**Movies for Electronics and Robotics**

**Hardware:**

Resistor: <https://www.youtube.com/watch?v=Gc1wVdbVI0E> (6:30)

Question 1.1: What is the purpose (function) of a resistor?

Question 1.2: What do you think would happen if he used a resistor with a higher value of resistance?

Question 1.3: Give alternate names for a variable resistor

Question 1.4: Some resistors change their resistance depending on some physical quantity. Name a resistor which changes its resistance depending upon its temperature.

Capacitor: <https://www.youtube.com/watch?v=CmII_BmOf0I>

Question 2.1: What does it do? It stores energy.

Question 2.2: What is the symbol?

Question 2.3: What is the unit

Question 2.4: Dielectric means what?

Stop at 7:15

Question2. 5: Do charges actually flow through the capacitor? (Yes, no)

Question 2.6: A small capacitor can store as much charge as a large one. (True, false)

Question 2.7: The larger the plates the (more/less) charge can be stored.

Question2. 8: Where is the energy stored? (In the electric field).

P type, n type, materials and transistors <https://www.youtube.com/watch?v=IcrBqCFLHIY> (6:00)

Question 3.1: Silicon is classified as a (conductor, insulator, semiconductor)

Question 3.2: There are two types of doping. The materials produced are called:

Question 3.3: Why is p type conductor called p type?

Question 3.4: N type semiconductor is negatively charged and a p-type semiconductor is positively charged. (True/False)

Question 3.5: How does the depletion layer become charged?

Question 3.6: How can you turn “on” a transistor?

Diode and LED <https://www.youtube.com/watch?v=AQ11HJ3JyeE> (13:20)

Question 4.1: What is a diode? What does it do?

Question 4.2: What does “LED” stand for?

Question 4.3: What is Vf for a diode? What does it mean?

Question 4.4: What is the meaning of Imax?

Stop at 5:30

Question4. 5: What is the purpose of the resistor in the circuit?

Question 4.6: He calculated the value of the resistor but decided to use one which was slightly HIGHER. Why did he use a slightly higher value?

Question 4.7: What would have happened if he had decided to use a resistor which was smaller than the value he calculated?

Stop at 8:07

How a transistor works <https://www.youtube.com/watch?v=ZaBLiciesOU> (2:00)

Question 5.1: A transistor may be used as a switch or as an amplifier (TRUE/False)

Question 5.2: A bipolar transistor has how many contacts?

Question 5.3: What are the names of the terminals (or contacts) of a bipolar transistor?

The CPU <https://www.youtube.com/watch?v=cNN_tTXABUA> (20:42)

The Hard Drive <https://www.youtube.com/watch?v=rREkzeoJz1s> (6:03)

Flash memory <https://www.youtube.com/watch?v=s7JLXs5es7I> (17:14)

USB <https://www.youtube.com/watch?v=1rlwBz_1_1w> (7:00)

Transformer <https://www.youtube.com/watch?v=GMePE7NZcxw&feature=youtu.be> (11:04)

Conductors and insulators: <https://www.youtube.com/watch?v=qkjCe0r5-cw> (1:57)

Diode Tutorial and how to build AC to DC power supply (11:20)<https://www.youtube.com/watch?v=cyhzpFqXwdA&feature=youtu.bewo>