

Name: _____

Binary System/Logic Gate Test (Out of 68 Marks)

1. Convert all of the following decimal numbers into binary, **show all work:** (12)
STUDENTS SHOULD SHOW THEIR WORK FOR FULL MARKS

a) 231

b) 203

c) 195

Answer: **11100111** (2)

Answer: **11001011** (2)

Answer: **11000011** (2)

d) 45

e) 75

d) 134

Answer: **00101101** (2)

Answer: **01001011** (2)

Answer: **10000110** (2)

2. Convert the following binary numbers into decimal, **show all work:** (12):
STUDENTS SHOULD SHOW THEIR WORK FOR FULL MARKS

a) 101011

b) 1110011

Answer: **43** (3)

Answer: **115** (3)

c) 11101111

d) 11101110

Answer: **239** (3)

Answer: **238** (3)

2. Binary Addition-Add up each of the pairs of binary digits, **show all your work:** (12)
STUDENTS SHOULD SHOW THEIR WORK FOR FULL MARKS

a) (3)

$$\begin{array}{r} 1101 \\ +1001 \\ \hline \end{array}$$

Answer: **10101**

b) (3)

$$\begin{array}{r} 1101 \\ +1101 \\ \hline \end{array}$$

Answer: **11010**

b) (3)

$$\begin{array}{r} 1110 \\ +1110 \\ \hline \end{array}$$

Answer: **11100**

c) (3)

$$\begin{array}{r} 101 \\ +101 \\ \hline \end{array}$$

Answer: **1010**

4. Binary Subtraction-Subtract the following pairs of binary numbers, **show all your work:** (12)
STUDENTS SHOULD SHOW THEIR WORK FOR FULL MARKS

a) (3)

$$\begin{array}{r} 1101 \\ -1001 \\ \hline \end{array}$$

Answer: **100**

b) (3)

$$\begin{array}{r} 1110 \\ -1 \\ \hline \end{array}$$

Answer: **1101**

c) (3)

$$\begin{array}{r} 1110 \\ -1110 \\ \hline \end{array}$$

Answer: **0**

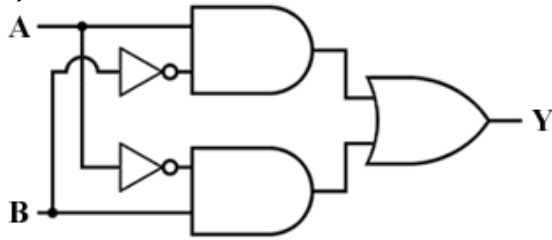
d) (3)

$$\begin{array}{r} 1101 \\ -1011 \\ \hline \end{array}$$

Answer: **10**

5. Give the names and make a Truth Table for each of the following Gates: (20)

a)



Name: **XOR GATE**

Truth Table:

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

(5)

b)



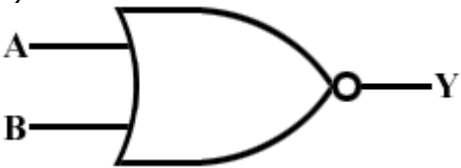
Name: **NAND GATE**

Truth Table:

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(5)

c)



Name: **NOR GATE**

Truth Table:

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(5)

d)



Name: **XOR GATE**

Truth Table:

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

