**Rock cycle**

Rock cycle is the process that describe the transition of rocks over time to the three main types i.e. Igneous, Sedimentary and Metamorphic rocks through the process of crystallization, metamorphosis, erosion process

**Igneous rocks**

These particular type of rocks are formed by crystallization and solidification of molten rock(magma)

**Sedimentary rocks**

These type of rocks are formed when rock particles settle out of the water, from the air or by precipitation of minerals from water and accumulate to form layers.

**Metamorphic rocks**

Metamorphic rocks are formed when existing igneous, sedimentary or metamorphic rocks are exposed to environmental conditions such as heat pressure hot mineral rich fluid.

**Igneous rocks**

**Texture** is determined by how fast or slow the magma cools. If the magma cools slowly it forms large crystals and rock forms phaneritic texture of large and visible interlocking crystals and if the magma cools faster, it forms small crystals form sometime a glassy texture. There are six main types of textures; aphanitic, phaneritic, porphyritic, Vesicular, glassy and pegmatitic**.**

**Aphanitic** texture is comprised of very and fine grained rock where individual crystals are invisible by naked eyes due to their relatively small size and can be seen only with the aid of a microscope.

**Phaneritic** texture of the igneous rock is made up of large crystal that can be seen by naked eyes. Its also referred to as coarse grained igneous texture e.g. granite.

**Porphyritic** texture is an igneous rock texture in which large crystals are finer-grained or glassy. Porphyritic textures occur in coarse, medium and fine-grained igneous rocks.

**Vesicular** texture **is** a volcanic rock texture that has tiny holes called vesicles on its surface and inside.

**Glassy** texture of an igneous rock is comprised of a block that has no visible mineral crystals, it has a glassy texture due to cooling that was extremely fast that no crystals could form.

**Pegmatitic** texture of an igneous rock showing a very coarse texture, with large interlocking crystals usually greater in size than 1 cm.

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**List the common igneous rock forming minerals**

* Feldspars - KAlSi3O8
* Quartz - SiO2
* Amphiboles - R14[(OH)4 Si16O44].
* Micas - XY2-3Z4O10(OH)2
* Olivine - Mg, Fe) 2SiO 4
* Garnet - R3R2(SiO4)3
* Calcite - CaCO3
* Pyroxenes - XYSi2O6

**Composition:** Igneous rocks may be simply classified according to their chemical or mineral composition as ultramafic, mafic, intermediate and felsic.

**Ultramafic** are igneous and meta igneous rocks with a very low silica content (less than 45%), generally >18% MgO high FeO, low potassium, and are composed of usually greater than 90% mafic minerals (dark colored, high magnesium and iron content)

**Mafic** are the rocks that contain olivine, pyroxene, amphibole, and biotite minerals. Common mafic rocks include basalt, diabase and gabbro.

**Intermediate** refers to the chemical composition of a rock that has 51.5–63 SiO2being an intermediate between felsic and mafic compositions.

**Felsic** refers to silicate minerals, magma, and rocks which are enriched in the lighter elements such as silicon, oxygen, aluminium, sodium, and potassium. It is contrasted with mafic rocks, which are relatively richer in magnesium and iron.

**State whether the following are intrusive, extrusive, ultramafic, mafic, intermediate, felsic.**

**Peridotite** is an intrusive ultramafic igneous rock

**Basalt** is an extrusive mafic igneous rock

**Gabbro** is an intrusive mafic igneous rock,

**Andesite** is an extrusive igneous rock that is an intermediate in composition between mafic and felsic rocks

**Diorite** is an intrusive igneous rock that is an intermediate between that of mafic gabbro and felsic granite

**Rhyolite** is an extrusive felsic igneous rock

**Granite** intrusive felsic igneous rock

**Types of volcanos**

**Active volcano** - An active volcano is a volcano that has erupted recently or is currently erupting or has the potential to erupt in the future

**Dormant volcano** -These are volcanoes that have not erupted in a long time but have the potential to erupt again in the future.

**Extinct volcano** - These are the volcanoes that have never erupted