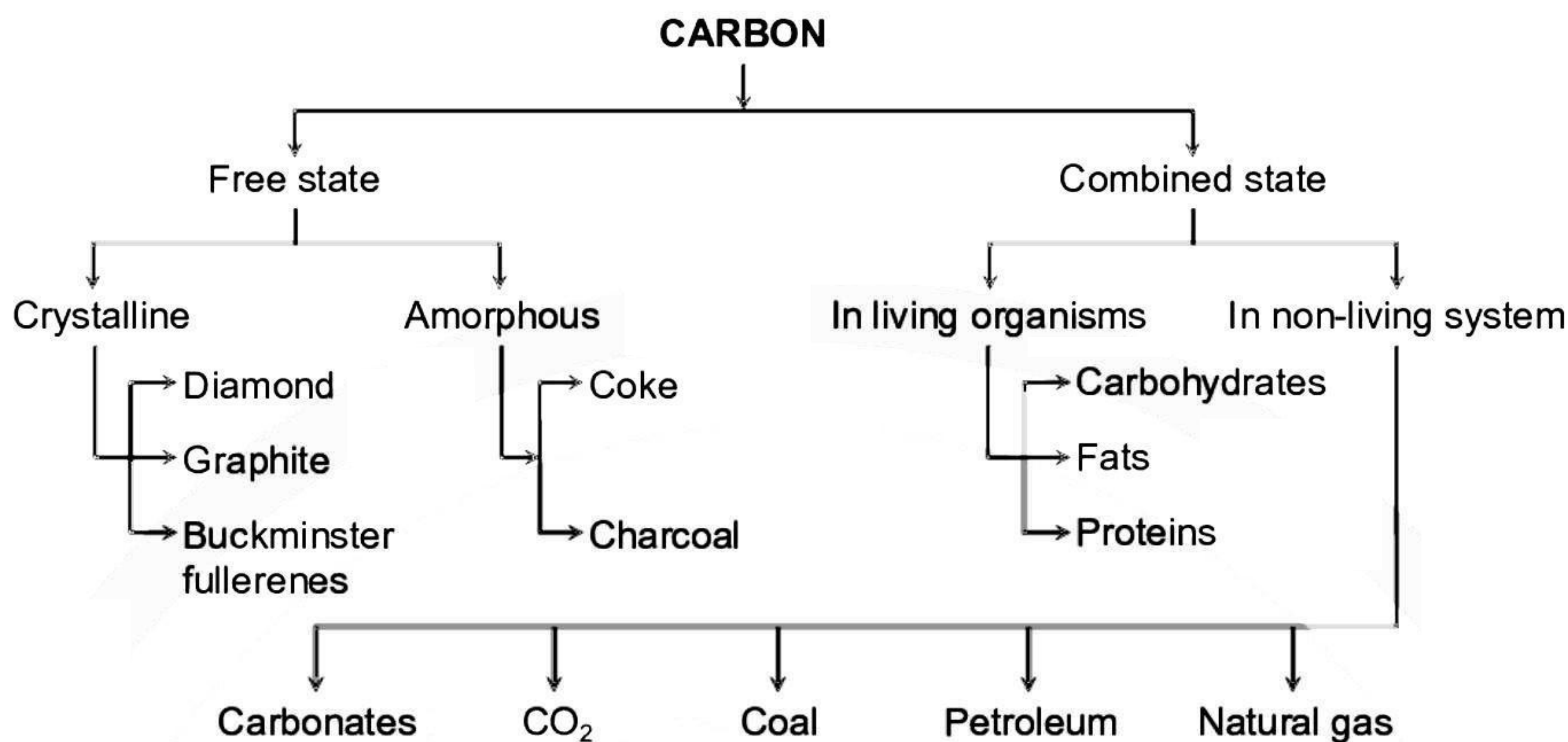


# CARBON AND ITS COMPOUNDS

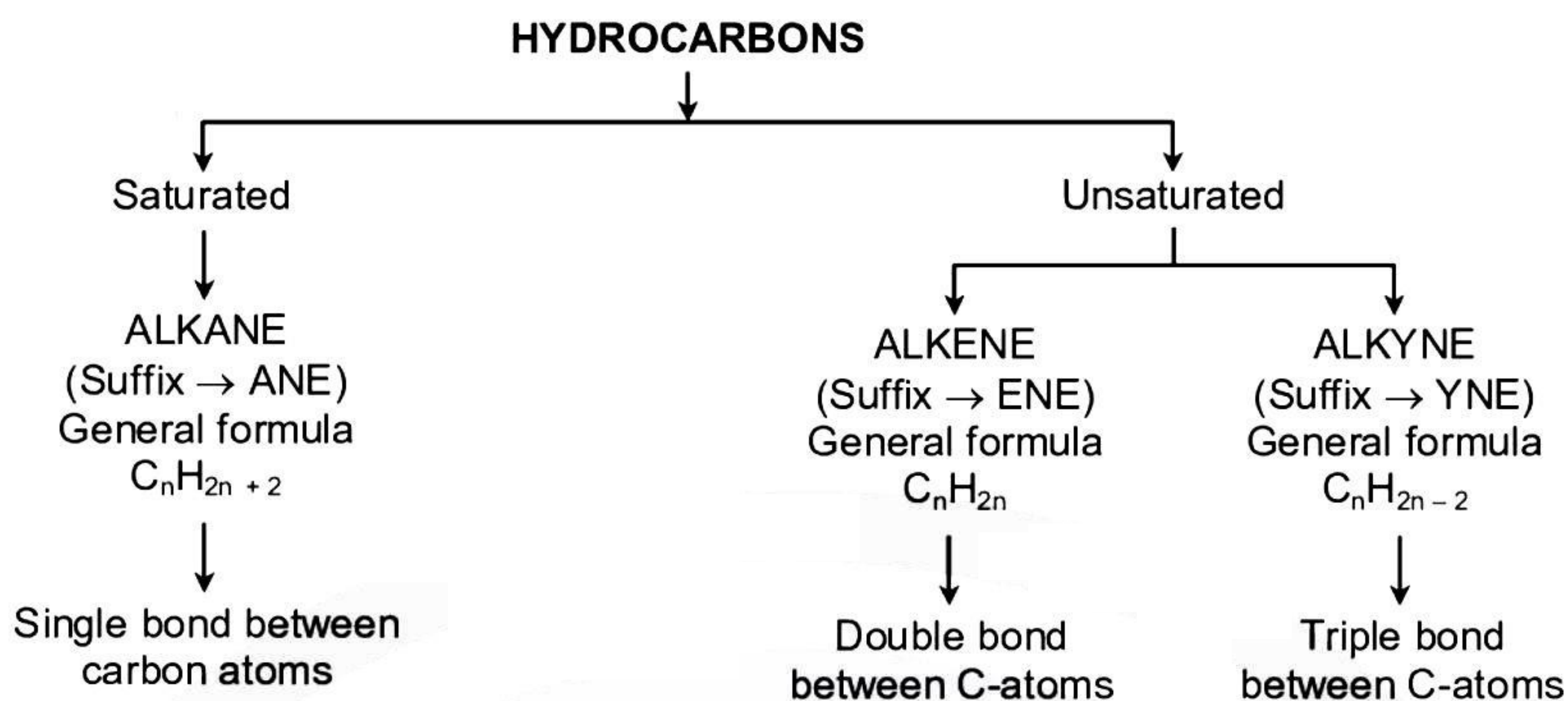


## Difference between Diamond and Graphite

1. Diamond has a three-dimensional network structure.	1. Graphite has a two-dimensional sheet like structure consisting of a number of benzene rings fused together.
2. It is the hardest natural substance known.	2. Graphite is soft and greasy and is used as solid lubricant for heavy machinery operating at high temperatures.
3. It is a bad conductor of electricity but is a very good conductor of heat. Because of hardness and high thermal conductivity, diamond tipped tools do not overheat and hence are extensively used for cutting and drilling purposes.	3. It is a good conductor of both heat and electricity. Because of high electrical conductivity, graphite is used for making electrodes of battery and arcs.
4. It is a transparent substance with high refractive index. Therefore, it is used for making gemstones and jewellery.	4. It is an opaque grayish black substance.

**Simplest compounds of carbon are HYDROCARBONS** (compounds having atoms of carbon and hydrogen only)





**Organic compounds:** Hydrocarbons and their derivatives are organic compounds. (Organic chemical substances of animal or plant origin).

**Hydrocarbons:** Compounds made of carbon and hydrogen are known as hydrocarbons.

Formula of functional group	Name of functional group	Formula of compound containing group	Name of compound
– OH	Alcohol	C <sub>2</sub> H <sub>5</sub> OH	Ethanol
– CHO	Aldehyde	HCHO	Methanal
– COOH	Carboxylic acid	CH <sub>3</sub> COOH	Ethanoic acid
> C = O	Ketone	H <sub>3</sub> C CO CH <sub>3</sub>	Propanone
– X (a halogen)	Halogen	CH <sub>3</sub> – Cl	Chloromethane
– NH <sub>2</sub>	Amino	CH <sub>3</sub> NH <sub>2</sub>	Methanamine
– NO <sub>2</sub>	Nitro	CH <sub>3</sub> NO <sub>2</sub>	Nitromethane

**Catenation:** It is a unique property found in some elements as in carbon in which carbon atoms have the ability of combining with themselves to form numerous compounds in different ways.

**Organic chemistry:** Study of hydrocarbons and their derivatives is called organic chemistry.

**Aromatic compounds:** Organic compounds in which carbon atoms are arranged in a six membered ring having characteristic properties (Aroma/smell) (Ring or closed chain compounds).

**Aliphatic compounds:** Compounds in which carbon atoms are arranged one after another in a chain like fashion (Open or straight chain compounds).

**Saturated compounds:** Compounds in which all the bonds between the atoms are single bonds.

**Unsaturated compounds:** Compounds, which contain a carbon-carbon double bond or a carbon-carbon triple bond.

**Functional Group:** A characteristic group present in an organic compound. (Eg. aldehyde, alcohol, acid etc.)

**Isomerism:** The phenomenon in which different compounds have different structural



formulae but same molecular formula.

**Molecular formula:** Gives the exact number of atoms of various elements present in a compound.

**Combustion:** Burning an organic compound in air or oxygen. Carbon dioxide and water are the products of combustion of any carbon compound.

**Molasses:** The mother liquor left after the crystallization of cane sugar.

**Rectified spirit:** 95.6% pure alcohol.

**Esterification:** Formation of an ester by the combination of an acid with an alcohol.