

GEOLOGY

1. The world of rocks

Igneous rocks - magma and lava,

Plutons- dyke, sill and batholith

Classification of igneous rocks- plutonic, hypabyssal and volcanic rocks

Textures of igneous rocks-granularity (coarse, medium and fine grained rocks), phaneritic and aphanitic textures, crystallinity-holocrystalline, glassy and frothy textures.

Compositional classification of igneous rocks-felsic, mafic and ultramafic rocks.

Common igneous rocks - granite, gabbro, dolerite, basalt and dunite.

Sedimentary rocks- formation of clastic and non clastic sedimentary rocks.

Textures of sedimentary rocks- terms related to grain size (clay, silt, sand and gravel), rounding and sorting.

Sedimentary structures- bedding/stratification, ripple marks, mudcracks, rain drop marks.

Common sedimentary rocks- Conglomerate, sandstone, shale and limestone.

Metamorphism- Agents of metamorphism

Common metamorphic rocks-slate, schist, gneiss, marble, quartzite and charnockite.

The concept of rock cycle.

2. Economic mineral deposits

Mineral, ore and gangue,

Names of ores of common metals- hematite, magnetite, chalcopyrite, bauxite, galena, pyrolusite, ilmenite and monazite.

Mineral based industries in Kerala.

Uses of major industrial minerals- mica, gypsum, asbestos, graphite and clay.

3. Fossil fuels

Coal, petroleum and natural gas.

Properties of coal- calorific value and fixed carbon

Origin of coal- Coalification process

Types of coal.

Chemical properties and products of petroleum.

6. Geology and environment

Effects of mining- deforestation, landslides, water pollution, lowering of water table, air and sound pollution, damage to habitat and biodiversity,

Impacts of sand mining on environment.

Major sources of contamination of ground water.

Green house effect and global warming- major consequences of global warming.

Resources- natural and artificial resources, renewable and non-renewable resources.

Conservation of natural resources for sustainable development.

7. Earthquakes

Earthquake related terminologies- definition of focus, epicenter, seismology and seismic waves.

Tectonic & Non Tectonic causes of earthquakes.

Seismic waves- Body waves (primary and secondary waves) & surface waves

Difference between seismograph and seismogram.

Magnitude and intensity, Richter and mercalli scales of earthquake (Basics only).

Effects of earthquakes-damage to structures, tsunامي, fire, landslides and liquefaction.

8. Geological hazards and disaster management

Basic concepts in disaster management- hazard, disaster, vulnerability, risk and capacity.

Phases of disaster management- preparedness, response, recovery and mitigation (Basics only).

Causes and mitigation of flood hazards.

Types of volcanoes and effects of volcanoes

Causes and mitigation of landslides.

Mitigation of coastal erosion.