

## INTERNAL STRUCTURE OF THE EARTH

### Crust

- The outermost solid cover or shell of the earth is known as the earth's crust.
- The thickness of the crust is about 30 km.
- It is thicker in the region of the continents and thinner in the region of the ocean floors.
- The density of the rocks in the earth's crust ranges from 2.7 to 3 g/c. c (grams per cubic centimeter).
- The upper part of the crust consists of silica and aluminium in greater proportions. That is why, it is called 'SIAL'.

### Mantle

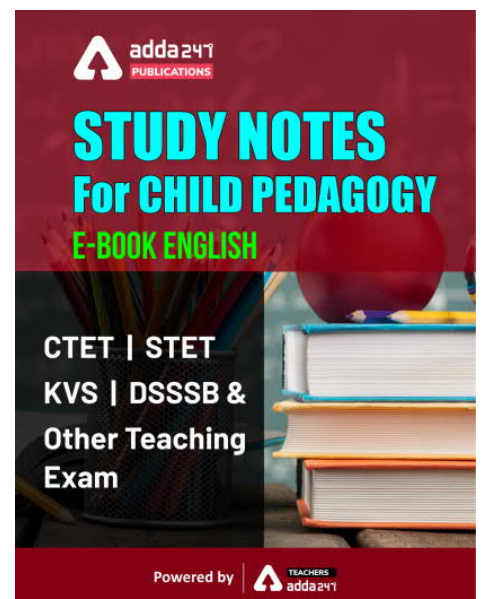
- This layer lies below the crust. The lower part of the crust is called 'SIMA' because the proportion of silica and magnesium is higher in this part.
- Its thickness is about 2900 km and the density of substances in the mantle ranges from 3.0 to 4.7.

### Core

- The earth's core lies below the mantle. Its thickness may be about 3,471 km.
- Its radius is 6,371 km., according to IUGG.
- It is divided into two parts-the outer core and the inner core. The outer core is probably in a liquid state and the inner core in a solid state.
- The core mainly consists of Nickel and Ferrous i.e. Iron. Hence, it is called 'NIFE'.
- After the mantle, the earth's density goes on increasing rapidly towards its centre and finally is more than 13.
- The temperature of the central part of the earth may be about 5000°C.

### Rocks

- The solid parts of the earth's crust are called rocks.
- In the same type of rocks, the proportions of minerals may be different in different areas.
- Rocks may not always necessarily be hard.
- Rocks are classified in three main types depending on the process of their formation: (a) Igneous, (b) Sedimentary, (c) Metamorphic.



## Anticline and Syncline

- A convex upfold in rock is called Anticline.
- The downfold in a rock is called Syncline.
- The imaginary line joining the highest points along the upfold is called the Crestline.

## Igneous rocks

- Hot lava pours out at the time of volcanic eruptions and cools down later on, forming rocks.
- The molten materials known as magma, sometimes cool down beneath the earth's crust, again forming rocks.
- Both these types of rocks are known as Igneous rocks.
- When the earth's surface first became solid after it cooled down from its hot liquid state, the original rocks of the earth's crust were formed. They are the Primary Igneous rocks.
- Igneous rocks are generally harder and granular.
- Fossils are not found in Igneous rocks.
- Rocks formed by the cooling of molten matter beneath the earth's surface are called intrusive igneous rocks. 'Granite' and 'Gabbro' are the main examples of these rocks.
- The intrusive rocks are thus crystalline rocks.
- Sometimes, the molten matter oozes out through cracks in the earth's crust and spreads on the surface, forming extrusive igneous rocks.
- Gabbro, Obsidian, Basalt etc. are examples of extrusive igneous rocks.
- A very large area of the Deccan Plateau consists of basalt rocks.
- These rocks contain silica from 40 to 80%, others are felspar, magnesium and iron etc.

Igneous rocks	Metamorphic rocks
Granite	Gneiss
Gabbro	Serpentine

## Sedimentary rocks

- They are formed by the deposition, sedimentation and lithification of sediments over a long period of time.
- As layers over layers get deposited, over a period of time, unified sedimentary rocks are formed on account of the tremendous pressure exerted by the layers above.
- Sometimes the remains of plants, dead animals etc. are found in the deposited material. Such fossil containing sedimentary rocks are useful for studying life on earth.
- Limestone is white as well as black.
- Sandstone is dull white, pink, bright red or sometimes black.

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Sedimentary rocks	Metamorphic rocks
Limestone	Marble
Sandstone	Quartzite*
Shale / clay	Slate, Phyllite, Schist
Coal	Diamond

### Metamorphic rocks

- The nature of igneous and sedimentary rocks changes due to the effects of tremendous heat or pressure, and new, transformed rocks, called metamorphic rocks, are formed.
- Minerals in the rocks get restructured on account of heat and pressure. This brings about a change in the original formation of the rocks.

Some examples of metamorphic rocks formed from igneous and sedimentary rocks:

Type of rock	Original rock	Metamorphic rock
Igneous	Granite	Gneiss
Igneous	Basalt	Hornblende
Sedimentary	Limestone	Marble
Sedimentary	Coal	Graphite coal
Sedimentary	Sandstone	Quartzite
Sedimentary	Shale / clay	Slate, mica – schist

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