

# How Semiconductors are Manufactured

(30 pts.)



1. The bulky vacuum tubes of the past were replaced by: \_\_\_\_\_ (1pt)
2. Where is Silicon found? \_\_\_\_\_ (1pt)  
 How much of the Earth's crust is made up of silicon? \_\_\_\_\_ (1pt)  
 What is the only element that is more abundant than silicon? \_\_\_\_\_ (1pt)
3. What is the term for an element that has the ability to be both a "Good & Poor Conductor"?  
 \_\_\_\_\_ (1pt)
4. Diamond blade saws the silicon crystal into, \_\_\_\_\_ (1pt)
5. What will be built on the wafer's surface? \_\_\_\_\_ (1pt)
6. Define a transistor: \_\_\_\_\_ (2pts.)
7. Create a **drawing** and **explain** how an electronic switch works. In your drawings and explanation, please include **1.** Electrons (conductive region), **2.** Electronic switch **3.** "Off" & "On", **4.** Zero "0s" and Ones "1s", which make up the digital code. *(Recommend using a pencil!)*

Drawing Switch On (5pts.)	Drawing Switch Off (5pts.)
<b>Explanation (5pts.)</b>	

8. What is probably the greatest source of contamination during the manufacturing of a semiconductor? \_\_\_\_\_(1pt.)
9. What is used to transfer the pattern each layer of the integrated circuits onto the wafer? \_\_\_\_\_(1pt.)
10. After the chip has been created, what is the next step? \_\_\_\_\_ (1pt.)
11. What is used to connect the chip on the pad to a pin on the frame? \_\_\_\_\_ (1pt.)
12. Why are the chips placed in ovens prior to being sent to customers? \_\_\_\_\_ (1pt.)
13. What is designed and built that allows chips to communicate with each other...and with the outside world? \_\_\_\_\_(1pt.)

