Name:

Teacher:

Class:

Date:

Logic Gate Applications - Practice Problems Set 2:

1. A firm wishes to have a safe protected by a security alarm at night. The requirement for the alarm is as follows: It must be possible to switch the alarm **ON** and **OFF**, and the alarm should ring if the safe door is opened when the room is dark.

   a) What Input sensor should be used?

   _____

   b) Draw a circuit diagram for an electrical system which would operate the alarm based on the conditions that have been set by the client (firm).

   Draw a circuit diagram here:

   c) The security system should have contained one of the following logic gates: **NOT**, **AND**, & an **OR** gate. Complete the following truth tables for each logic gate in the circuit.

NOT Gate	
Input	**Output**
0	
1	

OR Gate		
Input 1	**Input 2**	**Ouput**
0	0	
0	1	
1	0	
1	1	

AND Gate		
Input 1	**Input 2**	**Ouput**
0	0	
0	1	
1	0	
1	1	

2. The diagram below shows a simple alarm system for motorbike. There are two types of switches used in the design of the alarm system: a toggle switch which the rider turns on when the bicycle is parked, and a pressure switch in the saddle (seat).

Part X   **Part Y**   **Part Z**

| Toggle Switch |
| Pressure Switch |
| Bell |
| Buzzer |
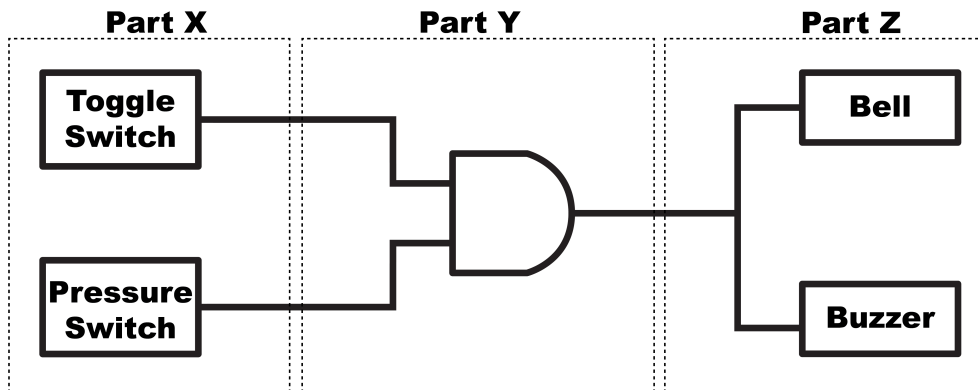
a) Identify the different sections of this circuit.

   i.   Control Block: _____

   ii. Input Sensors: _____

   iii. Output Sensor: _____

b) What logic gate was used to create this circuit?

_____

c) Complete the truth table for this system.

Toggle Switch	Presure Switch	Buzzer	Bell
1	1		
1	0		
0	1		
0	0		

d) What conditions will cause the alarm to go off?

_____

_____

_____

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