

Quiz 04 :::: Numbering System – Complements - Decimal codes – Boolean gates

1.

(a) Represent The unsigned decimal number 46 in binary form	(b) Represent the unsigned decimal number 74 in hexadecimal form
(c) Represent the unsigned binary number 100101 to decimal number	(d) Represent the unsigned binary number 111000110 to hexadecimal number
(e) Represent the unsigned hexadecimal number 4EH to decimal number	(f) Represent the unsigned hexadecimal number 100H to binary number

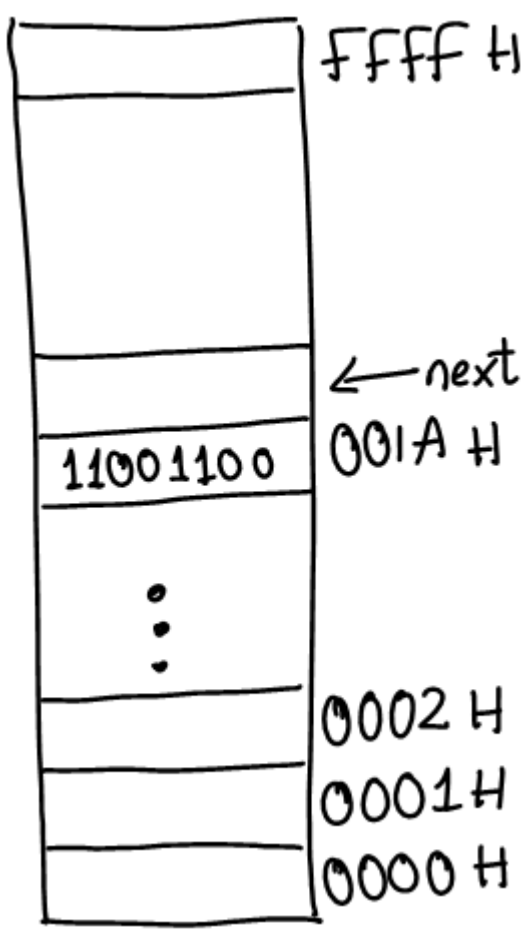
2.

(a) Represent decimal number +21 in signed binary form	(b) Represent decimal number -52 in signed binary form
(c) Represent decimal number +80 in 8-bit signed binary form	(d) Represent decimal number -65 in 8-bit signed binary form
(e) What is the minimum number of bits required to represent unsigned decimal number 127 ?	(f) What is the minimum number of bits required to represent signed decimal number -77 ?

3.

(a) Find the 1's complement of 11001111	(b) Find the 2's complement of 11001111
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4. The PC memory system is shown below on the right

(a) What is the address bus size?	
(b) Given that this memory is byte addressable, what is the size of memory?	
(c) What is the next address after 001AH?	
(d) What is the memory content of 001AH?	

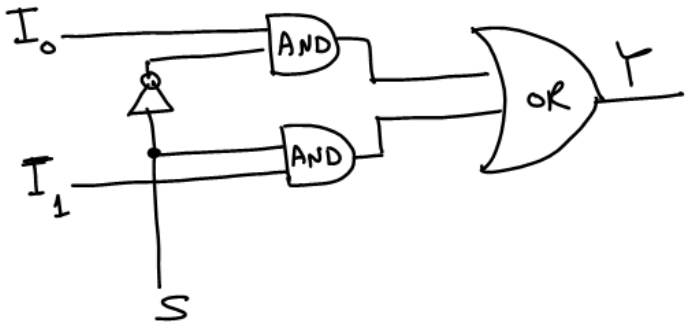
5.

(a) Represent unsigned decimal number 81 in BCD	(b) Represent unsigned decimal number 72 in Gray code
(c) Convert BCD number 11001 to decimal number	(d) Convert Gray number 11001101 in decimal number

6.

The following rules explain how to convert from a binary number to a Gray code word: ▪ The most significant bit (left-most) in the Gray code is the same as the corresponding MSB in the binary number. ▪ Going from left to right, add each adjacent pair of binary code bits to get the next Gray code bit. Discard carries. (a) Convert binary number 10110 to Gray code	Given that the character A is represented in 7-bit ASCII as 41H. (b) Using the eight bit to represent parity, represent character A in 7-bit odd parity ASCII
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7. Regarding the logic circuit sketched below

(a) Find the truth table	 <pre> graph LR I0 --> NOT1[NOT] NOT1 --> AND1[AND] I1 --> AND1 I1 --> AND2[AND] S --> AND2 AND1 --> OR[OR] AND2 --> OR OR --> Y </pre>
	(b) Find the Boolean equation

8. Regarding the truth table listed below

(a) Find the Boolean equation	<table><tr><th>x</th><th>y</th><th>z</th><th>f</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td></tr></table>	x	y	z	f	0	0	0	0	0	0	1	1	0	1	0	0	0	1	1	0	1	0	0	0	1	0	1	1	1	1	0	0	1	1	1	0
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(b) Sketch the logic diagram																																					

9. Regarding the Boolean equation $F(X, Y, Z) = XYZ + X\bar{Y}Z$

(a) Sketch the logic diagram	(b) Find the truth table
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