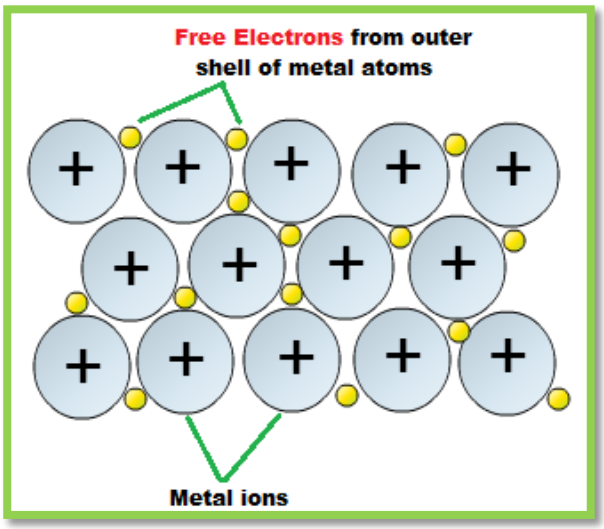
Metallic bonding

- Metallic bonding is a third type of giant structure.
- The metal atoms are closely packed together in a regular arrangement.



As they are very close to each other, the valence electrons tend to drift away from the atoms. Thus a sea of delocalised (mobile) electrons is formed surrounding the positive metal ions. The positively charged metal ions are held together by their strong attraction to the mobile electrons that keep moving between the ions. This is metallic bonding. The electrostatic attraction between the metal ions and the electrons exists in all directions.

Metallic Bonding:
Definition:Metallic bonding is defined as the electrosatic attraction between the positive ions in a giant metallic lattice and a "sea" of delocalised electrons.

Properties of metals

- **Metals have good electrical conductivity**

Reason: When a voltage is applied, the delocalised electrons move through the metal lattice towards the positive pole of the cell or power pack. But if the vibrations of atoms becomes faster due to high temperature , The electrons will not be able to move easily through the lattice. That is why the electrical conductivity of a lattice decreases with an increase in temperature.

- **Metals are malleable and ductile.**

The positive ions in a metal are arranged regularly in layers. When a force is applied, the layers can slide over each other. In a metallic bond, the attractive forces between the metallic ions and the electrons exist in all directions. So when the layers slide, new bonds can easily form. This leaves the metal with a different shape.