

Name \_\_\_\_\_

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

1) What is the difference between forward bias and reverse bias when discussing a diode?

---

---

2) What precautions should all service technicians adhere in order to avoid damage to electronic and computer circuits?

---

---

3) What is the difference between P-type material and N-type material?

---

---

4) How does a transistor work?

---

---

5) How can a diode can be used to suppress high-voltage surges in automotive components or circuits containing a coil?

---

---

## Answer Key

Testname: SHORT 48

- 1) When current flows through the diode with low resistance, this condition is called forward bias. If the battery connections are reversed and the positive side of the battery is connected to the N-type material, the electrons are pulled toward the battery, and away from the junction of the N-type and P-type materials. Because electrical conduction requires the flow of electrons across the junction of the N-type and P-type materials, and because the battery connections are actually reversed, the diode offers very high resistance to current flow. This condition is called reverse bias.  
[Page Ref: 548](#)
- 2) Never open a package until the part is ready to install; ground yourself often and never touch terminals.  
[Page Ref: 560](#)
- 3) P-type material is doped with an element that has only three electrons in the outer orbit, creating a hole in the silicon in which an electron could occupy. N-type material is pure silicon that has been doped with an element with five electrons in the outer orbit, resulting in an extra electron that could act as a current carrier.  
[Page Ref: 547-548](#)
- 4) A transistor can be toggled on and off, as well as throttled by controlling the current flow through the emitter-base circuit.  
[Page Ref: 553-554](#)
- 5) A diode can be installed across a coil in the reverse bias direction to suppress the high-voltage spikes that can occur when the current stops following through the coil.  
[Page Ref: 549](#)