CARBON

Part-I

FAMILY

6	14	32	50	82
C	Si	Ge	Sn	Pb
12.0107	28.09	72.81	118.71	207.2

DO you know?

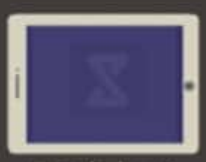
- Carbon is a non-metal
- Silicon and germanium are metalloid
- Lead and tin are metal

Carbon has three main solid state allotropes: Graphite, Diamond and Fullerenes (the most commonly known of which, buckminster fullerene, is also known as a "bucky-ball").

Germanium

Germanium is a rare element used in the manufacturing of **semi-conductor** devices. The physical and chemical properties of germanium are very similar to those of silicon. Germanium is **grey-white** in color and forms crystal structures.

Silicon



Silicon is the second most common element in the earth's crust (after oxygen) and it is the backbone of the mineral world. Silicon is used extensively as a semiconductor in **solid-state** devices in the computer and microelectronics industries.

Tin

Tin is **malleable**, **ductile**, and **crystalline**. It is a superconductor at low temperatures. Tin reacts with bases, acid salts and strong acids. Tin chlorides are good reducing agents and often used to reduce iron ores. Tin fluoride is often the anticavity **"fluoride"** additive in toothpastes.

Lead

It is a soft, malleable metal with a low **melting point**. Lead is toxic to humans, especially children. Even low levels of exposure can cause nervous system damage and can prevent proper production of **haemoglobin**. Its oxides have many industrial uses as oxidizing agents, such as cathodes in lead-acid storage cells.

Point to Remember

Carbon has the highest melting/sublimation point of the elements. The melting point of diamond is **3550°C**, with the sublimation point of carbon is around **3800°C**

CARBON FAMILY

Part-II

6	14	32	50	82
C	Si	Ge	Sn	Pb
Carbon	Silicon	Germanium	Tin	Lead

ELECTRONIC CONFIGURATION

ns^2np^2

Valence Electrons = 4

REACTIVITY

The carbon family elements tend to be fairly unreactive. the elements tend to form covalent compounds, though tin and lead also form ionic compounds.

CARBIDES

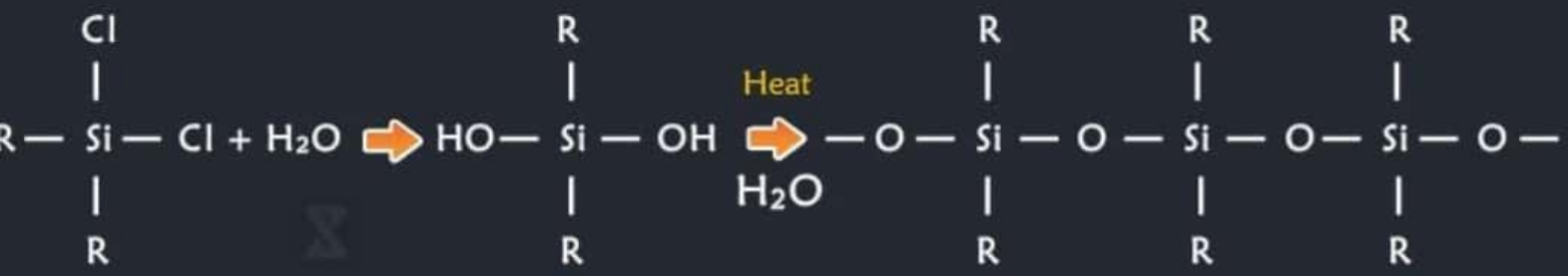
Carbon combines with other elements and forms carbides Al_4C_3, Be_2C, SiC and B_4C are considered as the hardest compounds.

DON'T STORE JUICES IN TIN CONTAINERS

Generally juices have metallic taste if we store them in tin containers. Juices are mostly acidic and they react with tin. Tin reduces the acid by absorbing oxygen.

SILICONES

Silicones are organo silicon polymers and are formed by hydrolysis of R_2SiCl_2



CARBON-GODLY ELEMENT

Every human being and everything around us consists of carbon.

TIN-CANS

Initially we used Tin in making cans, later it was replaced by Aluminium.

SILICON

Silicon is used in semiconductor devices, which are used in modern day computers.

LEAD PENCILS

Lead Pencils which we use do not contain Lead. It contains Graphite (an allotrope of carbon).

NON STICK PAN

Nonstick pan has a Teflon layer on its surface. Teflon($-CF_2-CF_2-$)