

Title: DEVELOPING A LOGIC CIRCUIT

Materials:

- [1] 7408 2-input AND gate IC
- [1] 7432 2-input OR gate IC

Procedure:

1. On a separate piece of paper, **draw** a logic circuit for the Boolean expression $A + (BC) = Y$ in Fig. 4-4. Use the correct logic symbols for the AND and OR gates. Label the switches A, B, and C – and also label the led as Y.
2. Insert a 7432 and 7408 IC into the breadboard.
3. Wire the logic circuit you drew in Fig. 4-4.
4. Move the input switches to each combination shown in the input section of Table 4-1. Record the results in the output column. **Get Instructor’s Signature.**

Questions (answer on a separate piece of paper – “**Draw**” means you must use a template):

1. The Boolean expression $\overline{A}B + A\overline{B}C = Y$ is called a _____ (maxterm, minterm) or also a _____ -of- _____ expression.
2. The Boolean expression $\overline{A}B + A\overline{B}C = Y$ can be implemented with an _____ (AND-OR, OR-AND) pattern of logic gates.
3. **Draw** a logic diagram for the Boolean expression $\overline{A}B + A\overline{B}C = Y$.
4. **Draw** a three-variable truth table for the Boolean expression $\overline{A}B + A\overline{B}C = Y$.

Inputs			Outputs
A	B	C	Y
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

Table 4-1. Truth Table for $A+BC=Y$