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Ch - 5
Landforms of the Earth

Landform - A landform is a natural feature of the earth's surface. There are a large number of landforms on the surface of the earth. The major landforms are:

i) Mountains
ii) Plateaus
iii) Plains

Forces causing Landforms on the surface of the Earth

- Endogenic forces (Internal Processes)
  - Diastrophic (large scale) forces
    - Epeirogenic (Continent building) forces
      - Block Mountains, Basins, Rift valleys, Plains
    - Orogenic (Mountain building) forces
      - Fold Mountains, Faults, Plateaus, Landforms
  - Sudden forces
- Exogenic forces (External Processes)
  - Alluvial and erosional plains, valleys, glacial landforms

Causes of Landform Development -

1. Plate Tectonics -

i) The lithosphere is broken into several small and big plates.

ii) These plates push, collide or slide past each other, resulting in compression of the sedimentary rocks deposits lying in between two or more plates.

iii) The compression causes folding of the rocks.

iv) The forces responsible for the formation of fold mountains are called orogenic movements [The term 'orogenic' is derived from the Greek word meaning 'mountain-building'].

2. Uplift and Submergence -

i) Another set of forces operating inside the earth are characterised by large-scale uplift or subsidence of land area known as Epeirogenic or Continent building movements ('Epeiros' in Greek means 'continent'; 'genic' or 'genetic' means 'building').

ii) Such movements are the result of faulting or cracks in the earth's surface.

iii) The above two forces, namely orogenic and epeirogenic, are together called Diastrophic forces (originating deep inside the earth).

3. Exogenic forces -

They are forces operating on the surface of the earth called exogenic forces. They are

described as Destructive forces because they cause widespread destruction through weathering and erosion of existing landforms.

Mountains -

i) A mountain is described as a very steep land or hill rising to great heights above the land surrounding it.

ii) They are classified into three main types depending on the forces that have formed them namely fold mountains, residual mountains, and block mountains.

- Fold Mountains -

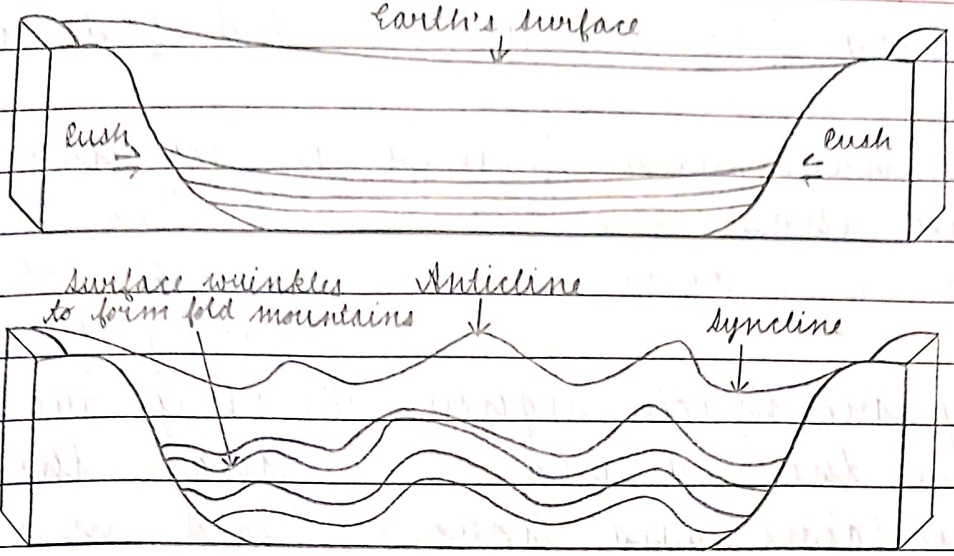
i) They are the result of lateral compression of the earth's crust

ii) The stresses subject the rocks to compressive forces, producing wrinkling or folding along the lines of weakness

iii) Ex - Andes (South America), Rockies (North America), Alps (Europe) and the Himalayas (Asia)

iv) Fold mountains are the highest and the most extensive mountain ranges of the world. Their chief characteristics are :-

1) They form irregular wave-like formations called folds. The upfold rock strata in arch-like shape are called anticlines or crest and the down folded structures are known as synclines or troughs.



How fold mountains are formed

2) Most of these mountains are constituted of sedimentary rocks.
3) Fold mountains have greater length but are comparatively smaller in width.
4) Most fold mountains except the Himalayas are found on the margins of continents.
5) They are associated with volcanic activity.
6) They have parallel ranges with intermontane plateaus.
v) The tops of the fold mountain chains that exist beneath the sea are revealed as islands There are also oceanic trenches which are the result of the same forces as fold mountains.
vi) Ex - Mid-Atlantic Ridge which rises 3 km above the floor of the Atlantic Ocean.

There are 2 types of fold mountains -

	Young fold mountains	Old fold mountains
i)	They have been formed later than the Old Fold Mountains.	i) They have been formed long ago much before the young fold mountains
ii)	They are much higher than the old fold mountains and have rough topography.	ii) They are lower than the young fold mountains.
iii)	Ex - The Himalayas, Andes, Alps and Rockies.	iii) Ex - The Appalachians, the Urals and the Aravallis (India).

- Residual Mountains -

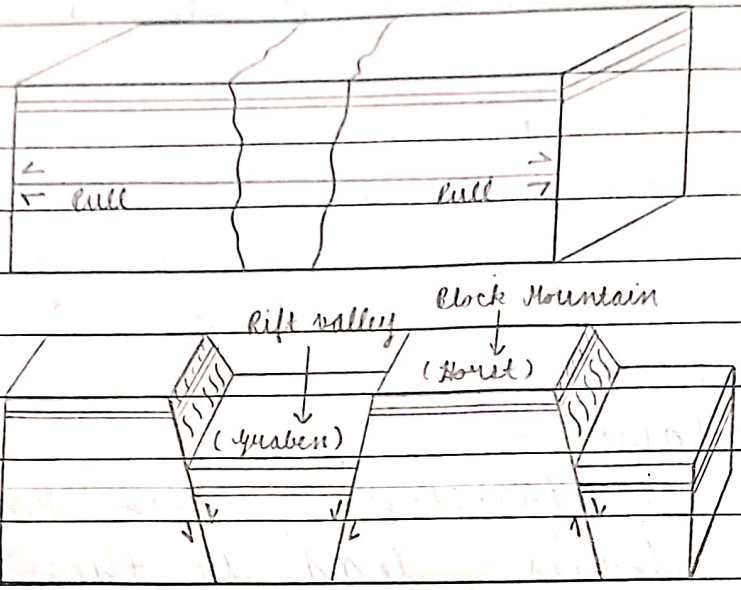
i) Mountains which are subjected to weathering and erosion for a longtime, are lowered down and called residual or relict mountains.

ii) Denudation and erosion by natural agents cause the mountains to be lowered but some resistant areas may remain and form residual mountains.

iii) They may also be formed on plateaus that are dissected by rivers. For ex- The Deccan Plateau.

iv) They are also called mountains of denudation.

v) Examples of Residual mountains are Nilgiri and Rajmahal Hills in India and the Catskill range in the USA.



Formation of block mountain by tension after faults develop

Plateaus -

i) Plateau is defined as an area of high ground, 500 feet above the ground level.

ii) These uplands have steep slope on one side. The upper part is generally flat and is called tableland.

Types of plateaus -

1. Intermontane Plateaus -

i) The plateaus surrounded by hills and mountains on all sides are called Intermontane Plateaus.

ii) These are the highest and most extensive types.

iii) The Tibetan plateau is the world's highest plateau.

iv) Other examples are Columbian Plateaus,

Bolivian, Peruvian and Mexican plateaus.

2. Volcanic Plateaus -

i) They are formed by numerous volcanoic eruptions that slowly build up over time, forming a plateau.

ii) Ex - The plateau of peninsular India.

Plains -

A plain is defined as an extensive area of lowland with a level or gently undulating surface.

A plain is seldom formed by a single process. Three types of plains can be distinguished - Structural Plains, Erosional Plains and Depositional plains.

- Structural Plains -

i) These plains are formed due to uplift or subsidence of land.

ii) Diastrophic forces may cause uplift of a portion of land beneath the ocean water or may cause submergence of coastal land under ocean water.

iii) The Great Plains of the USA were formed due to uplift of land submerged under water.

iv) On the other hand, the Coromandel plains in India are the result of mild subsidence followed by sedimentation.

- **Depositional Plains -**
These plains are formed by the deposition of materials which have been brought by various agents of transportation.

1. **River deposition -**
The most widespread of these are alluvial plains formed by deposition of sediments brought by rivers.

- **Piedmont Alluvial Plains -** They are formed by deposition of sediments at the foothills of mountains.
- **Flood plains -** They are found along the rivers.
In India, these flood plains are divided into -

i) **Khadar plains -** new deposits made every year.

ii) **Bhangar plains -** old deposits not renewed every year.

2. **Wind Deposition -**

i) ~~They~~ Most such plains are sandy deserts like the Sahara in Africa and the Thar desert in India.

ii) They have irregular and undulating surface made by existence of sand dunes and hollows.

iii) Ex - Loess plains in China.

3. Marine Deposition -

i) These plains are found in coastal regions

Polders - Polder is a piece of land reclaimed from the sea.

Dykes - The submerged land is surrounded by an embankment and directed drained by pumping water into canals.

ii) In Denmark we find polders and dykes.

Importance of Landforms -

The landforms have following advantages :-

i) Mountains, plateaus, plains and valleys are beautiful sculptures of nature. They add to the beauty of the earth.

ii) They have an impact on climate, direction of winds, precipitation etc.

iii) They are the abode of snow and glaciers thus the source of perennial rivers.

iv) Many kinds of forests are found on the slopes. These are home to different species of plants and animals.

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