MODULE J HARDWARE AND EMERGING TECH · J3

Sensors and what they measure

Original practice questions · 22 marks · ~25 minutes · Cambridge 0478 syllabus 3.2.3

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. When you name a sensor, give its type (for example, temperature sensor). Do not give brand names. The total for this worksheet is **22 marks**.

1

Total: 4 marks

(a) State what is meant by a sensor. **[2]**

(b) Give **two** purposes of sensors. **[2]**

1

2

2

Total: 4 marks

Draw **one** line from each sensor to the data it captures. Not all of the data descriptions will be used. **[4]**

pH	The height of a liquid in a container
proximity	The level of sound
flow	How acidic or alkaline a substance is
acoustic	The rate at which a liquid or gas moves through a pipe
	How near an object is to the sensor

3 **Total: 4 marks**

A public aquarium uses sensors to monitor its fish tanks and its visitor areas.

Complete the table by identifying the **most suitable** sensor for each task. Use a different sensor for each task. **[4]**

Task	Most suitable sensor
Check whether the water in a tank has dropped below a marked height, so staff know when to top it up	
Check that the water in a tank for tropical fish stays warm enough	
Measure how bright the lamps above a coral tank are	
Measure the amount of carbon dioxide in the air of a busy visitor hall	

4 **Total: 3 marks**

A company that sends fragile glassware to its customers puts a small data logger inside each box. The data logger uses a sensor to record whether the box is dropped, shaken or tipped over during the journey.

(a) Identify the **most suitable** sensor for the data logger. **[1]**

(b) Explain why this sensor is suitable for this purpose. **[2]**

5 **Total: 3 marks**

The car park of an office building has a display at the entrance that shows how many parking spaces are free. A sensor is fixed into the ground in the middle of each parking space. The wheels of a parked car do not touch the sensor. Each sensor is used to detect whether a car is parked over it.

Suggest a suitable sensor for each parking space **and** explain why it is suitable. **[3]**

Sensor

Explanation

6 **Total: 4 marks**

A plant nursery is setting up an automatic watering system for its outdoor flower beds. The system must water a bed only when the soil in that bed is dry. A technician suggests using a humidity sensor in each bed.

Explain why a moisture sensor would be more suitable than a humidity sensor for this system. **[4]**

Total for this worksheet: 22 marks