**1.Rock Cycle**

This involves the formation and destruction of rocks throughout the geological history. The cycle starts when magma is ejected from Earth’s crust cools to form igneous rocks. On the earths surface, these igneous rocks are subjected to agents of weathering which break them into smaller pieces, transport and deposit them into oceans where they are lithified into sedimentary rocks. When both igneous and sedimentary rocks are subjected to great heat and pressure, they form metamorphic rocks. In parts of the world where subduction occurs, the subducting slab containing this rocks sinks into the mantle where it would rise later to form a mantle plume, which melts, create a volcano, erupt lava to form a brand new igneous rock and the cycle repeats.

**2. Texture and Composition of Igneous rocks**

* Texture- refers to the size and arrangement of mineral particles that make up a rock.
* Composition – refers to the constituents of a rock in terms of minerals within a rock and overall chemical makeup of the rock

**3Igneous Rock Textures**

* Aphanitic:- Uniformly fine-grained texture in which the individual crystals are too small to be seen easily without magnification.
* Phaneritic:- Uniformly coarse-grained texture in which all the individual crystals are easily viscible without magnification.
* Porphyritic:-Igneous-rock texture in which large crystals are set in a fine-grained or glassy groundmass.
* Vesicular:-Igneous rocks with holes resulting from air bubbles in lava.
* Glassy:-Non-crystallined texture of rocks formed by rapid cooling of erupted magma into the earth’s atmosphere.
* Pegmatitic:-coarse-grained texture in which most of the crystals are larger than one centimetre.

4.**Common igneous rock forming minerals**

(a) .Quartz- SO2

(b) .Olivine-(Mg, Fe) 2SiO4

(c) .Amphibole-Mg14[(OH)4Si16O44 ]

(d) .Pyroxene-Mg2(Si2O16)

(e) .Biotite-K(Mg, Fe) 3AlSi3O10(F,OH)2

(f) .Muscovite- KAl2(Si3Al) 10(OH)2

(g) .plagioclase-NaAlSi3O8--CaAl2Si2O

(h) .Mica- [KAl2(AlSi3O10)(F, OH)2 ]

5.a)*Ultramafic*:- An igneous rock with extremely low silica composition, being made of almost olivine and pyroxene.

b) *Mafic*:- A kind of igneous rock that is relatively high in magnesium and iron content

c) *Intermediate*:- igneous rock with medium silica composition, equally rich in felsic and magic mineral composition.

d)*Felsic*:-silicate rocks enriched with lighter elements such as sodium.

6.

|  |  |  |
| --- | --- | --- |
| Igneous Rock | Type of igneous rock | Class |
| Peridotite | Intrusive | Ultramafic |
| Basalt | Extrusive | Aphanitic |
| Gabbro | Intrusive | Mafic |
| Andesite | Extrusive | Felsic |
| Diorite | Intrusive | Mafic |
| Rhyolite | Extrusive | Felsic |
| Granite | Intrusive | Felsic |

7.(a) Composite volcano-steep-sided cone shaped volcano built from several layers of lava, pumice ,ash forming high peaks due to very viscous lava.

(b) Shielded volcano- a broad rounded volcano built up successive outpouring of very fluid lava.

(c)Cinder cone volcano-a volcano built from particles and blobs of congealed lava ejected from a single vent forming a crater at the summit.