Name _____

ICT Logic Gate Pretest

Draw the logic diagram of the following boolean expressions (be neat and use a template):

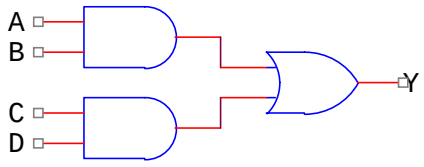
1. (A + B)(C + D) = Y

2. $\overline{N \bullet X} + (A \bullet B) = Y$

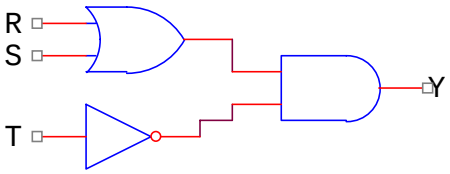
3. $(\overline{C} \bullet \overline{W} \bullet \overline{P}) + (V + W) = Y$

4. $\overline{\overline{(A \oplus B)} + (C \bullet D)} = L$

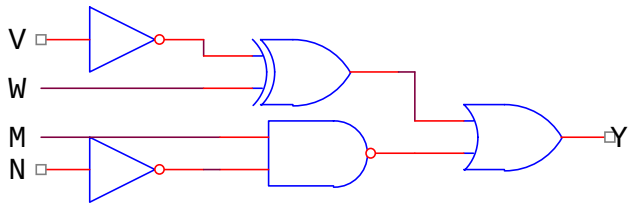
Write the boolean expression for each of the following logic diagrams:



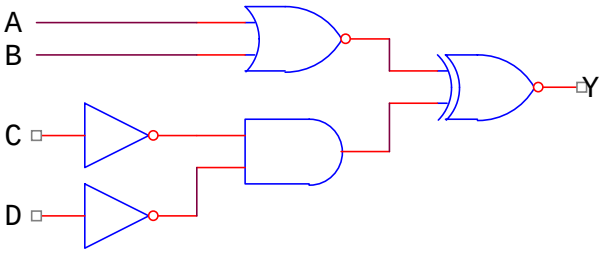
Y = _____



Y = _____



Y = _____



Y = _____

9) A NOR gate can be constructed by inverting a(n) _____ gate.

10) A XNOR gate can be constructed by inverting a(n) _____ gate.

11) LED is an acronym for _____ _____ _____.

12) DIP is an acronym for _____ _____ _____.

13) RAM is an acronym for _____ _____ _____.

14) ROM is an acronym for _____ _____ _____.

15) IC is an acronym for _____ _____.

16) A _____ gate has a unique output of low (or 0) when both inputs are high (or 1).

17) A _____ gate has a unique output of low (or 0) when both inputs are low (or 0).

18) A NOR gate has a unique output of _____ when both inputs are _____.

19) The _____ and _____ gates have no unique outputs.

For questions 20-22 choose from the following gates (AND, OR, XOR, NAND, NOT)

20) The "either but not both gate" is the _____ gate.

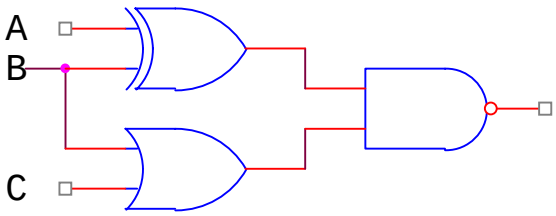
21) The "all or nothing gate" is the _____ gate.

22) The "any or all gate" is the _____ gate.

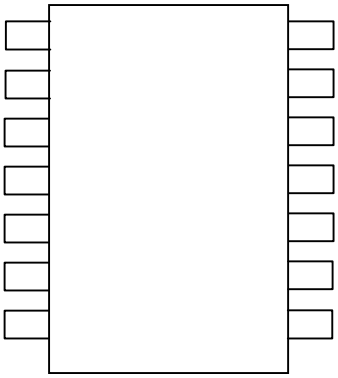
23) Complete the following truth table:

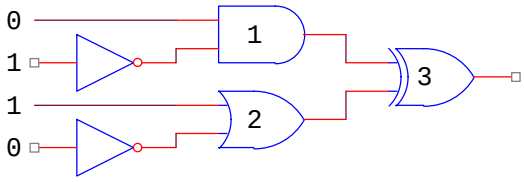
A	B	$A \oplus B$	$\overline{AB}$	AB	A + B
0	0				
0	1				
1	0				
1	1				

24) Complete the truth table for the following:



25) Label the legs of this IC.





26) The output of gate 1 is _____.

27) The output of gate 2 is _____.

28) The output of gate 3 is _____.

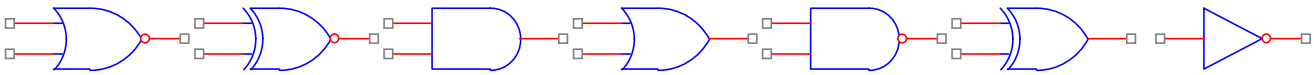
29) A NOR gate performs the logic function _____.

a) A + B b) $\overline{A+B}$ c) $\overline{AB}$ d) $\overline{A}\,\overline{B}$ e) $A \oplus B$

30) A NAND gate performs the logic function _____.

a) A + B b) $\overline{A+B}$ c) $\overline{AB}$ d) $\overline{A}\,\overline{B}$ e) $A \oplus B$

Name each of the following gates (choose from: NOT, OR, XNOR, XOR, NAND, AND, NOR)



_____ _____ _____ _____ _____ _____ _____

Simplify the following bit-wise expressions:

31) $10101 \bullet 11011 \oplus 10011 =$

32) $11000 + 10101 \bullet 01010 =$

33) $\overline{00110 \oplus 10011} \bullet 11101 + 00100 =$