

**Class-xii**

**Subject-Geography**

- **Chapter2-Geological Evolution and Structure of India**

## GEOLOGICAL EVOLUTION AND STRUCTURE

**GEOLOGY:-** Science of the Earth's crust.

**HISTORICAL GEOLOGY OR PALEOGEOLOGY :-**Historical study of the earth, which studies the patterns of development of the crust in time and space.

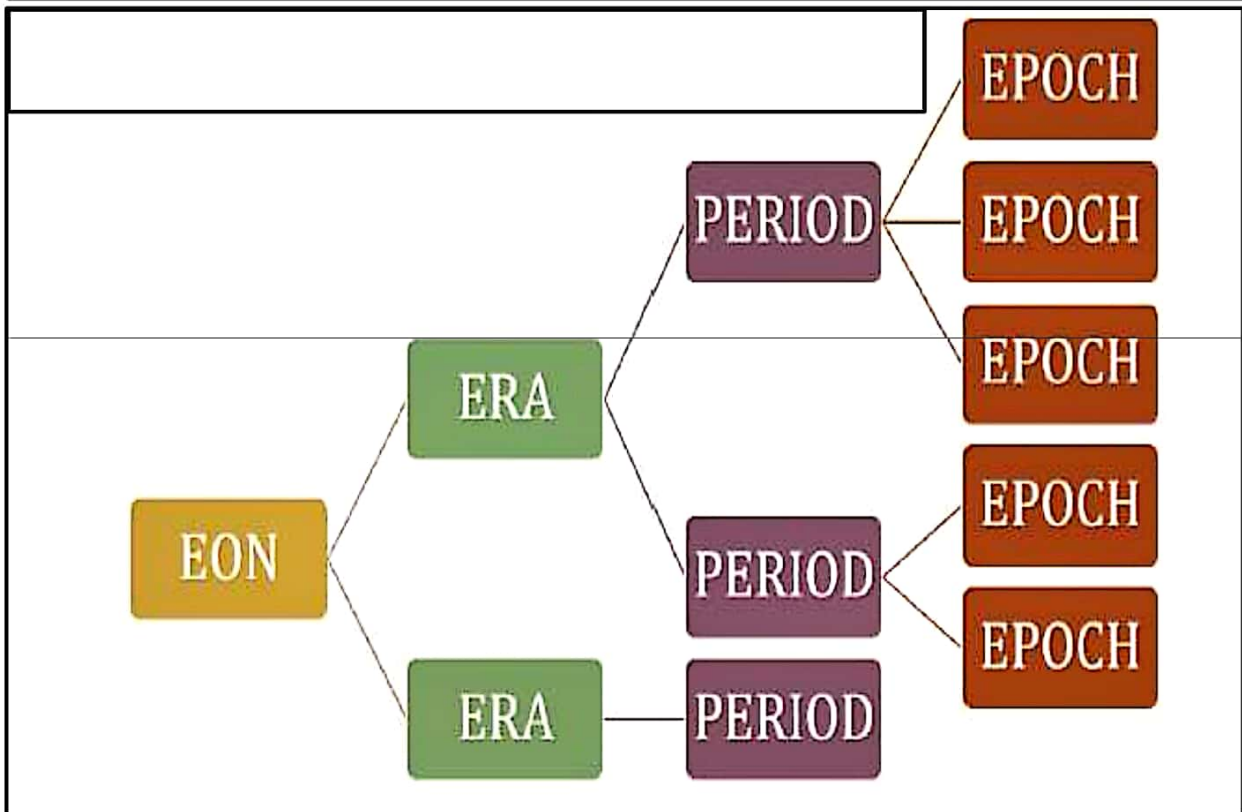
OR

It is a discipline that uses the principles and techniques of geology to reconstruct and understand the geological history of Earth

**ERA:-** Primary interval of time.

**PERIODS:-** Secondary intervals of time.

## DIVISION OF GEOLOGICAL TIME SCALE



## IMPORTANT TERMINOLOGY

**PHYSIOGRAPHY** :- Study of formation and development of surface features of land.

**GEOLOGICAL STRUCTURE**:- Study of structures such as faults and folds which are architecture of earth's crust which influence the shape of the landscape.

**STRATIGRAPHY**:- A discipline concerned with study of rock layers and layering of rocks, their thickness and age.

## **DIVISIONS OF GEOLOGIC TIME-**

- Geological time begins with *Precambrian Time*.
- **PRE-CAMBRIAN** - 88% of earth's history
- **Paleozoic (ancient life)**
  - 544 million years ago, lasted 300 million yrs
- **Mesozoic (middle life)**
  - 245 million years ago, lasted 180 million yrs
- **Cenozoic (recent life)**
  - 65 million years ago, continues through present day
  - Today we are in the Holocene Epoch of the Quaternary Period of the Cenozoic Era.

## INDIAN GEOLOGICAL ERA'S

	The Indian Classification	Corresponding period on the Earth's Geological timescale:
1.	Archaean	Early Precambrian Eon
2.	Purana	Late Precambrian (or Proterozoic Eon)
3.	Dravidian	600-400mya (largely coinciding with the Palaeozoic era)
4.	Aryan	400mya – present

## THE THREE GEOLOGICAL UNITS OF INDIA

- 1) PENINSULAR PLATEAU.
- 2) THE HIMALAYAN MOUNTAINS.
- 3) THE INDO-GANGETIC PLAINS.

## PENINSULAR PLATEAU

- Tableland which contains igneous and metamorphic rocks.
- One of the oldest and most stable landmass of India.
- It is known as Indian Plate.
- During Pre-cambrian era a large depression was deposited by sediments and a block of crystal rocks came out of the depression known as Peninsular plateau.
- Geologists believe that the Indian peninsular a part of the global Gondwana land drifted northwards and struck central Asiatic plate formed Himalayas out of Tethys sea.



## EVOLUTION OF HIMALAYAS

### Stage 1

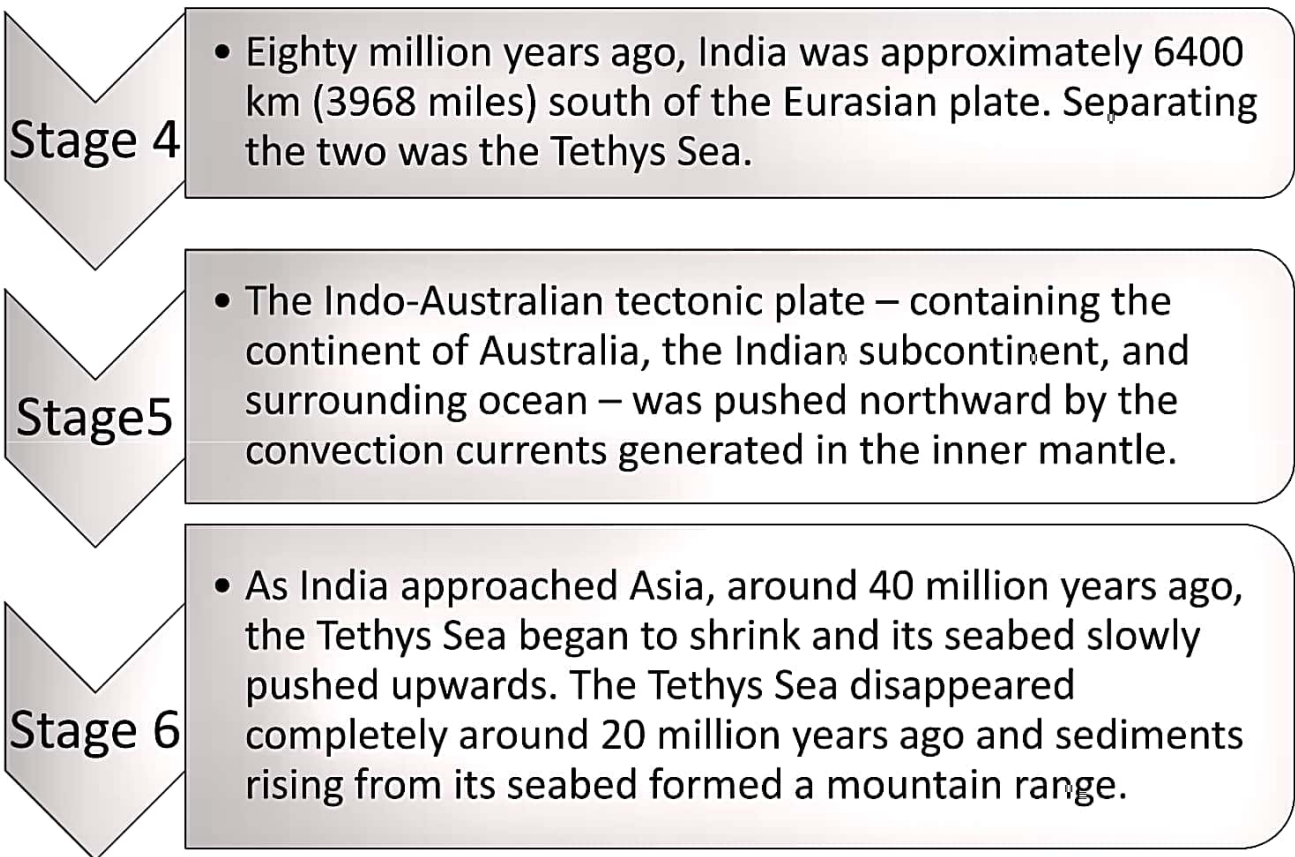
- Once, all the world's landmass was connected, forming one super-continent known as Pangea.

### Stage 2

- Approximately 200 million years ago, tectonic forces broke apart this giant continent into pieces, eventually forming the continents we know today

### Stage 3

- As convection currents worked independently on the plates associated with these new continental pieces, the plates and their respective continents began to drift across the globe to their present-day geographical locations.



Stage 7

- When India and Tibet collided, the relatively light sedimentary and metamorphic rock that makes up the subcontinent of India pushed against Tibet, forcing it upwards, and created a massive mountain fold.

Stage 8

## • The Himalayas

Stage 9

- This process hasn't stopped. The Indo-Australian plate is still moving toward Eurasia, still pushing Tibet upwards. The Himalayas continue to rise by an average of 2 cm each year. The highest mountains are only getting higher.

## EVOLUTION OF INDO-GANGETIC PLAINS.

- The great Northern Plains of India are an aggradational surface of great extent formed after the Himalayas.
- They are comparatively of recent origin.
- Believed to have formed by the filling up of a depression resulting from the uplifting of the Himalayas.
- By deposition of sediments brought by swift-flowing Himalayan Rivers, originated in Himalayas.
- Indian plate was part of the Gondwanaland mass.

- The conventional current lead to the split of the land masses.
- As a result of which the Indo Australian masses started drifting towards the Eurasian plate.
- The collision lead to folding of the sedimentary rocks from the Tethys sea, which became the Himalayas.
- The uplift of Himalayas formed a basin
- In the due time the depression were filled by the sediments flown by the rivers flowing from north to south.
- This is how the Northern plains were formed.

<b>Peninsular Plateau</b>	<b>Himalayan Mountain</b>
1. It is an old landmass of hard rocks.	1. It is a young mountain of soft rocks.
2. It is a tableland and is often compared to a 'horst'.	2. It is a chain of fold mountains formed due to tectonic uplift.
3. It remained a land area since the Cambrian period; only for a short period its coastal areas were submerged beneath the sea.	3. The Himalayan mountains remained under water for a long period of its history-right from the Cambrian to its formation into mountains.
4. The peninsula contains mostly residual mountains. The Aravalis are the best example.	4. The Himalayas are young, weak and flexible and have suffered from folding and deformation.
5. River valleys are shallow with low gradients.	5. The Himalayas are tectonic mountains and the rivers are torrential, having marks of youthfulness.
6. Peninsular plateau is triangular shaped.	6. Himalayan mountain system is arc-shaped.
7. Most of the rocks found in Peninsular Plateau are igneous.	7. Most of the rocks are sedimentary.

**Thank You**