

UPSC Civil Services Examination

UPSC Notes [GS-I]

Topic: Volcanoes [Geography Notes for UPSC]

Volcanoes

- A volcano is a vent or fissure in Earth's crust through which lava, ash, rocks, and gases erupt.
- An active volcano is a volcano that has erupted in the recent past.
- The mantle contains a weaker zone known as asthenosphere.
- Magma is the material present in the asthenosphere.
- Material that flows to or reaches the ground comprises lava flows, volcanic bombs, pyroclastic debris, dust, ash and gases. The gases may be sulphur compounds, nitrogen compounds, and trace amounts of argon, hydrogen and chlorine.

Types of Volcanoes UPSC

Major types of volcanoes

- Volcanoes are classified on the basis of nature of eruption and the form developed at the surface.

Shield Volcanoes

- The Shield volcanoes are the largest of all the volcanoes on the earth, which are not steep.
- These volcanoes are mostly made up of basalt.
- They become explosive if in some way water gets into the vent, otherwise, they are characterized by low-explosivity.
- The lava that is moving upwards does so in a fountain-form and emanates the cone at the vent's top and then develops into cinder cone.
- Eg: Hawaiian shield volcanoes

Composite Volcanoes

- Composite Volcanoes are characterized by outbreaks of cooler and more viscous lavas than basalt.
- They are constructed from numerous explosive eruptions.
- Large quantities of pyroclastic material and ashes find their way to the ground along with lava.
- This material gathers near the vent openings resulting in the creation of layers.

- Mayon Volcano in the Philippines, Mount Fuji in Japan, and Mount Rainier in Washington are the major composite volcanoes in the world.
- The major composite volcano chains are Pacific Rim which known as the “Rim of Fire”.

Caldera

- Calderas are known as the most explosive volcanoes of Earth.
- They are generally explosive in nature.
- When they erupt, they incline to collapse on themselves rather than constructing any structure.
- The collapsed depressions are known as calderas.

Flood Basalt Provinces

- Flood Basalt Province volcanoes discharge highly fluid lava that flows for long distances.
- Many parts of the world are covered by thick basalt lava flows.

Mid-Ocean Ridge Volcanoes

- These volcanoes are found in the oceanic areas.
- There exists a system of mid-ocean ridges stretching for over 70000 km all through the ocean basins.
- The central region of this ridge gets frequent eruptions.