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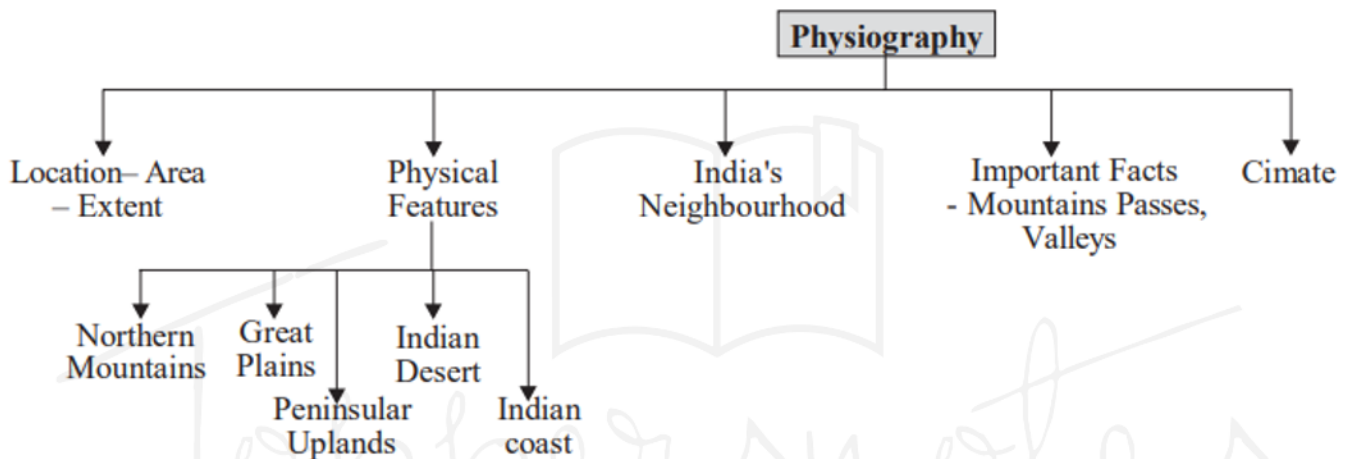
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# **Indian Geography**

## Chapter -1 PHYSIOGRAPHY AND DRAINAGE PATTERN OF INDIA

### Introduction –

‘Physiography’ of an area is the outcome of structure, process and the stage of development. The land of India is characterized by great diversity in its physical features. The North has a vast expanse of rugged topography consisting of series of mountain ranges with varied peaks, beautiful valleys and deep gorges. The South consists of stable table land with highly dissected plateaus and denuded rocks. In between these two lies the vast North Indian plain.



### LOCATION - AREA – EXTENT

- India lies in the northern and eastern hemispheres of the globe between 8° 4' N and 37°6' N latitudes and 68°7' E and 97°25'E longitudes.
- The southern most point extent up to 6°45' N latitude to cover the last island of the Nicobar group of islands. The southern extreme is called Pygmalion Point or Indira Point.
- The tropic of cancer  $23\frac{1}{2}^{\circ}$  passes through the middle part of India and crosses the states of Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram.
- Its total length of land frontier of 15,200 kilometers passes through marshy lands, desert, level plains, rugged mountains, snow covered areas and thick forests.
- Besides land there is a maritime boundary of 6,100 kilometers along the main land mass which increases to 7,516 kilometers of the coastlines of Andaman-Nicobar and Lakshadweep Islands are added to it.

- India-Afghanistan and Pakistan-Afghanistan international boundary is called the Durand Line, determined as a “militarily strategic border between British India and Afghanistan”.
- The India-China boundary (4,225 km) is a natural boundary running along the Himalayan ranges and is based on various treaties. Its eastern part (1,140 km) is called the Mc Mahon Line.
- The boundary with Pakistan and Bangladesh (the East Pakistan) was finalized at the time of partition in 1947 through the ‘Redcliff Award’.
- The Tin Bigha Corridor is a strip of land belonging to India is a part of West Bengal and lies adjacent to the Bangladesh border. In 1947, the border between India and Bangladesh was also demarcated by Sir Redcliffe.

- India is the only country which has given its name to an ocean, i.e. Indian Ocean encircled by 46 countries (27 littoral including Australia, 7 island states and 12 land locked countries).
- India commands a total geographical area of 32,87,263 sq. km which is roughly 0.57% of the area of the earth and 2.4% of the total area of the land hemisphere.
- India has roughly a quadrangular shape. It measures about 3,214 km from north to south and about 2,933 km from east to west, the difference between the two being just 281 km.
- Because of great longitudinal extent, the difference in local time between Eastern and Western extremes of the country is of two hours. In order to avoid the confusion with regard to the time at different places of the country, the local time along 82°30’ East longitudes is taken as the standard time of India, i.e. India Standard Time(IST).
- This meridian is known as the Standard Meridian of India. It passes through Mirzapur (UP). The Tropic of Cancer divides India almost into two equal halves. Thus, the Northern half of India is situated entirely in the Northern hemisphere and also belongs to the Eastern hemisphere because of its situation to the East of the Prime Meridian.
- After Russia, China, Canada, USA, Brazil and Australia, India is the seventh largest country of the world. Its area is almost equal to the area of Europe (excluding Russia), one-third of Canada, one fifth(1/5)of Russia, eight times of Japan and twelve times of United Kingdom.
- In population-size, India is the second giant country in the world after China.
- Its total population is more than the combined population of USA, Russia, Australia, Canada and Japan.

- The eastern boundaries of India are formed by a complex chain of the Himalayan offshoots consisting of the Mishmi, the Patkai, the Naga hills, the Barail range, the Mizo hills and finally them majestic Arakan Yoma Mountains range.
- The Arakan Yoma is submerged in the Bay of Bengal for sufficiently long stretch and emerges again in the form of Andaman and Nicobar Islands.
- The boundary line between India and Bangladesh crisscrosses the vast Ganga-Brahmaputra delta. This boundary runs is not even a small mount or hill which could be used for demarcating the boundary between the two countries.
- Jammu and Kashmir, Himachal Pradesh, Sikkim and Arunachal Pradesh are the states of India lying completely in the Himalayas, while the state of Uttarakhand lies partly in the Himalayas and partly in the northern plains.
- Madhya Pradesh, Chhattisgarh, Jharkhand, Maharashtra, Odisha, Andhra Pradesh, Karnataka, Kerala and Tamil Nadu, together make the great peninsular plateau.
- Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha and West Bengal are states on the coast of India. Among our Union Territories, Daman and Pondicherry have sea boundaries.
- The Indian states on international boundaries (other country/ countries within brackets) are: Gujarat (Pakistan), Rajasthan (Pakistan), Punjab (Pakistan), Jammu and Kashmir (China and Pakistan), Himachal Pradesh (China), Bihar (Nepal), Uttarakhand (China and Nepal), Uttar Pradesh (Nepal), West Bengal (Bhutan, Nepal, and Bangladesh), Sikkim (China, Bhutan and Nepal), Arunachal Pradesh (Bhutan, China and Myanmar), Nagaland (Myanmar), Manipur (Myanmar), Mizoram (Bangladesh and Myanmar), Meghalaya (Bangladesh), Tripura (Bangladesh) and Assam (Bhutan, Bangladesh and Myanmar).
- The states of Haryana, Madhya Pradesh, Chhattisgarh and Jharkhand are the only land-locked states which are neither on the coast nor on an international border.
- The states of Haryana, Madhya Pradesh, Chhattisgarh and Jharkhand are the only land-locked states which are neither on the coast nor on an international border.

## The States having Common Frontiers with Neighbouring Countries

Country	States
Pakistan	Jammu and Kashmir, Punjab, Rajasthan, Gujarat
Afghanistan	Jammu and Kashmir
China	Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim Arunachal Pradesh
Nepal	Uttarakhand, Uttar Pradesh, Bihar, West Bengal Sikkim
Bhutan	Sikkim, West Bengal, Assam, Arunachal Pradesh
Myanmar	Arunachal Pradesh, Nagaland, Manipur, Mizoram
Bangladesh	West Bengal, Meghalaya, Assam, Tripura, Mizoram

### **Four Ends of India**

Easternmost point of India is known as Kibithu; situated on right bank of river Lohit separating India from China-Tibet region. It is a small village with the population at the altitude of 3,350 metre in Arunachal Pradesh. Westernmost point is situated in Kuch area of Gujarat called as Ghuar Mota. The region is famous for its harsh climate with 45° C in summer and 20°C in winter. During monsoon season this region looks like tortoise surrounded by seawater. Northernmost point of India has been in controversies ever since India's independence. The Siachen Glacier in the state of J & K is the northern boundary of India according to the official division of India during the time of Independences. The Southernmost point of the mainland of India is Kanyakumari District in the state of Tamil Nadu. Kanyakumari, formerly was known as Cape Comorin. It is the second largest and urbanized of Tamil Nadu. Indira Point is a village in the Nicobar district of Andaman and Nicobar Islands, India. It is located in the Great Nicobar tehsil. It is the location of the southernmost point of India's territory.

## Area Wise Largest States

State	sq km
Rajasthan	342239
Madhya Pradesh	308245
Maharashtra	307713
Andhra Pradesh	160229
Uttar Pradesh	240928

## Important Straits

Location	Channel
Indira point-Indonesia	Great Channel
Little Andaman and Nicobar	10° Channel
Minicoy-Lakshadweep	9° Channel
Maldives-Minicoy	8° Channel
India-Sri Lanka	Gulf of Mannar and Palk Strait

## PHYSICAL FEATURES

### Origin of Landforms

- The oldest landmass, the Indian Peninsula, was a part of the Gondwanaland. The Gondwanaland included India, Australia, Africa and South America as one single land mass. The convectional currents split the crust into a number of pieces, thus leading to the drifting of the Indo-Australian plate after being separated from the Gondwanaland, towards North. The Northward drift resulted in the collision of the Indian plate with the much larger Eurasian Plate.
- Due to this collision, the sedimentary deposit which were accumulated in the geosyncline (a long shallow depression between two large landmasses) known as the Tethys were folded to form the mountain system of Western Asia and Himalaya. The Himalayan upliftment out of the Tethys sea and subsidence of the Northern flank of the Peninsular plateau resulted in the formation of a large basin. In due course of time this depression, gradually got filled with deposition of sediments by the rivers flowing from the mountains in the North and the Peninsular plateau in the South.



- A flat land of extensive alluvial deposits led to the formation of the Northern plains of India. Geologically, the peninsular plateau constitutes one of the ancient landmass on the Earth's surface. It was supposed to be one of the most stable land blocks. The Himalayas and the Northern plains are the most recent landforms. From the view point of geology, Himalayan Mountains form an unstable zone. The whole mountain system of Himalaya represents a very youthful topography with conical peaks, V-shaped valleys and fast flowing rivers. The Northern plains are formed of alluvial deposits. The Peninsular plateau is composed of igneous and metamorphic rocks with gently rising hills and wide valleys.
- Out of the total area of the country, about 10.6% is occupied by mountains, 18.5% by hills, 27.7% by plateaus and 43.2% by the plains.
- India may be divided into five major physiographic regions, viz, (I) The Northern Mountains, (II) The Great Plains, (III) The Peninsular Uplands, and (IV) The Indian Coasts and Islands, & (V) The Indian Desert

### **I. The Northern Mountains**

- The region extends all along the northern frontier of the country, for about 2500 km, with a varying width 240 to 320 km and a total area of about 5, 00,000 km<sup>2</sup>.
- Himalayas represent the youngest and the highest folded mountains of the earth, rising to over 8000 m above sea level and consisting of three parallel ranges :
  - (a) Himadri (Greater Himalayas),
  - (b) Himachal (Lesser Himalayas), and
  - (c) The Siwaliks (Outer Himalayas).
- The Himalayas are intersected by numerous valleys like Kashmir valley, the Karewas, the Doon valley, the Kangra and Kullu valley (Himachal Pradesh), Kathmandu valley (Nepal), Bhagirathi valley (near Gangotri) and Mandakini valley (near Kedarnath).

<b>Principal Peaks of India</b>		
<i>Peak</i>	<i>Height (Mtrs)</i>	<i>Location</i>
1. Mt. Everest	8848	Nepal-Tibet
2. Mt. K2 (Karakoram)	8611	India
3. Kanchenjunga	8597	Nepal-India
4. Dhaulagiri	8172	Nepal
5. Nanga Parbat	8126	India
6. Annapurna	8078	Nepal
7. Gasherbrum	8068	India
8. Nanda Devi	7817	India
9. Mt. Kamet	7756	India
10. Gurla Mandhata	7728	Tibet

<b>Valleys and its locations</b>	
• Araku Valley	: Andhra Pradesh
• Damodar Valley	: Jharkhand and West Bengal
• Darma Valley	: Uttarakhand
• Dzukou Valley	: North-eastern part
• Johar Valley	: Uttarakhand
• Markha Valley	: Ladakh
• Nubra Valley	: Ladakh
• Sangla Valley	: Himachal Pradesh
• Saur Valley	: Uttarakhand
• Suru Valley	: Ladakh
• Tons Valley	: Uttarakhand
• Yumthang Valley	: Sikkim

## **Divisions of the Himalayas**

### **(a) The sub-Himalayas or Siwaliks :**

- The range has a total length of about 2400 km from the Indus gorge to the Brahmaputra valley.
- It is known by various local names, i.e. the Jammu hills (Jammu & Kashmir), the Dundwa range (Uttarakhand), the Churia Muria hills (Nepal), the Daffla, Miri, Abor and Mishmi hills (Arunachal Pradesh).

### **(b) The Lesser Himalayas or Himachal:**

- It is about 80 km wide with average height between 1300 to 5000 m.
- Important ranges include the Dhauladhar, Pirpanjal, Nag Tiba, Mahabharat range and Mussoorie range. The famous hill resorts like Shimla, Chail,

Ranikhet, Chakrata, Mussoorie, Nainital, Almora and Darjeeling, etc. are situated over this range.

- Along the slopes are found a number of small pastures which are called Merg in Kashmir (viz. Gulmerg, Sonmerg, Tanmerg) and Bugyal and Payar in Uttarakhand.

<b>Mountain Passes of India</b>
<p><b>Himalayan passes</b></p> <ul style="list-style-type: none"> <li>• Banihal pass — between Doda and Anantnag (Jawahar Tunnel), J &amp; K.</li> <li>• Shipki La — River Sutluj enters India from Tibet, Himachal Pradesh.</li> <li>• Bara Lachan La — between Khyelang and Leh, Himachal Pradesh.</li> <li>• Rohtang pass — between Kullu and Khyelang, Himachal Pradesh.</li> <li>• Bomdila pass — between Tezpur and Tawang, Arunachal Pradesh.</li> </ul>
<p><b>Himalayan passes between India and China</b></p> <ul style="list-style-type: none"> <li>• Shipki La — Himachal Pradesh.</li> <li>• Thaga La and Niti La — Uttarakhand.</li> <li>• Lipu Lekh La — Tri-junction, India-Nepal-China, Uttarakhand.</li> <li>• Jelep La — Between India and China (Gangtok-Lhasa Road) Sikkim.</li> <li>• Nathu La — Between India and China (Entry to Chumbi Valley) Sikkim.</li> </ul>
<p><b>Trans Himalayan passes</b></p> <ul style="list-style-type: none"> <li>• Karakoram pass and Aghil pass — Jammu &amp; Kashmir.</li> </ul>
<p><b>Passes in Western Ghats</b></p> <ul style="list-style-type: none"> <li>• <i>Palghat</i> — between Palakkad and Coimbatore.</li> <li>• <i>Shenkota</i> — between Kollam and Madurai.</li> <li>• <i>Thalghat</i> — between Mumbai and Pune.</li> <li>• <i>Bhorghat</i> — between Mumbai and Nasik.</li> </ul>

- The best known passes of the Pir Panjal range are the Pir Panjal Pass (3480 m), the Bidil (4270m), Golabghar (9812m) and Banihal Pass (235 m). The Jammu-Sri Nagar highway uses the Banihal Pass.

### (c) The Greater Himalayas or Himadri

- This zone rises abruptly like a wall north of the Lesser Himalayas. It is about 25 km wide with average height above 5000 m.
- The Himadri runs in an arc like shape in a length of 2500 km from Nanga Parbat (8126 m) in the west to Namcha Barwa (7756 m) in the east.

- This is the northernmost or the innermost of all the Himalayan ranges.
- With an average elevation of 6100 m above sea level this is the loftiest and the most continuous mountain range of the world.
- This mountain range boasts of the tallest peaks of the world, most of which remain under perpetual snow.
- They are, in descending order of altitude, Mount Everest, also called Sagarmatha or Chomo Langma (8848 m), Lhotse 1 (8501 m), Mount Akalu (8481 m), Kanchenjunga South Peak (8474 m), Kanchenjunga West Peak (8420 m), Lhotsa Intermediate Peak (8410 m), Cho Oyu (8153 m), Nanga Parbat (8126 m), Annapurna (8078 m), Gosainthan or Shisha Pangma (8013 m), Makalu South peak (8010 m).
- The Burzil pass and Zoji La in Kashmir, Bara Lapcha La and Shipki La in Himachal Pradesh, Thaga La, Niti Pass and Lipu Lekh Pass in Uttarakhand and Nathu La, Jelep La in Sikkim are worthy of mention.
- The Hindustan - Tibet road connecting Shimla with Gartok in Western Tibet passes through the Shipki La.
- Another important trade route connecting Kalimpong (near Darjeeling) with Lhasa in Tibet however passes through Jelep La (4386 m).
- The Himadri runs in an arc like shape in a length of 2500 km from Nanga Parbat (8126 m) in the west to Namcha Barwa (7756 m) in the east.

#### **(d) Trans Himalayas**

- The Trans-Himalayan Zone with a width of 40 km in its eastern and western ends and a width of 222 km in its central part, it has important ranges such as the Zaskar Range and the Great Karakoram range. The Karakoram extends towards the south-east to form the Kailash Range (Tibet). The highest peak in the Karakoram range is K2 (8,611 m). The longest glacier is Siachen in the Nubra Valley which is more than 72 km long.

#### **Some important facts about peak**

- Highest Mt. Peak in India : K2 or Godwin Austin
- Highest peak in Aravalli : Gurushikhar (in Mt. Abu)
- Highest peak in Satpura – Dhupgarh (Mahadeo Hills)
- Highest peak in E. Ghats - Mahendragiri (Orissa)
- Highest peak in W. Ghats - Anaimudi (Annamalai Hills - Kerala)
- Highest peak in Nilgiris - Doda Betta
- Hills in Southern Hill complex - Nilgiri, Annamalai, Cardamom & Palani
- Hills in Eastern Ghats: Shevaroy, Javadi Palkonda, Nallamalai, Northern Circars

- Oblique ranges to Western Ghats in Maharashtra: Ajanta, Satmala, Harishchandra, Balaghat
- Satpura range from East to West : Amarkantak - Maikal- Mahadeo - Gawilgarh – Rajpipala
- Highest peak in Andaman and Nicobar is-lands - Saddle Peak
- The highest peak of Naga hills is Saramatipeak.

### **(e) The Eastern Hills or the Purvanchal**

- After crossing the Dihang gorge, the Himalayas take a sudden southward turn and form a series of comparatively low hills running in the shape of a crescent with its convex side pointing towards the west. These hills are collectively called the Purvanchal because they are located in the eastern part of India.
- The hill ranges running in north-south direction along the Burmese border and passing through Arunachal Pradesh (Tirap division), Nagaland, Manipur and Mizoram are collectively called Purvanchal. These are known by various local names, i.e. Patkai Bum (Arunachal Pradesh), Naga hills, Kohima hills, Manipur hills, Mizo hills, Tripura hills and Barail range.
- Extending from Arunachal Pradesh in the north to Mizoram in the south, they form India's boundary with Myanmar.
- In the north is the Patkai Bum, which forms the international boundary between Arunachal Pradesh and Myanmar.
- After running for some distance southwards, it merges into Naga Hills where Saramati (3826 m) is the highest peak.
- South of Naga Hills are the Manipur hills, which are generally less than 2500 metres in elevation.
- The Barail range separates Naga Hills from Manipur Hills.
- South of the Manipur Hills are the Mizo Hills, which have an elevation of less than 1500 metres. The highest point is the Blue Mountain (2157 m) in the South.

### **Longitudinal divisions of the Himalayas**

Longitudinally, the Himalayas can be divided into following sections.

#### **1. The Punjab Himalayas**

The 560 km long stretch of the Himalayas between the Indus and the Sutluj rivers is known as the Punjab Himalayas. A large portion of this sector lies in Jammu and Kashmir and Himachal Pradesh as a result of which it is also called the Kashmir and Himachal Himalaya. Karakoram, Ladakh, Pir Panjal, Zaskar and Dhaula Dhar are the main ranges of this section.

#### **2. Kumaon Himalayas**

This section extends from Sutluj to Kali river valleys and is said to have 360 lakes, such as Naini Tal and Bhim Tal. The Pilgrimage centers (Badrinath, Gangotri) located in this section is of particular importance to the Hindus.

### **3. Nepal Himalayas**

This section extends from Kali to Tista and has the distinction of having some of the highest peaks in the world including Mt. Everest.

### **4. Assam Himalayas**

This section extends from Tista to Brahmaputra. The highest peak of this range is Namcha Barwa.

## **II. The Great Plains**

- It is an aggradational plain formed by the alluvial deposits of the Indus, Ganga and the Brahmaputra and their tributaries. This is the largest alluvial tract of the world, extending for a length of 3200 km and width varies between 150 to 300 km.
- The plain stretches from west (from the banks of the Ravi and Sutluj) to east (the Ganga delta) to a length of 2400 km.
- The plain merges into the Thar desert in the south-west. A low watershed of the Delhi ridge (278 m) along the right bank of the Yamuna river separates the Satluj plains (a part of the Indus plain) from the Ganga plains.

### **Divisions of the Great Plains**

The Great Plains may be divided into a number of smaller units on the basis of the characteristics of the alluvium, surface gradient, drainage channels and regional traits.

#### **Bhabar Plains**

It lies all along the foot of the Siwaliks with remarkable continuity from the Indus to the Tista. It is generally 8 to 16 km wide belt consisting of gravel and unsorted sediments deposited by the Himalayan rivers in the foreland zone due to sudden break of slope. The porosity is so high that all streams disappear in the Bhabar tract leaving out only dry channels.

#### **Terai Plains**

South of the Bhabar lies a 15-30 km wide marshy tract called terai where streams reappear to the surface.

The Terai is more marked in the eastern part than in the west due to higher amount of rainfall.

It is a zone of excessive dampness, thick forests & rich wild life.

### **Bangar or Bhangar Plains**

The Bhangar represents the uplands (alluvial terrace) formed by the deposition of the older alluvium and lie above the flood limit of the plains. The main constituent of Bhangar is clay (locally known as kankar) which at places gives way to loam and sandyloam.

### **Khadar Plains**

The younger alluvium of the flood plains of the numerous rivers is called the Khadar or Bet (in Punjab).

Its alluvium is light colored and poor in calcareous matter consisting of deposits of sand, silt, mud and clay.

### **Delta Plains**

Deltaic plain is an extension of the Khadar plain. It covers about 1.86 lakh sq km of area in the lower reaches of the Ganga river (West Bengal). It mainly consists of old mud, new mud and marsh. Upland area is locally known as chars & marshy land as 'bills'. Large part of the coastal deltas is covered by thick impenetrable tidal forests called Sundarbans. On the basis of regional characteristics, the Great Plains may be divided into following sub plains:

### **The Punjab-Haryana Plains**

With a distance of 640 km from north-east to south-west and 300 km from west to east, these flat plains occupy 1.75 lakh sq km. They comprise the Bist Doab (between Sutlej and Beas rivers), the Bari Doab (between Beas and Ravi rivers), the Chaj Doab (between Chenab & Jhelum) & the Sindh Sagar Doab (between Jhelum - Chenab & Indus).

### **The Rajasthan Plains**

These comprise the marusthali of Thar and the nearly Bagar areas and occupy an area of 1.75 lakh sq km. Sand dunes are longitudinal (in the west and south) and transverse (in the east). The Luni river flowing towards the south-west is the only river in the region. The Rajasthan desert is sloping towards two directions.

(a) Westwards to the Indus Valley in Pakistan, and

(b) Southwards to the Rann of Kutch.

### **The Ganga Plains**

Spreading across the states of Uttar Pradesh, West Bengal and Bihar for 3.57 lakh sq km, the plains comprise the raised bhangar areas and Khadar areas. The Ganga Plain is divided into the

- (a) Ganga-Yamuna Doab,
- (b) Rohilkhand Plain,
- (c) Avadh Plain (covering the eastern half of Uttar Pradesh),
- (d) Bihar Plain, and
- (e) Bengal Plain. The Ganga delta, which constitutes the Bengal basin, has part of it stretching along the sea and covered with tidal forests (the Sundarbans).

### **The Brahmaputra Plains**

The low-level plains formed by deposits carried by mainly the Brahmaputra river but also the Dibang, the Sivasiri and the Lohit are bordered by high mountains. Moist soil conditions and thick forests form the northern extreme.

### **III. The Peninsular Uplands**

Rising from the height of 150 m above the river plains up to an elevation of 600-900 m is the irregular triangle known as the Peninsular Plateau.

The Peninsular plateau is a tableland composed of the old crystalline, igneous and metamorphic rocks. It was formed due to the breaking and drifting of the Gondwanaland and thus, making it a part of the oldest landmass. This region of the country is surrounded on the three sides by water and thus, is a Peninsular plateau.

The plateau has broad and shallow valleys and rounded hills. Narmada river, which flows into a Rift valley, divided the region into two parts namely, the central highlands in its North and the Deccan plateau in its South.

- Its north-west limit is marked by Aravalli range and its northern extreme has the raised Bundelkhand. At its eastern and western ends are Eastern Ghats and Western Ghats respectively.
- The fault in which the Narmada river flows divides the region into two unequal parts; the smaller one in the north being known as the Central Highlands.
- It is slightly tilted towards north. The southern part has been tilted east with bold heights to the west. This area is popularly known as the Deccan Plateau comprising the Satpuras, Western and Eastern Ghats and a large number of plateaus.



**On the basis of prominent relief features, the Peninsular plateau can be divided into three broad groups:**

### **1. The Central Highlands**

The Central Highlands are bounded to the West by the Aravali range. Satpura range demarcates its boundary in the South from Deccan plateau.

An Eastern extension of central high lands is formed by Rajmahal hills.

The general elevation of the central high lands ranges between 700-1000 m above the mean sea level. It slopes towards the North and North-Eastern directions.

#### **The Aravalli Range**

It runs North-East to South-West for 800 km from Delhi through Rajasthan to Palanpur in Gujarat. These are the Relict Mountains representing one of the world's oldest high lands formed as a result of folding process in Archean times. It has a lower elevation between Delhi and Ajmer, where it is characterized by a chain of discontinuous ranges. But it becomes a continuous range South of Ajmer where it rises to 900 m elevation.

The general height of this range varies between 400-1300 m. Gure Skikhar 1722 m) is the highest peak of the range, located in Ubu hills of Rajasthan. Barr, Piplighat, Dewari, Desuri are some of the passes associated with this range.

#### **East Rajasthan Uplands**

It is located East of the Aravali range in North-West India. The upland covers an area of 23,200 sq km and have a general elevation of 350 m. It constitutes the Northern part of Central Highlands.

#### **Madhya Bharat Plateau**

It is the Northern of the central highlands. It covers an area of about 22 thousand sq km.

#### **Bundelkhand and Baghelkhand Uplands**

It lies to the South of Yamuna river along border region of Uttar Pradesh and Madhya Pradesh. Bundelkhand covers five districts of Uttar Pradesh and four districts of Madhya Pradesh. Baghelkhand lies South-East of the Bundelkhand region and is largely made up of limestones and sandstones. They are represented by rounded Hummocky hills made of granite and sandstone. Streams like Betwa and Ken have carved out steep gorges, rocky banks and waterfalls in these uplands rendering them unfit for cultivation. The region is characterized by 'senile topography'

**The Malwa Plateau Largely** in Northern Madhya Pradesh, forms a triangular shape and is typical for having two systems of drainage. Rivers like Mahi and Narmada flow through it in to the Arabian sea, while rivers like Chambal and Betwa flow through it to join Yamuna and ultimately fall into Bay of Bengal. It is composed of lava flows and is covered with black soils. This plateau is marked in its North by the badlands or ravines formed by Chambal river by exercising gully erosion.

### **The Vindhya Ranges**

It runs parallel to the Narmada Rift valley as an escarpment in an East-West direction from Jobat in Madhya Pradesh to Sasaram in Bihar for a distance of 1200 km. The general elevation of the ranges is 400-700 m. It consists of horizontal beds of sedimentary rocks.

This range acts as a watershed between North flowing rivers of the Ganga system and Peninsular rivers. It continues eastwards as Bharner hills and Kaimur hills. Panna hills also lie in these ranges. The Great boundary fault separates the Aravallis from Vindhyan range.

### **The Chhotanagpur Plateau**

It lies East of Baghelkhand in the State of Jharkhand covering some parts of Chhattisgarh and West Bengal. Its average elevation is 700 m above sea level. It is the storehouse of minerals and a large scale mining of iron, manganese, coal, uranium etc is done in this region. This plateau is drained by numerous rivers forming a radial drainage pattern. Damodar river valley is well-known for its coal deposits.

In the North-East of this region lies Hazaribagh plateau, while towards East are Parasnath hills and towards South-East is Ranchi plateau. Rajmahal hills form the North-Eastern edge of the Chhotanagpur plateau and are covered by black soil.

The plateau is an example of Pat Land.

## **2. Deccan Plateau**

Deccan plateau is bordered by the Western ghats in the West, Eastern ghats in the East and the Satpura, Maikal and Mahadeo hills in North. The Deccan Plateau is higher in the West and slopes gently eastwards. It is higher in South than its North.

### **The Satpura Ranges**

It is a series of seven mountains that run in the East-West direction in between Narmada and Tapi rivers. It is an example of block mountain. Commencing from the Rajpipla hills in the West through the Mahadev hills to Maikal range, it stretches for about 900 km.