ROCKS – O level

A rock is an aggregate of minerals in the same state. Rocks can be classified according to mode of formation as shown below.

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

IGNEOUS OR FIRE-FORMED ROCKS

These are rocks formed by ejection, cooling and solidification of molten rock either within the earth's crust or on the earth's surface. They have the following x-tics

- They are crystalline i.e. they are made up of crystal or small particles
- They are formed by solidification of magma (fire formed some igneous rocks are glassy and they do glitter).
- They are not made up of fossils or remains of living organisms.
- Some rocks are soft or weak such as pumice while others are very hard e.g. granite.

Types of igneous rocks

1. **Volcanic rocks**

These are igneous rocks that are formed within magma is extruded on the earth's surface.

Because of exposure 2 the atmosphere magma cools down at a faster rate forming rocks of very fine crystals.

The features formed by such rocks include volcanic mts, explosion craters, lava plateaus and lava plains. Examples of such rocks include pumice, basalt, obsidian, rhyolite etc.

2. **Hypabyssal igneous rocks**

These are igneous rocks formed within magma solidifies near to the earth's surface. Because o this, the rate of cooling is moderate and the rocks are medium sized crystals. They form features like dyke, sill, laccolith etc. An example is called Dolerite

3. **Plutonic (Abyssal)**

These are igneous rocks which are formed within magma solidifies at a great depth of the earth's surface.

Because of this the rate of cooling is very slow leading to formation of rocks with large sized crystals. The features formed are batholiths which when exposed become inselbergs. An example of such rocks is granite rock.

Importance of Igneous rocks

1. They breakdown to form fertile soils which support crop growth eg Kabale and Mbale.

2. They contain a wide range of minerals which are useful to man e.g. gold in Busia and Karamoja, Limestone at Tororo and Diamond at Williamson Diamond mine near Mwadui.
3. From the high Mts such as Elgon, Kilimanjaro and Mt Kenya. There are many rivers that are useful to man e.g. irrigation such as along R. Thiba, Mwea- Tebere, R. Manafa Doho irrigation, R. Athi-Althi – Kapit plain
4. The volcanoes, calderas and explosion craters and tourist attractions of which earn foreign exchange from foreign tourists.
5. Inselbergs provide a firm foundation for establishment of communication gadgets.
6. The high volcanic Mt influence the formation of relief rainfall which supports agriculture on the wind ward side e.g. the Western slopes of Mt Elgon.

Problems of Igneous rocks

1. Granite rock form poor and shallow soil which limit agriculture especially crop growing.
2. The inselbergs act as habitants for dangerous animals like snakes e.g. Pythons
3. Acidic Volcanic soil limits the growing of some crops like sugarcanes.
4. Landslides are common in volcanic areas and they after result into loss of lives and property.
5. The Lime water in the crater lakes cannot be used by man for domestic purposes in L. Katwe.
6. Subsidence of the surface of land in limestone regions due to chemical weathering.

SEDIMENTARY ROCKS

Sedimentary rocks are rocks that are made from pre- rocks or sediments which are weathered, eroded, transported and deposited in layers in the lower regions.

The layers are cemented together to form a rock. The sediments may contain sand, clay, or gravel. The sediments are also of dead animals and plants.

Characteristics of sedimentary rocks

- They are non-crystalline (they don't contain crystals).
- They are formed by compaction and cementation of sediments from pre-existing rocks.
- Some rocks such as coral reefs are made up of fossils.
- Some rocks such as rock salt and Gypsum can be dissolved into a solution.
- Sedimentary rocks are stratified i.e. laid down in layers.
- They are permeable i.e. absorb water and allow it to soak thru.

Types of Sedimentary rocks

1. **Mechanically formed sedimentary rocks**

These are rocks formed within seds are eroded, transported and deposited in lower regions by running water and glaciers. These sediments become cemented together and harden to form a rock.

They form features like deltas, flood plains, leeves, alluvial sand dumes, sand bars etc

Examples of such rocks include claystone, sandstones,minestones, siltstone.

2. **Organically formed sedimentary**

These are sedimentary rocks which are formed from accumulation and cementation plants and animal remain (fossils)

The fossils become compacted or cemented & compressed form a rock e.g coralline limestone from remains of polyps, coal & petroleum. Coral reefs are land forms 4 originally formed sedimentary rocks. Coal from remains of ancient plants buried over millions of years ago e.g. at Songwe, Kiwi in Southern T.Z

3. **Chemically formed sedimentary rocks**

These are sedimentary rocks formed from chemical precipitates/evaporation of water from saline solution e.g. rock salt, orb escape of carbon dioxide from lime water e.g. stalactite & stalagmite or leaching & coagulation of precipitates or minerals in soil forming laterites or duricrusts. Soda ash, borax, nitrates.

Importance Of Sedimentary Rocks

- Coral reefs along the coast are used as raw materials in the manufacture of cement at Bamburi.
- Sedimentary rocks contain minerals such as salt which is food for man and a source of nutrients
- Clay is used for making bricks & tiles used forn building.
- The soils along rivers & in Delta regions are fertile & there support crop growing.
- Coral reefs along the of East Africa are tourist attractions which earns foreign exchange in Malindi marine notional park.

Problems Of Sedimentary Rocks

1. Sandy soils are agriculturally unproductive because of a remains of high rate of porosity.
2. Cora reefs form saline salts that limit the growth of some crops e,g sugarcanes.
3. Coral reefs tear the nets for the fishermen and discourage navigation.
4. Lateritic soils (murrum) are easily eroded away forming potholes along murrum roads.
5. Clay soils lack humus and hence don't support meaningful agriculture.
6. Clay soils are water-logged, creating breeding grounds for mosquitoes that spread malaria.

METAMORPHIC (CHANGED) ROCKS

Metamorphic rocks are rocks whose chemical composition or structure has been changed due to either heat or pressure. They are originally igneous or sedimentary rocks. Some rocks may change chemically when exposed to atmosphere & they are able to take up molecules of oxygen.

Examples of metamorphic rocks include; 1.coal which under pressure changes to graphite then to gneiss

2. Limestone which under pressure changes to marble.

3. Clay which under pressure changes to shale to slate then to schist.