Hands-on Internet of Things Specialization

IoT Cloud   Week 3 & 4

Question 1:

What material has valence electrons so attracted to the nucleus that they don't hop between atoms, and it's not easy to dope them to do otherwise?

Insulator

Question 2:

Which of these materials are conductive, yet have the most strength?

Tin

Question 3:

What are some reasons we coat metal wires with other conductors?

- **To protect against the elements.**
- **To leverage the skin effect to improve transmission properties.**

Question 4:

You are building an IoT device that has a moveable arm, which bends back and forth. You need to run a wire up the arm to supply a sensor at the endpoint with power. Which stranding type is best for wires that get flexed back and forth a lot like that?

Stranded

Question 5:

You are building an IoT device that has a mount that rotates back and forth. You need to run a wire up that is used to collect data from the sensor. What stranding type is best for wires that twist back and forth like that?

Concentric Unilay

Question 6:

What are some ways you can build a device that is resilient to catching fire or burning?

- **Jacket it with fire-retardant plastic.**
- **Use components with materials that reduce smoke and toxic gasses.**

Question 7:

Why do we use twisted pairing in Ethernet cable? Select all that are true:

- **Noise affecting one direction of the twist tends to affect the other direction in an opposite way, causing much of the noise to cancel out.**
- **Noise tends to affect both wires together, allowing receiver to read information as difference between wires.**

Question 8:

What is the purpose of surrounding a cable or device with braided shield?

- **Reducing noise**
- **Protection from compression forces**

Question 9:

What is the technology/technique used to isolate problems in outdoor cable runs and other situations where you can't easily observe the entire cable?

TDR

Question 10:

When a wave pulse encounters a hard (fixed) boundary, what happens to it?

It returns back, inverted.