



SNS COLLEGE OF TECHNOLOGY
(AN AUTONOMOUS INSTITUTION)
COIMBATORE-35

II YEAR / III SEMESTER
19CET201-ENGINEERING GEOLOGY



BRANCHES OF GEOLOGY

Main Branches:

- Physical geology
- Mineralogy
- Petrology
- Structural geology
- Stratigraphy
- Economic geology



Allied Branches:

- Engineering geology
- Mining geology
- Geophysics
- Geohydrology
- Geochemistry





PHYSICAL GEOLOGY

(dynamic geology, geomorphology etc.)

It deals with:

- ✓ Different physical features of the earth, such as mountains, plateaus, valleys, rivers, lakes, glaciers and volcanoes in terms of their origin and development.
- ✓ The different changes occurring on the earth surface like marine transgression, marine regression, formation or disappearance of rivers, springs and lakes.
- ✓ Geological work of wind, glaciers, rivers, oceans, and groundwater and their role in constantly moulding the earth surface features
- ✓ Natural phenomena like landslides, earthquakes and weathering.





MINERALOGY

- ❖ This deals with the study of minerals. Minerals are basic units with different rocks and ores of the earth are made up of.
- ❖ Details of mode of formation, composition, occurrence, types, association, properties uses etc. of minerals form the subject matter of mineralogy.
- ❖ For example: sometimes quartzite and marble resemble one another in shine, colour and appearance while marble disintegrates and decomposes in a shorter period because of its mineral composition and properties.





MINERALS



IRON ORE



BAUXITE



SANDSTONE



MARLSTONE



MAGNETITE



GYPSUM



ASBESTOS



FELDSPAR



CHALCOPYRITE



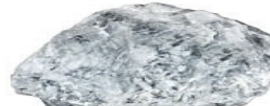
FLINT



LEAD GLANCE



HEMATITE



MAGNESITE



SULFUR



PYRITE



SULFUR PYRITE



LIMONITE



PHOSPHORITE



KAOLIN



FLUORITE



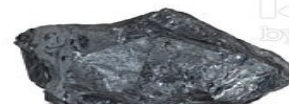
RED GRANITE



BROWN COAL



ANTHRACITE



BLACK COAL



SIDERITE



CORUNDUM



AGATE



MARBLE



APATITE



GRAPHITE

540852072



PETROLOGY

Petrology deals with the study of rocks.

The earth's crust also called lithosphere is made up of different types of rocks.

Hence petrology deals with the mode of formation, structure, texture, composition, occurrence, and types of rocks. This is the most important branch of geology from the civil engineering point of view.





PETROLOGY

Types of Rocks

Igneous rocks



Sedimentary rocks



Metamorphic rocks



Igneous rocks form when molten rock (magma or lava) cools and solidifies.

Sedimentary rocks originate when particles settle out of water or air, or by precipitation of minerals from water. They accumulate in layers.

Metamorphic rocks result when existing rocks are changed by heat, pressure, or reactive fluids, such as hot, mineral-laden water. Most rocks are made of minerals containing silicon and oxygen, the most abundant elements in the Earth's crust.



IGNEOUS ROCKS - formed from melted rock deep inside the earth.





SEDIMENTARY ROCKS - formed from layers of sand, silt, dead plants, and animal skeletons.

**Glacial
Conglomerate**



Shale



**Shelly
Limestone**



**Banded
Iron**

Sandstone



Chalk



Anthracite





METAMORPHIC ROCKS -formed from other rocks that are changed by heat and pressure underground.

Slate



Schist



Gneiss



Sphalerite Ore Rock



Jadeite



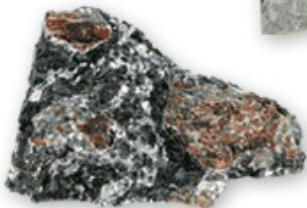
Deformed Conglomerate



Eclogite



Garnet Amphibolite



Marble





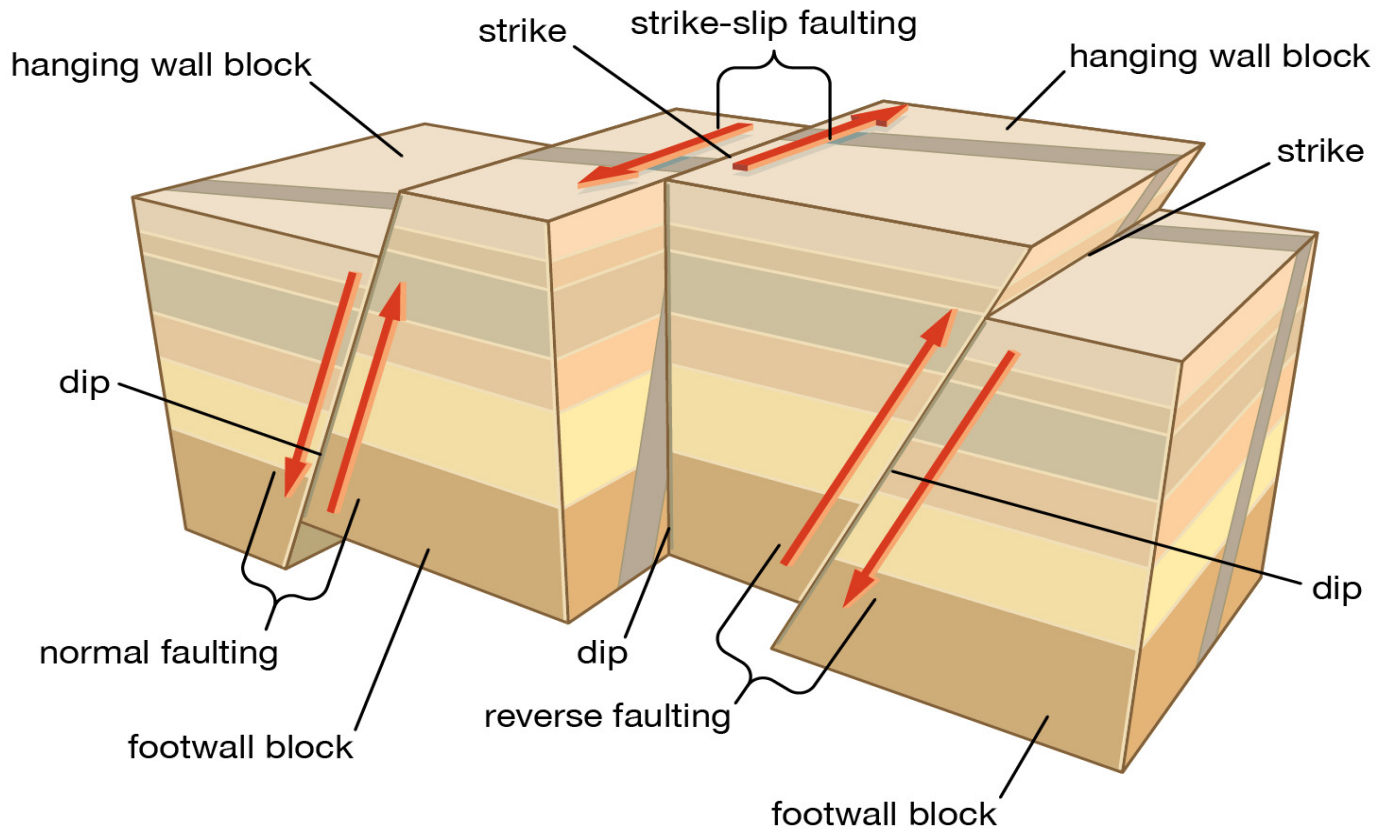
STRUCTURAL GEOLOGY

- ❑ The rocks, which from the earth's crust, undergo various deformations, dislocations and disturbances under the influence of tectonic forces.
- ❑ The result is the occurrence of different geological structures like folds, faults, joints and unconformities in rocks.
- ❑ The details of mode of formation, causes, types, classification, importance etc of these geological structures form the subject matter of structural geology





STRUCTURAL GEOLOGY



© 2015 Encyclopædia Britannica, Inc.



STRATIGRAPHY

The climatic and geological changes including tectonic events in the geological past can also be known from these investigations. This kind of study of the earth's history through the sedimentary rock is called historical geology. It is also called stratigraphy (Strata = a set of sedimentary rocks, graphy-description).



ECONOMIC GEOLOGY



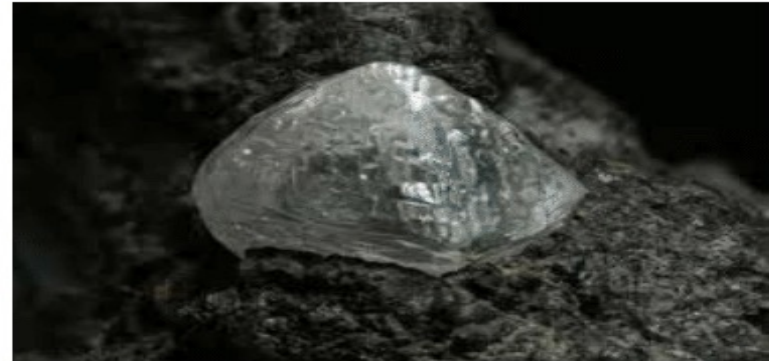
- ❖ Minerals can be grouped as general rock forming minerals and economic minerals. Some of the economic minerals like talc, graphite, mica, asbestos, gypsum, magnesite, diamond and gems.
- ❖ The details of their mode of formation, occurrence, classification. Association, varieties, concentration, properties, uses from the subject matter of economic geology.
- ❖ Further based on application of geological knowledge in other fields there is many other allied branches collectively called earth science.



ECONOMIC GEOLOGY

The discipline of “**Economic Geology**” covers all aspects pertaining to the description and understanding of mineral resources.

The purpose of this process-orientated course is to provide a better understanding of the nature and origin of mineral occurrences and how they fit into the Earth system.



Diamond



Gold



Lead-Zinc



ALLIED BRANCHES

Engineering geology: This deals with the application of geological knowledge in the field of civil engineering, for execution of safe, stable and economic constructions like dams, bridges and tunnels.

Mining geology: This deals with the application of geological knowledge in the field of mining. A mining engineer is interested in the mode and extent of occurrence of ores, their association, properties etc. It is also necessary to know other physical parameters like depth direction inclination thickness and reserve of the bodies for efficient utilization. Such details of mineral exploration, estimation and exploration are dealt within mining geology



ALLIED BRANCHES

Geophysics: The study of physical properties like density and magnetism of the earth or its parts. To know its interior form the subject matter of geophysics. There are different types of geophysical investigations based on the physical property utilized gravity methods, seismic methods, magnetic methods. Engineering geophysics is a branch of exploration geophysics, which aims at solving civil engineering problems by interpreting subsurface geology of the area concerned. Electrical resistivity methods and seismic refraction methods are commonly used in solving civil engineering problems.

Geohydrology: This may also be called hydrogeology. It deals with occurrence, movement and nature of groundwater in an area. It has applied importance because ground water has many advantages over surface water. In general geological and geophysical studies are together taken up for groundwater investigations.

Geochemistry: This branch is relatively more recent and deals with the occurrence, distribution, abundance, mobility etc, of different elements in the earth crust. It is not important from the civil engineering point of view.



ACTIVITIES

TO KNOW ABOUT



WHICH IS BEST

MARBLE OR TILES



Marble	Floor Tile
Marble is a natural stone	Tile is made of clay and then polished
Cost of marble is expensive	Cost of floor tile is affordable
Marble is primarily used on floors	Tile is especially used to cover roofs, floors, and walls, outdoors
Marble is porous and easy to get stains	Tile is stain resistant
Marble is difficult to load and is less heavier to install	Floor Tile is easier to load and install
Marble installation is difficult and long	Floor Tile installation is shorter and easier
Wastage is more in Marble	Wastage is less in Tiles
Marble is not suitable for cold climate	Tile is suitable for all climate
Marble is difficult to clean and maintain	Tile is easier to clean and maintain

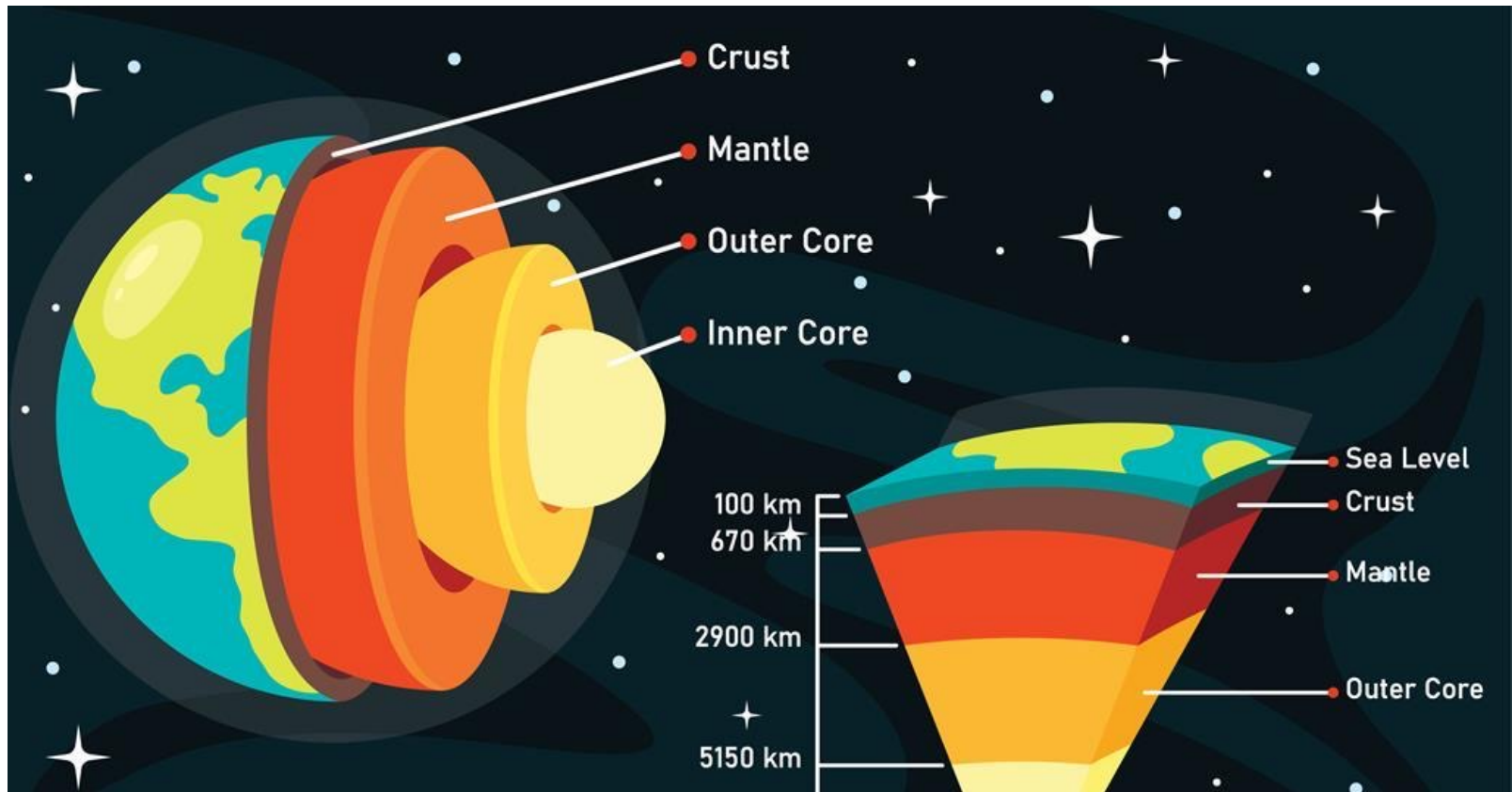


CONCLUSION

Both Marble Floor and Floor Tile are used as flooring solutions in residential and commercial areas. The people who are looking forward to a cost-effective solution should opt for Floor Tile flooring option.



EARTH'S STRUCTURE





THANK YOU...