

Assignment SET-1

- The Following Monomers are :
 - Buna-S:** Styrene and 1,3-Butadi-ene
 - Buna-N:** Buta-1,3-diene and prop-2-ene-1-nitrile
 - Neoprene:** 2-Chloro-1, 3-butadiene
 - Natural Rubber:** 2-methyl-1,3-butadiene
 - Bakelite:** Phenol and Formaldehyde
 - Terylene:** Ethylene glycol and terephthalic acid
- Differentiate between thermosetting and thermoplastic polymers.

Thermoplastic	Thermosetting Plastic
Thermoplastic can be synthesized by the process called addition polymerization.	Thermosetting plastics are synthesized by condensation polymerization.
Thermoplastic is processed by injection moulding, extrusion process, blow moulding, thermoforming process, and rotational moulding.	Thermosetting Plastic is processed by compression moulding, reaction injection moulding.
Thermoplastics have secondary bonds between molecular chains.	Thermosetting plastics have primary bonds between molecular chains and held together by strong cross-links.

- What is Vulcanization of Rubber ?

→ **Vulcanization** , chemical process by which the physical properties of natural or synthetic rubber are improved; finished rubber has higher tensile strength and resistance to swelling and abrasion, and is elastic over a greater range of temperatures. In its simplest form, vulcanization is brought about by heating rubber with sulphur.

- What do Cetane number and Octane number define ?

→ **Cetane number** is the measure of combustion quality of diesel oil or it is the measure of the ignition delay, the higher the cetane number of diesel the shorter the ignition delay, and the greater the fuel quality.

Whereas, **Octane number** is the measure of the resistance of gasoline against detonation or pre-ignition of the fuel in the engine. It is measured relative to the mixture of iso octane (2,2,4 trimethylpentane) and n-heptane.

5. Explain Proximate and Ultimate Analysis of Coal Briefly.

→ **Proximate Analysis** of coal determines the moisture content of Coal, volatile matter, ash content and fixed carbon of coal. Ultimate analysis determines the chemical composition of Coal. i.e, C, H₂, O₂, etc.

Whereas in **Ultimate Analysis**, which is more comprehensive, is dependent on quantitative analysis of various elements present in the coal sample such as carbon, hydrogen, sulphur, oxygen, and nitrogen.

6. What are refractory materials ?

→ A **Refractory** is a material that is resistant to decomposition by heat, pressure, or chemical attack, and retains strength and form at high temperatures. Refractories are inorganic, non-metallic, porous and heterogeneous. They are typically composed of oxides of the following materials:

- Silicon
- Aluminium
- Magnesium
- Calcium
- Zirconium

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