

Describe Earth's Structure and Composition.

A considerable body of inferential knowledge has been amassed concerning Earth's interior through geophysical means i.e. primarily through the analysis of seismic shock waves emitted through Earth from earthquakes or manmade explosions. These shock waves change their speed and direction once they cross a boundary and enter a different medium of matter. The analyses of shock waves, augmented with related data on Earth's magnetism and gravitation has helped geologists in carrying an interior structure of the Earth.

Geologists have charted the interior structure of earth based on mechanical properties such as rheology (ratio of rock and stress) and chemical properties.

- On the basis of mechanical properties Earth can be divided into crust, lithosphere, asthenosphere, mesospheric mantle

outer core and inner core.

• On the basis of chemical properties, Earth can be divided into ^{mantle,} crust, outer core and inner core.

CRUST:

It is the outermost layer of the Earth and is ~~composed~~ ^{makes up} of continental crust and oceanic basin of the Earth's surface. certain salient features of Earth's crust are listed below:

Thickness → Crust is 40-70 km in the continents and is 5-10 km thick in the oceans.

Density → The Earth's crust is 2.8 g/cm^3 dense.

Composition → It is mostly composed of aluminosilicates. Aluminium is the most abundant metal in Earth's crust (8.8%).

Temperature → The deepest point of Earth's crust has a temperature of 870°C .

This temperature is not enough to melt rocks.

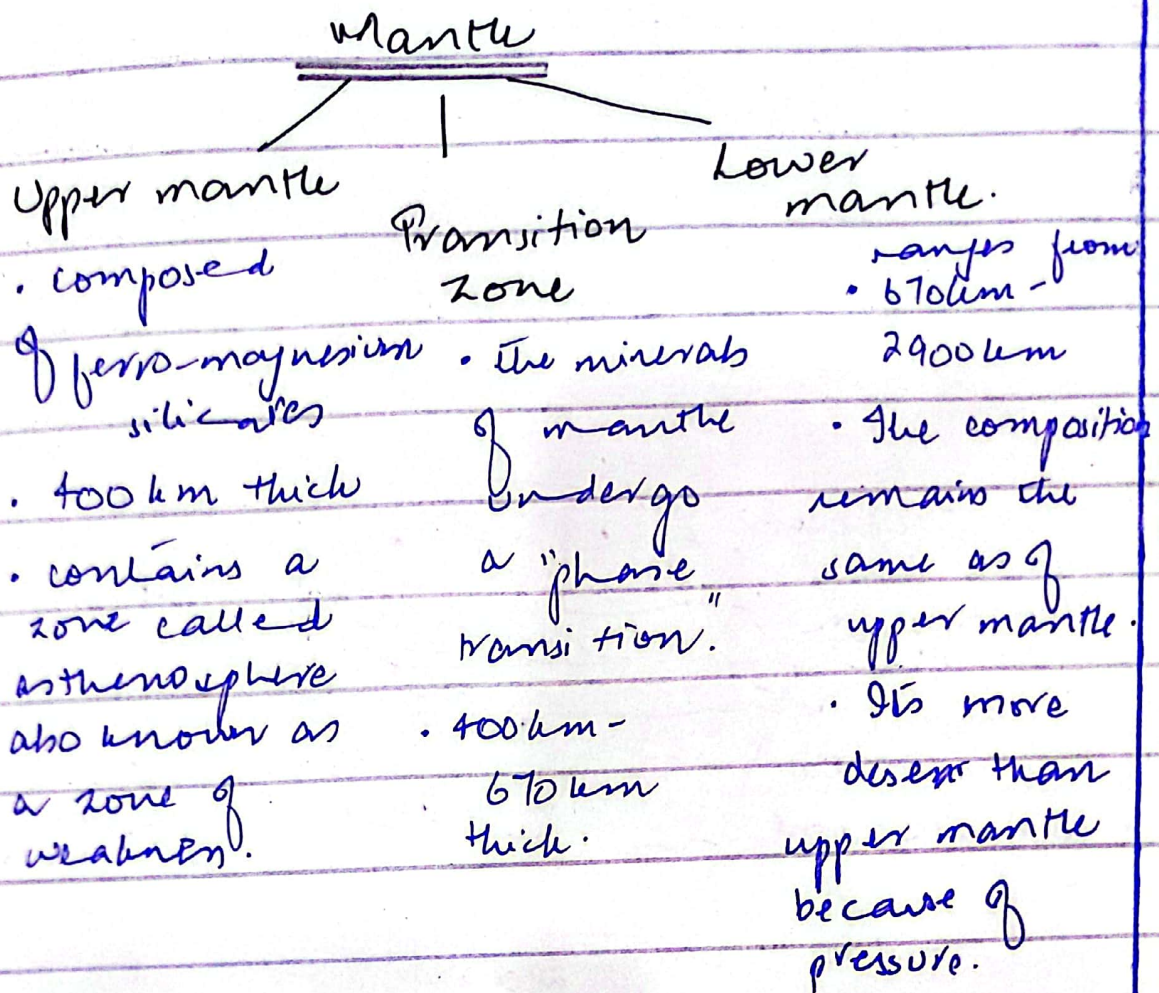
Rocks → Three types of rocks are found in Earth's crust i.e. igneous, sedimentary and metamorphic rocks.

Mohorovicic discontinuity:

The Mohorovicic discontinuity or simply "Moho" is the boundary between the mantle and the crust. The word 'discontinuity' in geology refers to the boundary between two layers where seismic shock wave change their velocity.

MANTE:

The layer next to crust is mantle. This layer is 2900 km deep and is mainly composed of ferro-magnesium silicates. Seismologists have divided mantle into three layers.



CORE:

The third and the last layer of earth is called core and is further subdivided into outer liquid core and inner solid core.

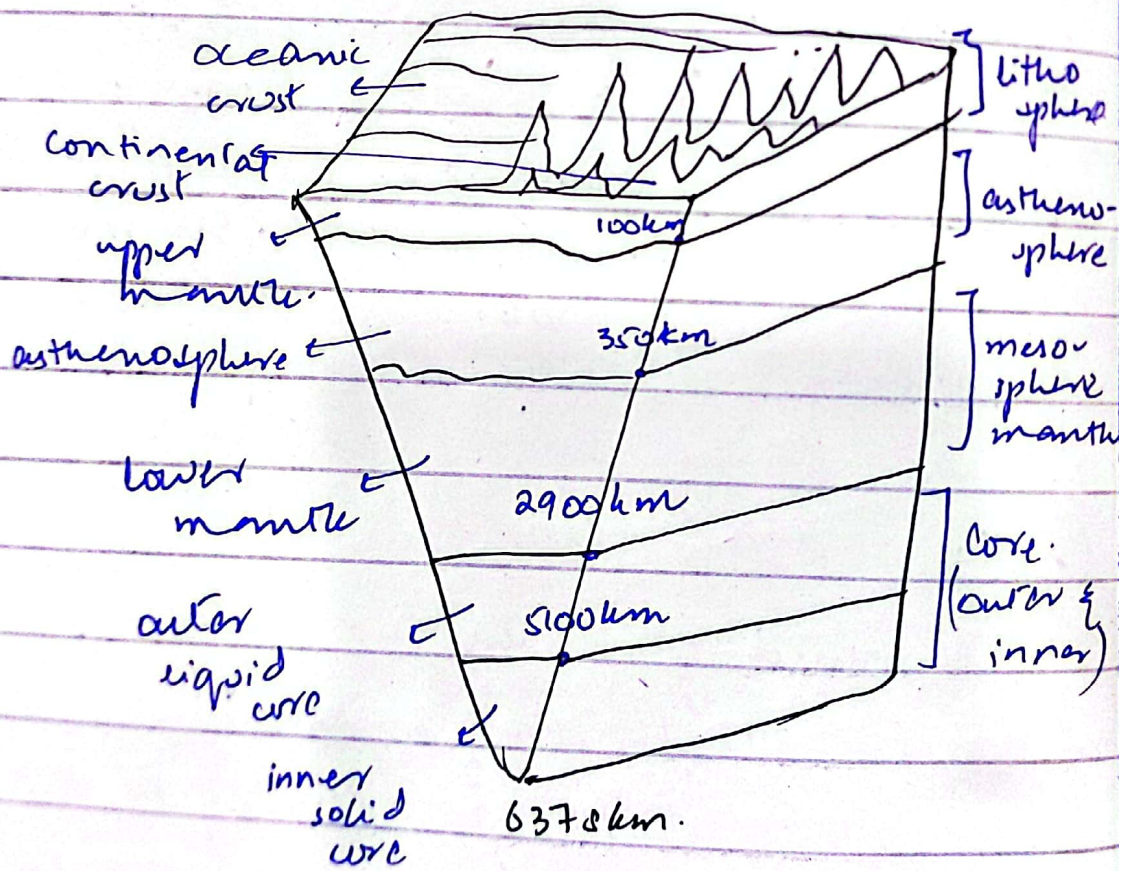
Outer liquid core → 2300 km thick

- nickel-iron alloy
- responsible for magnetic field of the earth.

Inner solid core : 1200 km thick.

- solid iron

• iron does not change into liquid despite high pressure temperature b/c of extremely high pressure.



Earth's structure