Status	Finished
Started	Monday, 15 September 2025, 5:04 PM
Completed	Monday, 15 September 2025, 5:30 PM
Duration	25 mins 16 secs
Grade	Not yet graded
Question 1 Complete Marked out of 1.00	

Explain the difference between a **sensor** and an **actuator** in IoT. Provide one industrial example of each.

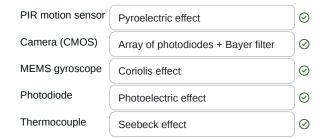
A sensor is a device that measures a physical things and transform to a signal, and the actuator is also a device but the functionality is get signals and do a physical action.

A temperature sensor.

Turn on a light can be an actuator.

Question 2 Correct Mark 1.00 out of 1.00

Match the following sensors with their operating principle



La resposta és correcta.

The correct answer is: PIR motion sensor → Pyroelectric effect, Camera (CMOS) → Array of photodiodes + Bayer filter, MEMS gyroscope → Coriolis effect, Photodiode → Photoelectric effect, Thermocouple → Seebeck effect



Marked out of 1.00
PIR motion sensors are prone to false positives. Mention one source of interference and explain why it affects the sensor's output. One source of interference can be the hot air cause alters the temperature of the surroundings and this can effects to the sensor's output.
Question 4 Complete Marked out of 1.00
Why does the resolution (in bits) of an ADC matter? Explain how quantization error can influence IoT applications. Matters cause the ADC defines the physical quantity that will be represented digitally. Quantizaition error can influence Iot appllications cause for the same output it can be interpreted like a good value or not depending on that.
Question 5 Complete Marked out of 1.00
When choosing a sensor, what is a common trade-off between sensor characteristics? Mention 3 relevant characteristics (e.g. selectivity, this one does not count). The accuracy, sensitivity and the power consumption.

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Question 3
Complete

Question 6
Complete
Marked out of 1.00
You are deploying a vibration sensor on a drone. The raw accelerometer signal is overwhelmed by motor noise. Mention one hardware and one software preprocessing techniques you would recommend, and why?
We need to implement a noise reduction preprocessing technique. we can implement a low pass filter to mitigate the noise this filter can be hardware or software processing the data before send it.
Question 7 Complete
Marked out of 1.00
Compare edge and cloud data processing in terms of latency, power consumption, and reliability. In which scenario would each be preferable?
Edge data proccessing have a very low latency, normal power consumption and higher realiability than cloud. But cloud have a higher latency, a more efficiently power consumption.
Edge data is better for real time control like autonomous vehicles, and cloud
Question 8 Not answered
NUL alisweleu

Mention one method to optimize neural networks for edge AI.

