

Pre-Lab 6

Carefully read the entirety of Lab 6, then answer the following questions. Attach a separate sheet of paper, if necessary, to show all work and calculations.

1. Calculate the number of bytes of memory in the following ROM chips.

(a) 27C64

(b) 27C010

(c) 27C256

(d) 27C1024

2. Are EPROM outputs HIGH or LOW by default?

3. How many input variables are needed to express decimal numbers from 0–31?

4. When placed on your breadboard, what value should be sent to the $\overline{\text{PGM}}$ pin (VCC or GND)? Why?

5. What are the binary values that should be written to the EPROM in lab Circuit 2? Q7 is the MSB and Q0 is the LSB of each word. (Note, this truth table is very long and continues on the next page.)

Address	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
00000								
00001								
00010								
00011								
00100								
00101								
00110								
00111								
01000								
01001								
01010								
01011								
01100								
01101								
01110								
01111								
10000								
10001								
10010								
10011								
10100								
10101								
10110								
10111								
11000								
11001								

11010								
11011								
11100								
11101								
11110								
11111								

6. What are the binary values and hexadecimal characters that should be written to the EPROM in lab Circuit 3? Output pins Q7–Q3 will not be used and will therefore be kept at their default HIGH value.

Address	Q7–Q3	Q2	Q1	Q0	Hex Value
		R	G	B	
0000	1 1 1 1 1				
0001	1 1 1 1 1				
0010	1 1 1 1 1				
0011	1 1 1 1 1				
0100	1 1 1 1 1				
0101	1 1 1 1 1				
0110	1 1 1 1 1				
0111	1 1 1 1 1				
1000	1 1 1 1 1				
1001	1 1 1 1 1				
1010	1 1 1 1 1				
1011	1 1 1 1 1				
1100	1 1 1 1 1				
1101	1 1 1 1 1				
1110	1 1 1 1 1				
1111	1 1 1 1 1				

7. The following questions pertain to the 74224 FIFO chip. Refer to the datasheet to help answer these questions.
- (a) Is this chip a type of volatile memory or non-volatile memory?

 - (b) Is OE active-HIGH enable or active-LOW enable? How do you know?

 - (c) If you want to enable the outputs, what value will you connect to OE?

 - (d) Is $\overline{\text{CLR}}$ active-HIGH enable or active-LOW enable? How do you know?

 - (e) If you do not wish to clear the stack pointer (using $\overline{\text{CLR}}$), what value will you connect to $\overline{\text{CLR}}$?

 - (f) How many 4-bit words can be entered into the chip before it is full?

 - (g) The LDCK input expects a low value when not in use. Should you use an active-HIGH or active-LOW pushbutton configuration to control this input?

 - (h) The UNCK input expects a high value when not in use. Should you use an active-HIGH or active-LOW pushbutton configuration to control this input?