Exam

Name_____

**TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.**

1) The typical barrier potential for silicon is 0.3 V. 1) _____

2) In the quantum model of the atom, an orbital is a discrete energy level where an electron is found. 2) _____

3) Silicon doped with impurities is used in the manufacture of semiconductor devices. 3) _____

4) A *p*–type semiconductor has relatively few free electrons. 4) _____

5) Hole flow occurs in the conduction band. 5) _____

6) The valence band has lower energy than he conduction band. 6) _____

7) The energy difference between the valence band and the conduction band in a substance is called the thermal gap. 7) _____

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

8) Holes are the majority carriers in 8) _____
A) a *p*–type semiconductor
B) a *pn* junction semiconductor
C) an *n*–type semiconductor
D) none of the above

9) Silicon and germanium contain _____ valence electrons 9) _____
A) eight B) one C) four D) two

10) A semiconductor is said to be a _____ type of material 10) _____
A) gaseous B) liquid C) crystalline D) metallic

11) A trivalent atom is also called 11) _____
A) a metal
B) a donor
C) an acceptor
D) a semiconductor

12) An intrinsic semiconductor has 12) _____
A) an excess of holes
B) a large number of impurities
C) an excess of electrons
D) none of the above

13) Conduction in the conduction band of semiconductors is by the movement of 13) _____
A) holes
B) electrons
C) both electrons and holes
D) none of the above

14) The process of a conduction electron falling into a hole is called 14) _____
A) falling B) ionization C) recombination D) merging

15) In a *pn* junction, the layers where there are few charges near the junction is called the 15) _____
A) valence region B) conductive region
C) depletion region D) boundary region

16) The majority carrier in a *p*–type semiconductor is 16) _____
A) holes B) ions C) electrons D) protons

17) The type of chemical bond that occurs in copper is 17) _____
A) covalent B) ionic C) crystalline D) metallic

18) Electrons orbiting the nucleus of an atom are grouped into energy bands known as 18) _____
A) tracks B) layers C) elevations D) shells

19) The following are all semiconductors except 19) _____
A) gallium arsenide B) copper
C) silicon D) germanium

20) Raising the temperature of an intrinsic semiconductor will 20) _____
A) increase free electrons
B) there is no effect on free electrons
C) decrease free electrons

21) The energy required to cause a valence electron to escape from the atom's influence is called the 21) _____
A) potential energy B) ionization energy
C) break–away energy D) free energy

Answer Key
Testname: UNTITLED1

1) FALSE
2) FALSE
3) TRUE
4) TRUE
5) FALSE
6) TRUE
7) FALSE
8) A
9) C
10) C
11) C
12) D
13) B
14) C
15) C
16) A
17) D
18) D
19) B
20) A
21) B