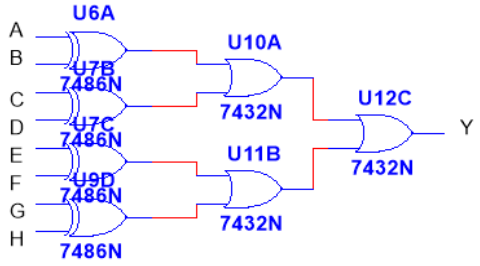


/En	A	Y
0	0	
0	1	
0	⎍	
1	0	

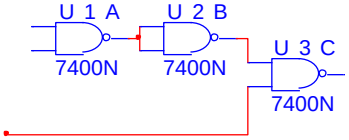
10. Please use **DMM** to **recognize the 7-segment display whether is CA** (common anode) or **CK** (common cathode).



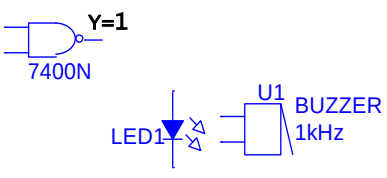
11. Please show the respective **output Y** to the inputs of (a) **ABCDEFGH = 00001111** and (b) **ABCDEFGH = 11001100**.



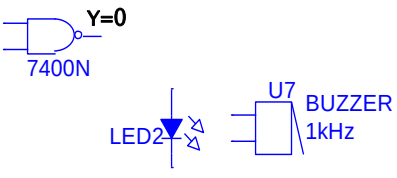
12. Draw the **equivalent logic gate**.



13. (a) Please connect the high-active driving such that both LED and Buzzer are on if **Y=1**.
(b) Please connect the low-active driving such that both LED and Buzzer are on if **Y=0**.

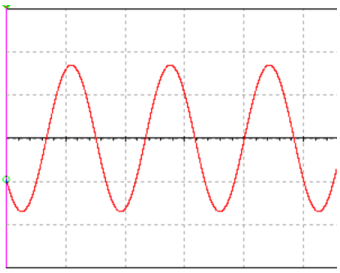


(a)

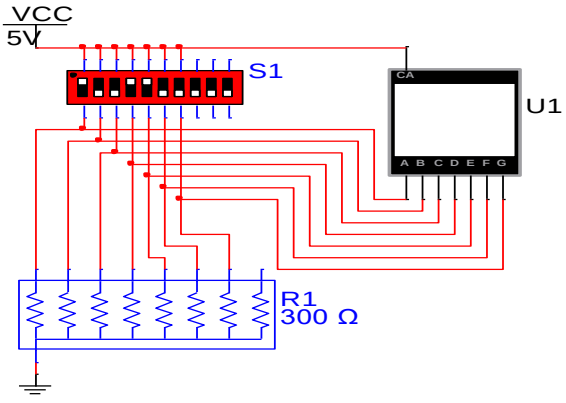


(b)

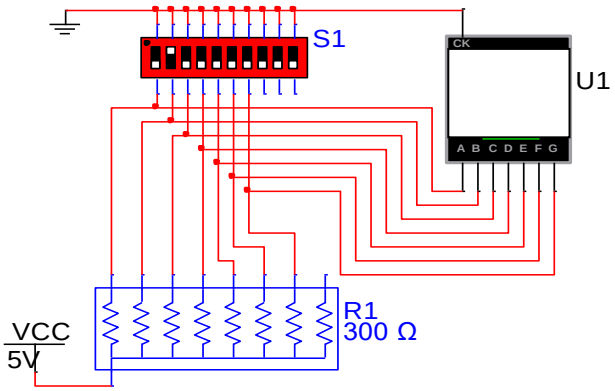
14. Please determine **the voltage amplitude** and **frequency** of a sinusoidal waveform on a scope with the **voltage scale 2V/div** and **time scale 2ms/div**.



15. Please **show the respective displayed number** for the following circuits (a) and (b).



(a)



(b)

16. Given **a 4-bit e-key** as below, please **explain that LED1, LED2, and Buzzer are how to work** under the various conditions of comparing two 4-bits A and B.