Distinguish, differentiate, compare and explain what is the differences between Conductors and Semiconductors. Comparison and Difference.

Conductors

In the first category are substances which provide an easy path for an electric current. All metals are conductors. However, some metals donâ□□t conduct well. For example, Copper is a good conductor, therefore it is widely used for cables. A non-metal which conducts well is carbon. Salt water is an example of a liquid conductor.

Semiconductors

Semiconductors are midway between conductors and insulators. Under certain conditions they allow a current to flow easily but under others, they behave as insulators. For example, Germanium and silicon are semiconductors. Mixtures of certain metallic oxides also act as semiconductors. These are known as thermistors. The resistance of thermistors falls rapidly as their temperature rises. They are therefore used in temperature â□□ sensing devices.

Differences between Conductors and Semiconductors

1. In conductors, electric conduction is possible in them. In semiconductors, at low temperature, there is no electric conduction in them. However, at high-temperature, electric conduction becomes possible in them.
2. Conductors have a very large number of current carriers free electrons. Semiconductors have neither a very large number nor a very small number of current carriers free electrons.
3. The resistance of conductors increases with increase in temperature, i.e., their temperature coefficient of resistance is positive. The resistance of semiconductors decreases with increase in temperature, i.e., the temperature coefficient of resistance is negative.
4. On adding impurities, the conductivity in conductors decreases. Whereas, on adding impurities, the conductivity in semiconductors increases.
5. The first one has a very small resistivity. The second one has resistivity nearly 0.1-ohmmeter which is very high as compared with the first one.
6. In conductors, the forbidden energy gap between the conduction band and valence band is nearly zero. On the other hand, in semiconductors, the forbidden energy gap between the conduction band and valence band is nearly 1 eV.
7. Examples of Conductor: Metals, a Human Body, Earth etc. Examples of Semiconductor: Silicon, Germanium etc.