

## **Rocks**

Rocks are naturally formed solid entities consisting of minerals. They constitute a fundamental component of the Earth's crust and represent the most prevalent solid material on our planet. They are categorized into three primary types.

- 1) Igneous rocks
- 2) Sedimentary rocks
- 3) Metamorphic rocks.

### **Igneous rocks:**

The igneous rocks are formed due to cooling, solidification and crystallization of hot and molten materials known as magmas and lavas. The melt originates deep within the Earth near active plate boundaries or hot spots, then rises toward the surface. Igneous rocks are divided into two groups, intrusive or extrusive, depending upon where the molten rock solidifies. Examples of igneous rocks are Granite, diorite, basalt, obsidian, pumice etc.

**Intrusive Igneous rocks:** Intrusive, or plutonic, igneous rock forms when molten magma is trapped deep inside the Earth. Great globes of molten rock rise toward the surface. Some of the magma may feed volcanoes on the Earth's surface, but most remains trapped below, where it cools very slowly over many thousands or millions of years until it solidifies. Slow cooling means the individual mineral grains have a very long time to grow, so they grow to a relatively large size. Some common intrusive igneous rocks are granite, diorite, gabbro and peridotite.

**Extrusive Igneous Rocks:** Extrusive, or volcanic, igneous rock is produced when magma exits and cools above (or very near) the Earth's surface. These are the rocks that form at erupting volcanoes and oozing fissures. The magma, called lava when molten rock erupts on the surface, cools and solidifies almost instantly when it is exposed to the relatively cool temperature of the atmosphere. Quick cooling means that mineral crystals don't have much time to grow, so these rocks have a very fine-grained or even glassy texture. Hot gas bubbles are often trapped in the quenched lava, forming a bubbly, vesicular texture. Some common extrusive igneous rocks are rhyolite, andesite, basalt and obsidian.

### **Characteristics of Igneous Rocks:**

- i. igneous rocks are roughly hard rocks and water percolates with great difficulty along the joints. Sometimes the rocks become so soft due to their exposure to the environmental conditions for longer duration.
- ii. Igneous rocks are granular or crystalline rocks but there are much variations in the size, form, and texture of grains because these properties largely depend upon the rate and plane of cooling and solidification of magmas and lavas.
- iii. Igneous rocks do not have strata like sedimentary rocks.

- iv. Since, water doesn't penetrate the rocks easily and hence igneous rocks are less effected by chemical weathering but basalts are very easily weathered and eroded away when they come in contact with water.
- v. Igneous rocks do not contain fossils.

Sample questions:

1. Write a short note on Igneous rocks.
2. Write five (5) characteristics of Igneous rocks.
3. How are igneous rocks formed?
4. What are the two main types of igneous rocks?
- 5.