

	MARIST BROTHERS OF THE SCHOOLS CHAMPAGNAT PASTO INSTITUTE		
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	Grade: 7 th	Term: 3 rd	
	Area/ Subject: Technology and computing	Mark:	

Purpose: Identify and correctly apply the function of logical operators (AND, OR, NOT) and conditional structures in the design of automated control algorithms.

Evaluative Activity: Conditionals and Logical Operators

1. What is the main function of the **AND** logic operator in an algorithm?

- ☐ It changes the condition from true to false.
- ☐ It activates an action if at least one condition is true
- ☐ It activates an action only if all conditions are true at the same time.

2. In a home security system, a warning sounds if the **gas sensor** detects a leak OR if the **humidity sensor** detects a flood. Which logic operator do we use?

- ☐ AND
- ☐ OR
- ☐ NOT

3. We want an **air extractor** to turn off when the **gas sensor** does NOT detect dangerous substances. Which operator is best for this **inverse** logic?

- ☐ AND
- ☐ OR
- ☐ NOT

4. What type of sensor is necessary for a project to **prevent** gas poisoning accidents in a house?

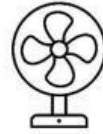
- ☐ Gas sensor
- ☐ Logic operator
- ☐ Light sensor



5. An algorithm turns on a fan if the **temperature** is high AND the **humidity** is high too.

If the temperature is **high**, but the humidity is **low**, what happens to the fan?

- ☐ The fan turns on because temperature is the most important factor.
- ☐ It activates an action if at least one condition is true
- ☐ The fan stays off because both conditions are not true.



6. For the classroom lights to turn on, the classroom must be **dark** there must be students inside. Which of the following logical conditions is correct?

- ☐ IF Light_Sensor = Dark OR Motion_Sensor = People are in THEN Lights = TURN ON
- ☐ IF Light_Sensor = Light AND Motion_Sensor = Empty THEN Lights = TURN ON
- ☐ IF Light_Sensor = Dark AND Motion_Sensor = People are in THEN Lights = TURN ON



7. A cooperative team programmed an **irrigation system** for the plants using the following logic condition:

IF Soil = Dry OR Time = 6:00 PM THEN Irrigation System = ON.

The irrigation system turns on at 6:00 PM even though the soil is completely moist, wasting water. What is the error in the algorithm?

- ☐ They should have used the NOT operator to invert the time value
- ☐ They used the OR operator instead of AND.
- ☐ They used the AND operator instead of OR.



8. The following algorithm has been created to display an alert message if the room temperature is higher than 30°C or the air humidity is higher than 90%:

If temperature = high OR humidity = low, Then Alert = active

The thermometer currently reads 32°C. What happens?

- ☐ The alert does not activate because the humidity is too low and blocks the system.
- ☐ There is an error in the algorithm.
- ☐ The alert does appear because one of the two conditions is TRUE



9. Create the algorithm to the following situation with these dates:



It's raining / I will wear a cape / I will take a umbrella

IF _____ THEN _____ OR _____