



Rajasthan

National Health Mission  
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Staff Nurse

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General Knowledge, Science & Computer



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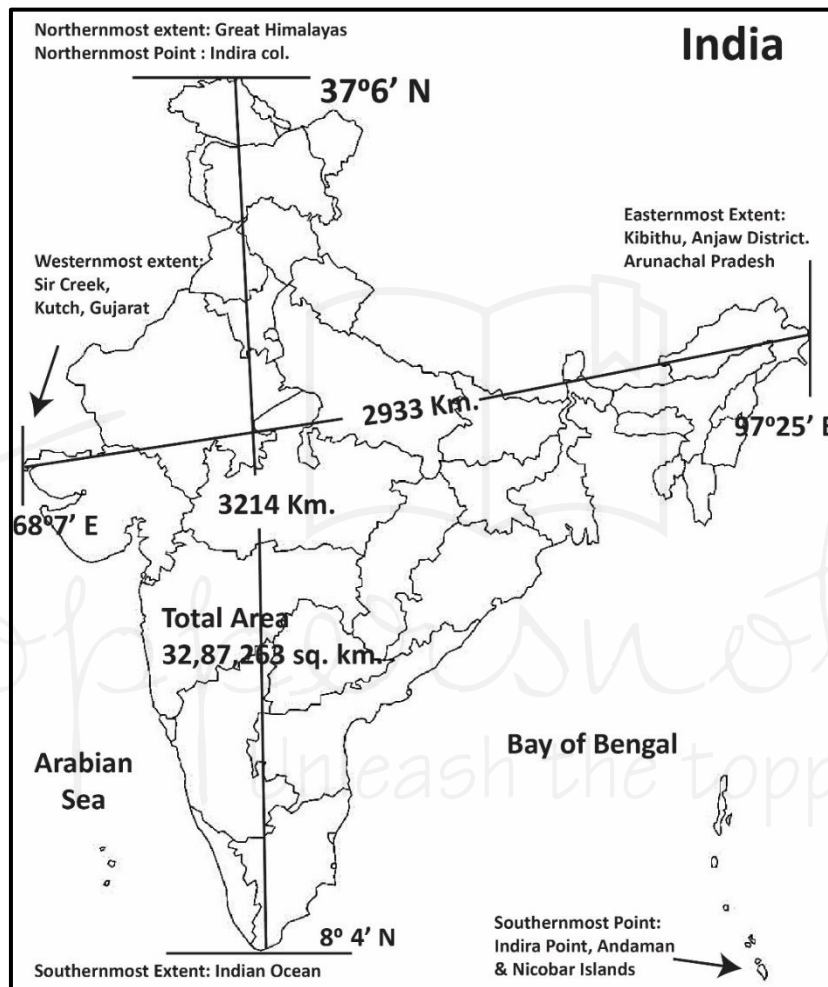
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# 1

## CHAPTER

# India-Size & Location

- **7th largest country** in the world.
- Situated in the **northern hemisphere** (**8°4'N to 37°6'N and 68°7'E to 97°25'E**)
  - India lies to the north of the equator between **6° 44' and 37°6'N latitude** and **68° 7' and 97° 25'** east longitude (including the islands).
- **Area:** 32,87,263 sq. km (**2.42% of the world**)
- 2nd most populated country in the world (**17.5% of the world's population**)
- **Total land boundary** = 15,200 km.
- **Total Sea boundary** = 7516.6 Km
  - Without islands = 6100 Km



### Border Countries:

<b>North-west</b>	<ul style="list-style-type: none"> <li>• Afghanistan and Pakistan</li> <li>• Indo-Pak border: Radcliffe line</li> <li>• Pak - Afghanistan border: Durand Line</li> </ul>
<b>North</b>	<ul style="list-style-type: none"> <li>• China, Bhutan and Nepal</li> <li>• Indo-China border: McMahon line</li> </ul>
<b>East</b>	<ul style="list-style-type: none"> <li>• Myanmar, Bangladesh</li> <li>• Longest boundary with Bangladesh</li> </ul>
<b>South</b>	<ul style="list-style-type: none"> <li>• Sri Lanka</li> <li>• Separated by Palk Strait &amp; Gulf of Mannar</li> </ul>

### States sharing International borders:

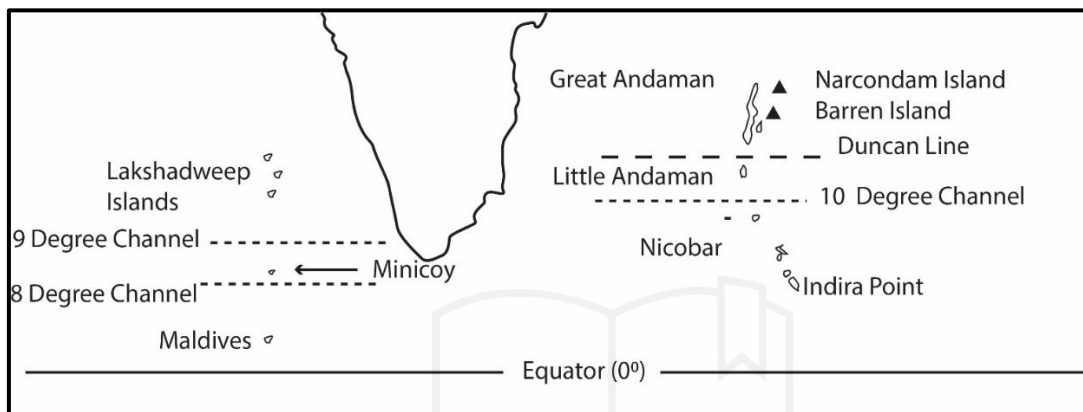
<b>Bangladesh</b>	<b>5 States:</b> West Bengal, Mizoram, Meghalaya, Tripura, and Assam ( <b>4096 km</b> )
<b>China</b>	<b>4 States and 1 UT:</b> Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh and Ladakh ( <b>3488 km</b> )
<b>Pakistan</b>	<b>3 States and 2 UTs:</b> J&K, Punjab, Gujarat, Rajasthan and Ladakh ( <b>3323 km</b> )

<b>Nepal</b>	<b>5 States:</b> Uttar Pradesh, Bihar, Uttarakhand, Sikkim, West Bengal ( <b>1751km</b> )
<b>Myanmar</b>	<b>4 States:</b> Arunachal Pradesh, Manipur, Mizoram, and Nagaland ( <b>1643 km</b> )
<b>Bhutan</b>	<b>4 States:</b> Arunachal Pradesh, Assam, Sikkim, and West Bengal ( <b>699 km</b> )
<b>Afghanistan</b>	<b>1 UT:</b> Ladakh ( <b>106 km</b> )

- **Indian Standard Meridian**
  - **82°30'E, Mirzapur(UP)** - India's Standard Meridian.

- **Ahead of meantime** by **5 hours and 30 minutes**.
- **States through which IST Passes:** Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Odisha and Andhra Pradesh.
- **Tropic of cancer (23°30'N)** - Gujarat, Rajasthan, MP, Chhattisgarh, Jharkhand, West Bengal, Mizoram, and Tripura.
- **Coastal states of India: 9** (West Bengal, Odisha, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Goa, Maharashtra, and Gujarat)

## Various Channels and their Location



- **Ten Degree Channel**
  - **Separates** the **Andaman Islands** from the **Nicobar Islands** in the Bay of Bengal
  - **150 km wide** from north to south and **10 km long** from east to west with a minimum depth of 7.3m.
- **Nine Degree Channel**
  - **Separates Minicoy** island from the **Lakshadweep archipelago**.
  - **200 km wide** with a **depth of 2597 metres**.
  - **Strategic importance:** Passage of major merchant shipping between Europe, the Middle East and Western Asia with South-East Asia and the far East.
- **Eight Degree Channel**
  - **Maritime boundary** between the **Maldives** and **India**
  - **Separates** the islands of **Minicoy** and **Maldives**.
  - Traditionally known as **Maliku Kandu** and **Māmalē Kandu Divehi**.

### Duncan Passage

- A strait in the Indian Ocean.
- Located in between South Andaman and Little Andaman.
- Also lies within the EEZ of India, protected by the integrated tri-services Andaman and Nicobar Command of Indian Military.
- **Width:** ~ 48km.

# 2

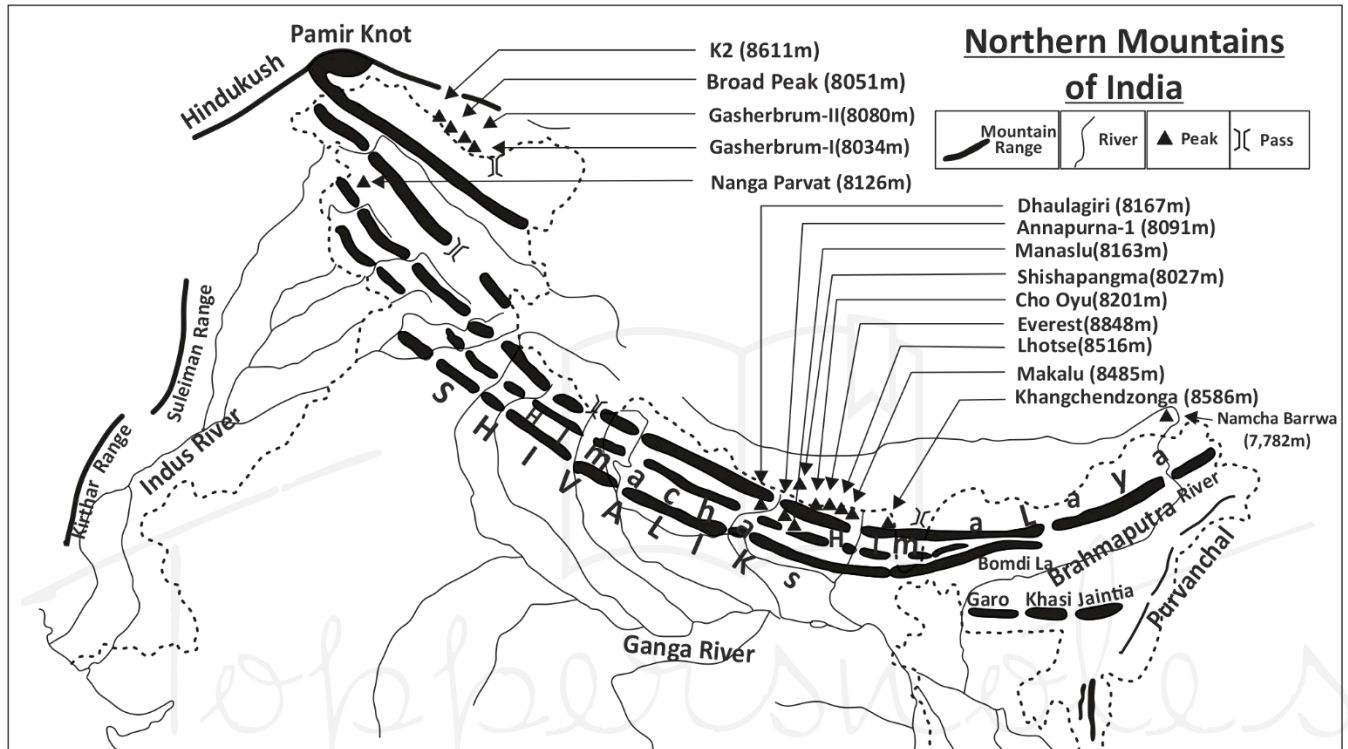
## CHAPTER

# Physiographic Divisions of India

Based on physical features, India is divided into six physiographic divisions:

- |                        |                          |                       |
|------------------------|--------------------------|-----------------------|
| 1. Himalayan Mountains | 2. Great Plains of India | 3. Peninsular Plateau |
| 4. Indian Desert       | 5. Coastal Plains        | 6. Islands            |

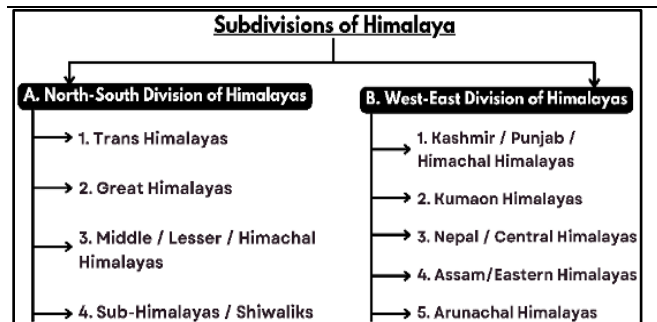
### 1. Himalayan Mountains



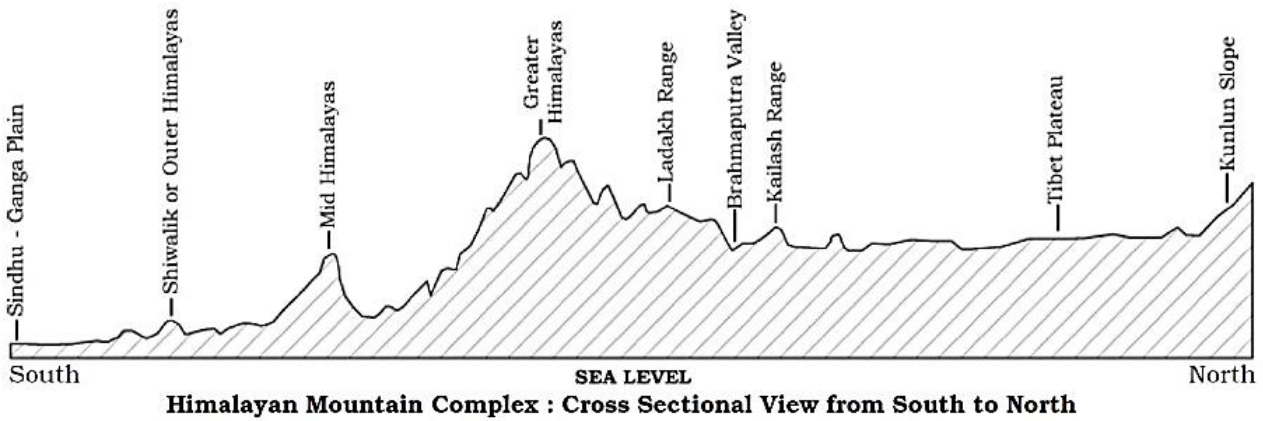
- **Highest and the youngest fold mountain ranges** of the world.
- **One of the highest earthquake-prone regions** of the world.
- **Length:** runs **west-northwest to east-southeast** in an arc **2,500 km long**.
  - **Western anchor:** Nanga Parbat (lies just south of the northernmost bend of the Indus River)
  - **Eastern anchor:** Namcha Barwa (lies immediately west of the great bend of the Yarlung Tsangpo River)
- **Width:** 400 km - 150 km (West- East).
- **Soaring heights, steep-sided jagged peaks, valley and alpine glaciers** often of stupendous size
- **Topography** deeply cut by **erosion**, seemingly **unfathomable river gorges, complex geologic structure, and series of elevational belts** (or zones)

- **Greater part of the Himalayas** lies below the snow line.
- The **mountain-building process** that created the range is still active.
- **Considerable stream erosion and gigantic landslides.**

#### Sub Divisions of the Himalayas



## A. North-South Division of Himalayas



### 1. Trans-Himalayan Ranges:

- **Location:** North of the Great Himalayas
- Also known as **Tibetan Himalaya** because most of it lies in Tibet.
- **Lifted much before the Himalayas** between Jurassic and Cretaceous
- **Geologically not a part of the Himalayas.**
- **Start from Pamir Knot.**
- **Godwin Austen/ K2/ Qogir (8,611 m) - second highest peak in the world / highest peak in the Indian Union** found in Karakoram Range
- **Length- 1,000 km** in the east-west direction.
- **Average elevation - 5000 m** above mean sea level.
- **Average width - 40 km- 225 km** (extremities - central part).
- **Siachen glacier** - highest battlefield.
- **Glacier Baltaro** - largest Mountain glacier from the Karakoram range.
- **Karakoram Pass** - connects the **Aksai Chin**, an erosional plateau of an average height 5000m.
- **Main ranges:**

<b>Karakoram Range</b>	<ul style="list-style-type: none"> <li>● <b>Northernmost range</b> of the Trans-Himalayan Ranges in India</li> <li>● Also known as <b>Krishnagiri range</b></li> <li>● Extends eastwards <b>from Pamir for about 800 km.</b></li> <li>● <b>Average elevation - 5,500 m</b> and above.</li> </ul>
<b>Ladakh Range</b>	<ul style="list-style-type: none"> <li>● <b>North of the Zaskar Range</b></li> <li>● <b>Highest point</b> - Rakaposhi</li> <li>● Lies <b>north of Leh.</b></li> <li>● <b>Merges with the Kailash range</b> in Tibet.</li> <li>● <b>Important passes</b> - Khardung La, and Digar La.</li> </ul>
<b>Zaskar Range</b>	<ul style="list-style-type: none"> <li>● A mountain range in the <b>union territory of Ladakh.</b></li> <li>● <b>Separates Zaskar from Ladakh.</b></li> </ul>

	<ul style="list-style-type: none"> <li>● <b>Average height</b> - about 6,000 m.</li> <li>● Acts as a <b>climatic barrier protecting Ladakh and Zaskar from monsoon</b></li> <li>● <b>Major passes</b>- Marbal Pass, Zojila Pass - extreme northwest.</li> <li>● <b>Major rivers</b>- Hanle River, Khurna River, Zaskar River, Suru River (Indus), and Shingo River.</li> </ul>
<b>Kailas Range</b>	<ul style="list-style-type: none"> <li>● <b>Offshoot of the Ladakh Range.</b></li> <li>● <b>Highest peak</b> - Mount Kailash (6714 m).</li> <li>● <b>River Indus</b> originates from the <b>northern slopes of the Kailas range.</b></li> </ul>

### Ladakh Plateau

- **Cold desert**
- Lies to the **northeast of the Karakoram Range.**
- **Dissected into** many plains and mountains - **Soda Plains, Aksai Chin, Lingzi Tang, Depsang Plains and Chang Chenmo.**
- **Northwestern part** - Deosai mountains are the **end of the Trans-Himalayan region**

### 2. Great Himalayas:

- Also known as **Himadri.**
- **Average height** - 6000 m
- **Average width** - 25 km
- **Extension** - Mt. Namcha Barwa to Nanga Parbat (2400 km)- World's one of the longest-running fold mountain ranges
- **Features:** High relief, deep gorges, vertical slopes, symmetrical convexity, and antecedent drainage.
- **Terminates abruptly** at the **syntaxial bends.**
  - **Nanga Parbat** - north-west
  - **Namcha Barwa** - north-east.
- **Composed of metamorphic and sedimentary rocks.**

- **Core - Batholith** representing the intrusion of Magma (Granitic Magma)
- **Have asymmetrical folds** due to high compression, and they **have fractured rocks** in the **eastern part**.
- **14 of the 28 tallest peaks** in the world (> 8000 m) are situated here.
- **Major passes** - Zojila Pass (connects Srinagar with Leh), Shipki La Pass, Burzil Pass, Nathu La Pass etc.
- **Major glaciers** - Rongbuk glacier (largest in the Himadri), Gangotri, Zemu etc.
- **Separated from lesser Himalayas** by longitudinal **valleys** filled with sediments known as **Doons**.
  - Eg. Patli Dun, Chaukamba Dun, Dehradun etc.

### 3. Middle/ Lesser/ Himachal Himalaya:

- **Most rugged** mountain system.
- Lies **between** the **Shivaliks** in the south and the **Greater Himalayas** in the north.
- **Composed of highly compressed and altered rocks**.
- **Average altitude** - 3,700 - 4,500 metres.
- **Average width** - 50 to 80 Km.
- **Pir Panjal range - longest**
  - **Extends from Jhelum - upper Beas River** for over 300 km.
  - Rises to 5,000 metres and contains **mostly volcanic rocks**.
- **Passes:**
  - **Pir Panjal Pass** (3,480 m), the **Bidil** (4,270 m), **Gulabgarh Pass** (3,812 m) and **Banihal Pass** (2,835 m).
  - **Banihal Pass**- Jammu-Srinagar highway and Jammu-Baramulla railway.
- **Rivers:** Kishanganga, the Jhelum and Chenab.
- **Important Valleys**

<b>Valley of Kashmir</b>	<ul style="list-style-type: none"> <li>● Between the <b>Pir Panjal</b> and the <b>Zaskar Range</b> (average elevation- 1,585 m)</li> <li>● <b>Composed</b> of alluvial, lacustrine [lake deposits], fluvial [river action] and glacial deposits.</li> <li>● <b>Jhelum River meanders</b> through these deposits and cuts a <b>deep gorge</b> in Pir Panjal.</li> </ul>
<b>Kangra Valley</b>	<ul style="list-style-type: none"> <li>● <b>Extends from</b> the foot of the <b>Dhauladhar Range to the south of Beas</b>.</li> </ul>
<b>Kullu Valley</b>	<ul style="list-style-type: none"> <li>● In the <b>upper course of the Ravi</b></li> <li>● A <b>transverse valley</b>.</li> </ul>

- **Most important range** - Dhauladhar and Mahabharat ranges.

- **Includes** famous valley of Kashmir, the Kangra and Kullu Valley in Himachal Pradesh.
  - **Well known for its hill stations.**
- **Cut across by the Jhelum and Chenab rivers.**
- **Dhauladhar ranges** – an extension of Pir Panjal into Himachal Pradesh - cut across by the river Ravi.
- **Mussoorie ranges** - divide the waters of Sutlej and Ganga
- Have **steep, bare southern slopes** [ prevents soil formation] and gentler, **forest-covered northern slopes**.
- **Uttarakhand**- marked by **Mussoorie and Nag Tibba ranges**.

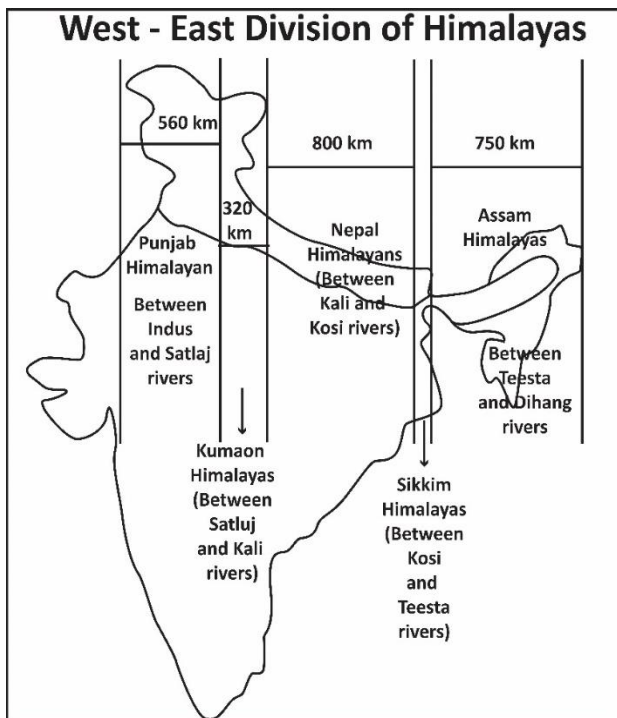
<b>Important ranges of Lesser Himalayas</b>	<b>Region</b>
<b>Pir Panjal Range</b>	Jammu and Kashmir (south of Kashmir Valley)
<b>Dhauladhar Range</b>	Himachal Pradesh
<b>Mussoorie Range and Nag Tibba Range</b>	Uttarakhand
<b>Mahabharat Range</b>	Nepal

### 4. Sub-Himalayas/ Shivaliks:

- Also known as **Outer Himalayas**.
- **Between Great Plains and Lesser Himalayas**.
- **Altitude**- 600-1500 metres.
- **Length**- 2,400 km - **Potwar Plateau to Brahmaputra valley**.
- **Southern slopes** - steep
- **Northern slopes** - gentle.
- **Width** - 50 km - 15 km (Himachal Pradesh -Arunachal Pradesh).
- **Almost unbroken except** for 80-90 km – **Tista and Raidak River valley**.
- Covered with **thick forests from North-East India up to Nepal**.
- **Southern slopes** in **Punjab** and **Himachal Pradesh**- almost **NO forest cover**.
- **Highly dissected by seasonal streams** - **Chos**.
- **Valleys** - part of **synclines** and **hills** - part of **anticlines**
- **Different names:**

<b>Region</b>	<b>Name of Shivaliks</b>
Jammu Region	Jammu Hills
Dafla, Miri, Abor and Mishmi Hills	Arunachal Pradesh
The Dhang Range, Dundwa Range	Uttarakhand
Churia Ghat Hills	Nepal

## B. West-East Division of Himalayas



### 1. Kashmir / Punjab / Himachal Himalayas

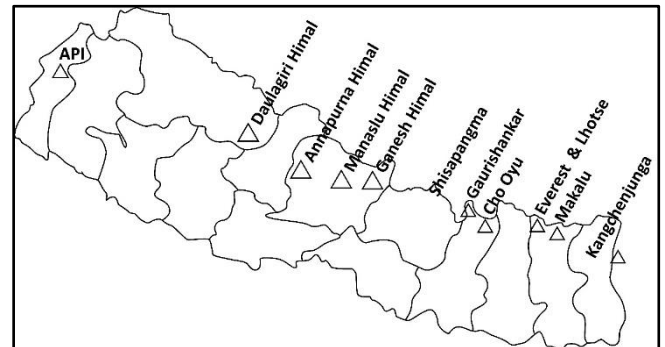
- Located **between Indus and Satluj gorge**
- **Length**- 560 kms
- **Width** - 320 kms
- **Zaskar range** - northern boundary and **Shivaliks** - Southern boundary
- **Characterized by** ridge and valley topography (Kashmir Valley is the syncline basin) formed by the Lacustrine deposits (**Karewas**- helpful in **growing saffron**- from Pulwama to Pampore) of Jhelum.
- **Major ox-bow lakes** - Wular lake, Dal Lake, etc.
- Also known as "**Vail of Kashmir**"
- **Rainfall** upto 100cm in **summers** and **snow** during **winters**
- **Only gateway to Kashmir** - **Banihal pass** - Jawahar tunnel (Second Largest in India)
- **Major passes**- Burzil pass, Zozila pass.

### 2. Kumaon Himalayas

- Located between **Satluj and Kali gorges**
- **Length**- 320 kms
- **Major mountain ranges** - Nag Tibba, Dhaula Dhar, Mussoorie, and the Greater Himalayas.
- **Major peaks** - Nandadevi, Kamet, Badrinath, Kedarnath, etc.
- **Major rivers** – Gangotri, Yamunotri, Pindari, etc.
- **Characteristics:**
  - **Snowfall** in winters
  - **Coniferous** forests above **3200m** and **Deodar** Forest between **1600-3200m**.
  - Has **tectonic valleys**- Kullu, Manali, and Kangra.
  - **Rainfall** of about 200cm in summers
  - **More prone to Seismicity** and landslides.

### 3. Nepal/ Central Himalaya

- **Length**- 800 km
- **Between Kali** in the west and **Tista** in the east.
- **Great Himalayas** attain a **maximum height** in this portion.
- **Major peaks**- Mt. Everest, Kanchenjunga, Makalu, Annapurna, Gosainthan and Dhaulagiri.
- **Lesser Himalaya** is known as **Mahabharat Lekh** here.
- **Major rivers**- Ghaghara, Gandak, Kosi, etc.
- **Major valleys**- Kathmandu and Pokhra lacustrine valleys (previously lakes).



### 4. Assam/ Eastern Himalayas

- **Length**- 750km
- Located between **Tista** in the **west** and **Brahmaputra** (Dihang gorges) in the **east**.
- Occupy **mainly Arunachal Pradesh** and **Bhutan**.
- **Narrow longitudinal valleys**
- **Rainfall > 200cms**.
- Show a **marked dominance of fluvial erosion** due to heavy rainfall.
- **Landslides** and **earthquakes** are very **common** as rocks are fractured
- **Inhabited by tribes**
- **Important peaks** - Namcha Barwa (7756 m), Kula Kangri (7554 m), Chomolhari (7327 m).
- **Major hills** - Also known as hills, Dafla hills, Miri hills, Abor hills, Mishmi hills, Namcha Barwa, Patkai bum, Manipur hills, Blue Mountain, Tripura range, and Braille range.
- **Major passes**- Bomdi La, Yong Yap, Diphu, Pangsau, Tse La, Dihang, Debang, Tunga, and Bom La.

### 5. Arunachal Himalayas

- **Form the eastern frontier** of the **Eastern Himalayas**.
- **Namcha Barwa** - **extreme east** of Arunachal Pradesh.
- **Earlier known as Assam Himalayas**.
- **Himalayan range** enters Arunachal Pradesh **from Bhutan** in the West Kameng district.
- **Characteristics**
  - **High ridges** and **low valleys**
  - **Altitude** - 800 m to 7,000 m above sea level.
  - **Extend** from the east of the Bhutan Himalayas - Diphu pass in the east.
  - **Dissected by the Brahmaputra**, which flows through a deep gorge after crossing Namcha Barwa.
- **Major tribes**- Monpa, Abor, Mishmi, Nyishi and the Nagas- practice Jhumming.

## Purvanchal Himalayas

- Geologically considered **part of the Himalayas**
- Has **structural differences**, thus, **separated from the main Himalayan ranges**.
- Lies **south of the Brahmaputra valley**.
- Belong to **Arakan Yoma orogenesis**.
- Have **loose, fragmented sedimentary rocks** like shale, mudstone, sandstone, quartzite

- **Most fractured parts** of the Himalayas.
- **Naga fault line**- earthquakes and landslides
- **Rainfall** - 150-200 cm
- **Densely forested**
- **Elevation** decreases from **north to south**.
- **Convex to the west**.
- **Low hills** where Jhum cultivation is prevalent.
- **Major Hills:**

<b>Dafila Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> north of Tezpur and north Lakhimpur</li> <li>● Bounded on <b>west</b> by the <b>Aka Hills</b> and on the <b>east</b> by the <b>Abor Range</b>.</li> </ul>
<b>Abor Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> region of Arunachal Pradesh in NE of India, near China border</li> <li>● Bordered by <b>Mishmi Hills</b> and <b>Miri Hills</b>.</li> <li>● <b>Drained by the Dibang River</b>, a tributary of the Brahmaputra.</li> </ul>
<b>Mishmi Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> southward extension of the Great Himalayan ranges.</li> <li>● <b>Northern and eastern parts touch China</b>.</li> </ul>
<b>Patkai Bum Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> India's NE border between Arunachal Pradesh and Myanmar.</li> <li>● "<b>Patkai</b>" - "<b>to cut chicken</b>" in Tai-Ahom language.</li> <li>● <b>Originated by the same tectonic processes</b> that resulted in the <b>formation of the Himalayas</b> in the Mesozoic.</li> <li>● Have <b>conical peaks, steep slopes and deep valleys</b></li> <li>● <b>Not as rough</b> as the <b>Himalayas</b>.</li> <li>● Whole region is <b>surrounded by forests</b> composed of sandstones.</li> </ul>
<b>Naga Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> extending into Myanmar forms a divide between India and Myanmar.</li> <li>● <b>Highest peak</b> - Saramati.</li> <li>● Receive a <b>heavy monsoon rainfall</b> and densely forested.</li> </ul>
<b>Manipur Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> north of Nagaland, Mizoram in the south, upper Myanmar in east and Assam in the west bound Manipur Hills.</li> <li>● <b>Border</b> between <b>Manipur and Myanmar</b>.</li> <li>● <b>Loktak Lake</b> - only floating national park of the world.</li> <li>● <b>Keibul-Lamjao national park</b> situated here.</li> </ul>
<b>Mizo Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location-</b> south-eastern Mizoram state.</li> <li>● <b>Formerly</b> known as <b>Lushai Hills</b>.</li> <li>● <b>Highest part-</b> Blue Mountain.</li> <li>● Part of the <b>North Arakan Yoma system</b>.</li> <li>● Also known as '<b>Molasses basin</b>' - made up of <b>soft unconsolidated deposits</b>.</li> <li>● <b>Shifting agriculture</b> and some <b>terrace cultivation</b> practised.</li> </ul>
<b>Tripura Hills</b>	<ul style="list-style-type: none"> <li>● series of <b>parallel north-south folds, decreasing in elevation to south</b>.</li> <li>● Merge into <b>greater Ganges-Brahmaputra lowlands</b> (aka Eastern Plains).</li> </ul>
<b>Mikir Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location-</b> south of the Kaziranga National Park, Assam.</li> <li>● Part of the <b>Karbi Anglong Plateau</b>.</li> <li>● <b>Mikir Hills</b> - oldest landform in Assam.</li> <li>● <b>Radial drainage pattern</b></li> <li>● <b>Major rivers-</b> Dhansiri and Jamuna.</li> <li>● <b>Highest peak</b> – Dambuchko.</li> </ul>
<b>Garo Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> Meghalaya state.</li> <li>● <b>Highest peak:</b> Nokrek Peak.</li> </ul>
<b>Khasi Hills</b>	<ul style="list-style-type: none"> <li>● Part of <b>Garo-Khasi Range</b> in Meghalaya.</li> <li>● <b>Cherrapunji</b> - East Khasi Hills.</li> <li>● <b>Highest peak:</b> Lum Shyllong.</li> </ul>
<b>Jaintia Hills</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> further to the east of the Khasi Hills.</li> </ul>
<b>Barail Hill</b>	<ul style="list-style-type: none"> <li>● <b>Location:</b> North Cachar Hill District.</li> <li>● <b>Southwestern extension</b> of the <b>Patkai Range</b>.</li> <li>● Runs in a <b>south-westerly direction</b> from <b>southern Nagaland</b> and parts of <b>northern Manipur</b> up to the Jaintia Hills of Meghalaya.</li> </ul>

## Himalayan Passes

### 1. Passes of Jammu and Kashmir and Ladakh

<b>Banihal Pass (Jawahar Tunnel)</b>	<ul style="list-style-type: none"> <li>A famous pass in Jammu and Kashmir.</li> <li>Situated in Pir- Panjal Range.</li> <li>Connects <b>Banihal with Qazigund</b>.</li> </ul>
<b>Zoji La</b>	<ul style="list-style-type: none"> <li>Connects <b>Srinagar with Kargil and Leh</b>.</li> <li><b>Border Road Organization</b>- clears and <b>maintains</b> the road, especially during winter.</li> </ul>
<b>Burzil Pass</b>	<ul style="list-style-type: none"> <li><b>Srinagar- Kishan Ganga Valley</b></li> <li>Joins the Valley of Kashmir with the <b>Deosai Plains of Ladakh</b>.</li> </ul>
<b>Pir-Panjal Pass</b>	<ul style="list-style-type: none"> <li>A traditional pass from Jammu to Srinagar.</li> <li><b>Closed after the partition.</b></li> <li><b>Shortest roadway access to Kashmir valley</b> from Jammu.</li> </ul>
<b>Qara Tagh Pass</b>	<ul style="list-style-type: none"> <li>Located in the <b>Karakoram Mountains</b>.</li> <li>A <b>subsidiary of the ancient silk route</b>.</li> </ul>
<b>Khardung La</b>	<ul style="list-style-type: none"> <li><b>Highest motorable pass</b> in the country (5602 m).</li> <li>Connects <b>Leh and Siachen</b> glaciers.</li> <li><b>Closed during the winter</b>.</li> </ul>
<b>Thang La</b>	<ul style="list-style-type: none"> <li>Located in <b>Ladakh</b>.</li> <li><b>Second highest motorable mountain pass</b> in India.</li> </ul>
<b>Aghil Pass</b>	<ul style="list-style-type: none"> <li><b>North of Mount Godwin-Austen</b> in Karakoram.</li> <li>Connects <b>Ladakh with Xinjiang province</b> of China.</li> </ul>
<b>Chang-La</b>	<ul style="list-style-type: none"> <li>Connects <b>Ladakh with Tibet</b>.</li> </ul>
<b>Lanak La</b>	<ul style="list-style-type: none"> <li><b>Aksai Chin</b> in Ladakh region.</li> <li>Connects <b>Ladakh and Lhasa</b>.</li> <li><b>Chinese authorities</b> have built a <b>road to join Xinjiang with Tibet</b>.</li> </ul>
<b>Khunjerab Pass</b>	<ul style="list-style-type: none"> <li><b>Kashmir and China</b></li> <li>On the <b>Indo-China border</b></li> </ul>
<b>Mintaka Pass</b>	<ul style="list-style-type: none"> <li><b>Kashmir and China</b></li> <li><b>Tri Junction of India-China and Afghanistan border</b></li> </ul>

### 2. Passes of Himachal Pradesh

<b>Shipki La Pass</b>	<ul style="list-style-type: none"> <li>Passes through <b>Sutlej Gorge</b>.</li> <li>Connects <b>Himachal Pradesh with Tibet</b>.</li> <li><b>India's 3rd border post for trade with China</b> (Lipu Lakh and Nathula Pass)</li> </ul>
<b>Bara-Lacha Pass</b>	<ul style="list-style-type: none"> <li><b>Himachal Pradesh- Leh-Ladakh</b></li> <li>Situated on the <b>National Highway</b> in Jammu and Kashmir.</li> <li>Connects <b>Manali and Leh</b>.</li> </ul>
<b>Debsa Pass</b>	<ul style="list-style-type: none"> <li>Joins <b>Spiti and Parvati Valley</b>.</li> <li><b>Between the Kullu and Spiti of</b></li> </ul>

	<p>Himachal Pradesh.</p> <ul style="list-style-type: none"> <li><b>Bypass route of Pin-Parvati Pass.</b></li> </ul>
<b>Rohtang Pass</b>	<ul style="list-style-type: none"> <li><b>High road transportation</b>- high jams</li> <li>Connects <b>Kullu, Spiti, and Lahaul</b>.</li> </ul>

### 3. Passes of Uttarakhand

<b>Lipu Lakh</b>	<ul style="list-style-type: none"> <li>Connects <b>Uttarakhand with Tibet</b>.</li> <li><b>Important border post</b> for trade with China.</li> <li>The <b>pilgrims for Kailash-Manasarovar travel</b> through this pass.</li> </ul>
<b>Mana Pass</b>	<ul style="list-style-type: none"> <li>Located in the <b>Greater Himalayas</b>.</li> <li>Connects <b>Tibet with Uttarakhand</b>.</li> <li><b>Remains under snow for six months</b> during winter.</li> </ul>
<b>Mangsha Dhura Pass</b>	<ul style="list-style-type: none"> <li>Connects <b>Uttarakhand-Tibet</b>.</li> <li><b>Known for landslides</b>.</li> <li><b>Pilgrims for Manasarovar</b> cross this route.</li> </ul>
<b>Muling La</b>	<ul style="list-style-type: none"> <li><b>Seasonal pass</b></li> <li>Connects <b>Uttarakhand with Tibet</b></li> <li>Snow covered during the winter season</li> </ul>
<b>Niti Pass</b>	<ul style="list-style-type: none"> <li><b>Joins Uttarakhand with Tibet</b>.</li> <li>Remains <b>snow-covered during the winter season</b>.</li> </ul>
<b>Trail's Pass</b>	<ul style="list-style-type: none"> <li>Situated at the <b>end of the Pindari glacier</b>.</li> <li>Connects the <b>Pindari valley to Milam valley</b>.</li> <li><b>Steep and rugged</b>.</li> </ul>

### 4. Passes of Sikkim

<b>Nathu La Pass</b>	<ul style="list-style-type: none"> <li>Located on the <b>India- China border</b>.</li> <li>Forms a part of an <b>offshoot of the ancient silk route</b>.</li> <li>One of the <b>trading borders posts between India and China</b>.</li> </ul>
<b>Jelep La Pass</b>	<ul style="list-style-type: none"> <li>Passes through the <b>Chumbi valley</b>.</li> <li>Connects <b>Sikkim with Lhasa</b>, the capital of Tibet.</li> </ul>

### 5. Passes of Arunachal Pradesh

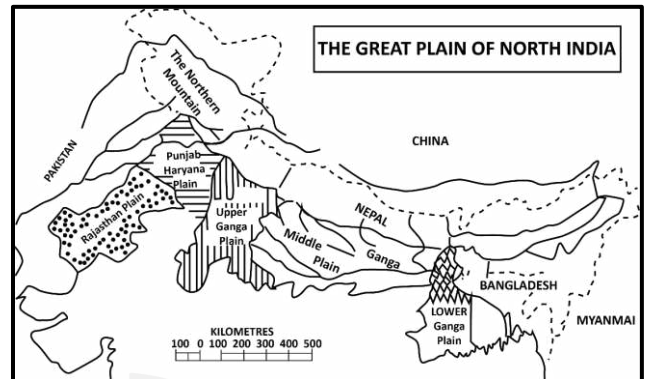
<b>Bomdi-La</b>	<ul style="list-style-type: none"> <li>Connects <b>Arunachal Pradesh- Lhasa</b>, the capital city of Tibet.</li> <li>Located in the <b>east of Bhutan</b>.</li> </ul>
<b>Dihang pass</b>	<ul style="list-style-type: none"> <li><b>Located in the Northeastern states of Arunachal Pradesh</b>.</li> <li>Connects <b>Arunachal Pradesh with Myanmar (Mandalay)</b></li> </ul>
<b>Diphu pass</b>	<ul style="list-style-type: none"> <li>An alternate route to <b>Myanmar</b>.</li> <li><b>Remains open throughout the year</b> for transportation and trade.</li> </ul>
<b>Lekhapani</b>	<ul style="list-style-type: none"> <li><b>Remains open throughout a year</b> for transport and trade.</li> <li>Connects <b>Arunachal Pradesh with Myanmar</b>.</li> </ul>
<b>Pangsang Pass</b>	Connects <b>Arunachal Pradesh and Myanmar</b> .

<b>Yonggyap Pass</b>	Connects <b>Arunachal Pradesh with Tibet</b>
<b>Kumjawng Pass</b>	Connects <b>Arunachal Pradesh with Myanmar</b>
<b>Hpungan Pass</b>	Connects <b>Arunachal Pradesh with Myanmar</b>
<b>Chankan Pass</b>	Connects <b>Arunachal Pradesh with Myanmar</b>
<b>Tuju Pass:</b>	
<ul style="list-style-type: none"> <li>● <b>Manipur.</b></li> <li>● <b>Connects Imphal to Myanmar.</b></li> </ul>	

## 2. Great Plains of India

- Lie to the **south of Shiwalik** separated by the Himalayan Front Fault (HFF).
- A **transitional zone between the Himalayas and Peninsular India.**
- **Aggradation plain** formed by **alluvial deposits of the Indus, Ganga, Brahmaputra** and their tributaries.
- Stretches for about **2400 km from west to east.**

- **Width-** 90-100 in Assam, 160 km near Rajmahal (Jharkhand), 200 km in Bihar, 280 km near Allahabad and 500 km in Punjab. (Increases from east to west.)
- **Consists largely of alluvial deposits** brought down by rivers of the Himalayan and the Peninsular region.
  - **Maximum depth > 8000 metres** - Ambala, Yamunanagar and Jagadhri (Haryana).
- Merges into the **Thar Desert** in the **southwest.**
- A **low watershed of the Delhi ridge** (278 m) + **Yamuna River separates the Satluj plains** (a part of the Indus plain) from the **Ganga plains.**



### Divisions of the Great Plains

#### A. North-South Division of Great Plains of India

<b>1. Bhabar</b>	<ul style="list-style-type: none"> <li>● Along the <b>foot of Siwaliks</b> with remarkable continuity <b>from Indus to Tista.</b></li> <li>● <b>8-16 km wide belt</b> consisting of <b>gravel and unsorted sediments</b></li> <li>● <b>Deposited by Himalayan rivers</b> in the foreland zone <b>due to sudden slope break.</b></li> <li>● <b>Himalayan rivers deposit</b> their loads along the <b>foothills</b> in the form of <b>alluvial fans.</b> <ul style="list-style-type: none"> <li>○ <b>Coarser sediments</b> merged to build up piedmont plain/ Bhabar.</li> </ul> </li> <li>● Most <b>unique feature - porosity.</b> <ul style="list-style-type: none"> <li>○ Porous due to the <b>deposition of a huge number of pebbles and rock debris</b> across the alluvial fans.</li> <li>○ <b>Not suitable for agriculture</b></li> </ul> </li> <li>● <b>Comparatively narrow</b> in the east</li> </ul>
<b>2. Tarai</b>	<ul style="list-style-type: none"> <li>● <b>10-20 km wide marshy region</b> in the <b>south of Bhabar</b> and runs parallel to it.</li> <li>● <b>Wider in eastern parts</b> of the Great Plains - Brahmaputra valley due to heavy rainfall.</li> <li>● <b>Re-emergence of underground streams</b> of the Bhabar belt</li> <li>● Most of Terai land (especially in Punjab, Uttar Pradesh and Uttarakhand) has been <b>reclaimed and turned into agricultural land</b> over some time.</li> <li>● Receives <b>high rainfall</b> and has <b>excessive humidity.</b></li> <li>● Has <b>underground streams</b> → ground <b>marshy.</b></li> <li>● <b>Suitable for wheat, maize, rice, rice, sugarcane, etc.</b></li> </ul>
<b>3. Khadar</b>	<ul style="list-style-type: none"> <li>● <b>Younger alluvium</b> of flood plains of numerous rivers</li> <li>● Also known as <b>Bet/betlands</b> (in Punjab).</li> <li>● <b>Contains new alluvial deposits</b> along the course of the river.</li> <li>● <b>Alluvium</b> – light-coloured and poor calcareous matter consisting of sand, silt, mud and clay deposits.</li> <li>● Suitable for <b>extensive cultivation.</b></li> <li>● <b>Rivers in the Punjab-Haryana</b> plains have <b>broad floodplains</b> of Khadar <b>flanked by bluffs</b> known as Dhayas.</li> </ul>
<b>4. Bangar or Bhangar Plains</b>	<ul style="list-style-type: none"> <li>● <b>Uplands</b> (alluvial terrace) formed by <b>deposition of older alluvium.</b></li> <li>● <b>Lies above the flood limit</b> of the plains.</li> <li>● <b>Main constituent: clay.</b></li> <li>● <b>Rich in humus - high yield.</b></li> </ul>

- **Contains** Calcium Carbonate nodules known as **‘Kankars’** - impure and found in doabs
- **Regional variations:**
  - **Barind plains**- the deltaic region of Bengal
  - **Bhur formations** - middle Ganga and Yamuna doab.
  - **‘Reh’, ‘Kollar’ or ‘Bhur’** - Drier areas- exhibit small tracts of saline and alkaline efflorescence.

## B. Regional Classification of Great Plains

### 1. Sindh Plain

- Lies in **Pakistan**
- Mainly **formed** of the **Bhangar Plains**.
- **Dhors: Long narrow depressions** - remnants of the course of **former rivers**.
- **Dhand: Alkaline lakes** on some Dhors.

### 2. Rajasthan Plains

- **Occupied by Thar Desert**.
- An **undulating plain** (average elevation - 325 m above mean sea level).
- **Desert region known as Marusthali** forms a greater **part of the Marwar plain**.
- Has a few outcrops of **gneisses, schists and granites**
  - Proof that it is **geologically a part of the Peninsular Plateau**.
- **Eastern part is rocky**, while the **western part has shifting sand dunes**.
- **Eastern part of Thar Desert till Aravalli Range - Rajasthan Bangar**- semi-arid plain.
- **Drained by several short seasonal streams** from the Aravali and **supports agriculture** in some patches of fertile tracts.
- **Luni** – a significant **seasonal stream** which **flows into Rann of Kutch**.
- **Tract north of Luni** - **thali** or sandy plain.

### 3. Punjab Plain

- Form the **western part of northern plain**.
- Majorly in **Pakistan**.
- **Divided into many Doabs**. Formed by **5 important rivers** of the Indus system.
- **Literally means “(The Land of Five Waters”** referring to: **Jhelum, Chenab, Ravi, Sutlej, and Beas**.

<b>Sindh Sagar Doab</b>	between the <b>Indus</b> and <b>Jhelum</b> rivers.
<b>Jech Doabs/ Chaj Doab</b>	between the <b>Jhelum</b> and <b>Chenab</b> rivers.
<b>Rechna Doab</b>	between the <b>Chenab</b> and <b>Ravi</b> rivers.

<b>Bari Doabs</b>	between the <b>Ravi</b> and <b>Beas</b> rivers.
<b>Bist Doab</b>	between the <b>Beas</b> and <b>Sutlej</b> rivers.

- **Total area** - 1.75 lakh sq km.
- **Average elevation** - 250 m above mean sea level.
- **Eastern boundary** - Delhi-Aravali ridge.
- **Northern part** [Shivalik hills] is **intensively eroded** by numerous **streams** called **Chaos**.
  - Resulted in **enormous gullying**.
- **South of Satluj river** - **Malwa plain** of Punjab.
- **Area between the Ghaggar and Yamuna rivers** - **‘Haryana Tract’**.
  - **Water divide** b/w **Yamuna and Satluj** rivers.

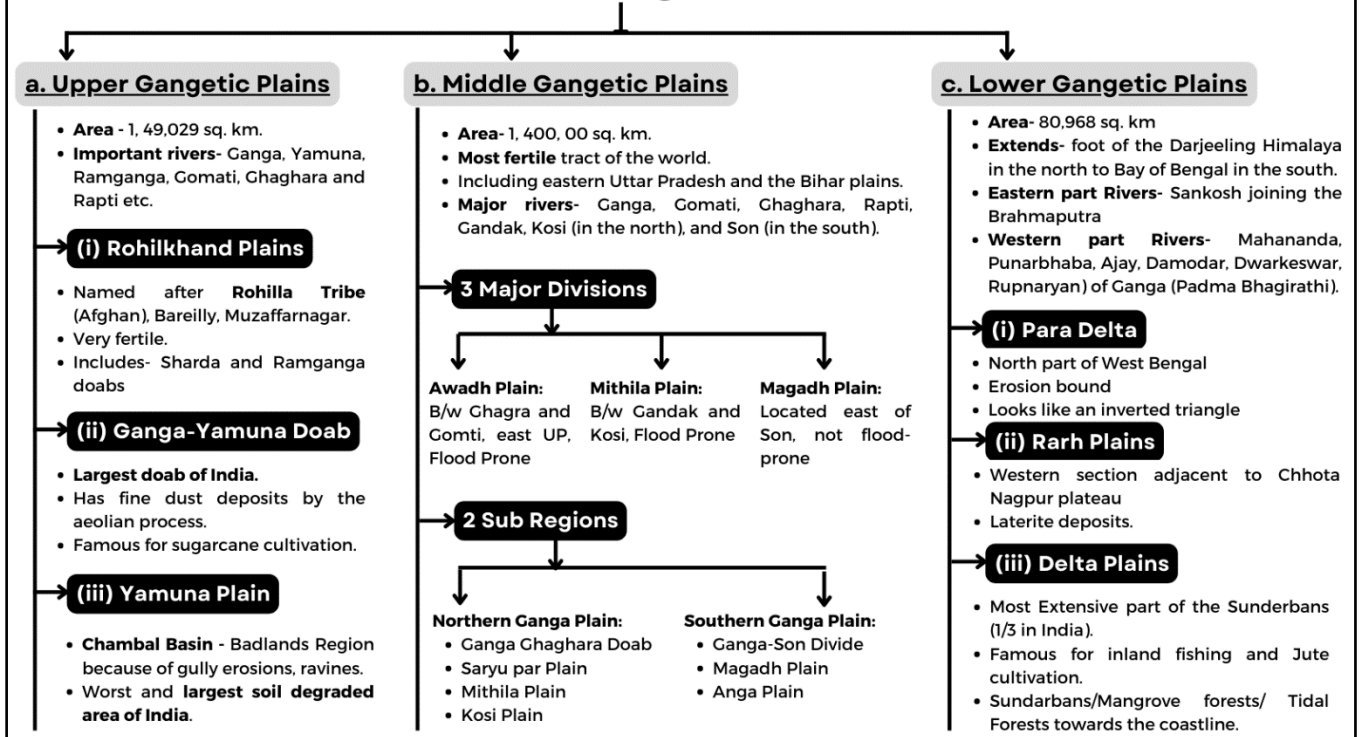
#### **Other Doabs of India:**

- **Malwa Doab:** Covers **Madhya Pradesh** and parts of north-eastern **Rajasthan**.
- **Raichur Doab:** A triangular region of **Andhra Pradesh** and **Karnataka** lying between **Krishna** and its tributary **Tungabhadra River**.

### 4. Ganga Plain

- **Extend from Yamuna River** in west to **western borders of Bangladesh** (~ 1,400 km).
- **Average width** - 300 km.
- **Maximum height** - **Saharanpur** (276m) - decreases towards **Sagar Islands** (3 m).
- **Largest unit of Great Plain** of India - from **Delhi to Kolkata** (about 3.75 lakh sq km).
- **Major Himalayan river**- **Ganga**.
- **Peninsular rivers** - **Chambal, Betwa, Ken, Son**, etc. (join **Ganga river system** - contribute to formation of this plain).
- **Slope** - east and south east.
- **Rivers flow sluggishly in lower sections of Ganges** resulting in **levees, bluffs, oxbow lakes, marshes, ravines**, etc.
- **Rivers keep shifting their courses** making this area **prone to frequent floods**.
  - **Kosi river**- ‘Sorrow of Bihar’.

## Divisions of Ganga Plains



### 5. Brahmaputra/Assam Plains

- Area- 56,274 sq. km
- Easternmost part of Great Plains
- Aggradation plain built up by the Brahmaputra and its tributaries.
- Extend from Sadiya (in the east) to Dhubri (near the Bangladesh border in the west).
- Majuli (area 929 km<sup>2</sup>)- largest river island in the world.
- Large marshy tracts → formation of terai or semi-terai conditions.
- 2 sub-regions:
  - Upper Assam Valley
  - Lower Assam Valley

## 3. Indian Desert

### A. Sandy Thar Desert

- India- ~ 85% of Thar Desert
- Rest- in Pakistan.
- 4.56% of the total geographical area of India.
- Geographical characteristics:
  - Location: partly in Rajasthan and partly in Punjab and Sindh.
  - Area: > 2,00,000 sq km.
  - Rainfall < 150 mm per year- arid climate with low vegetation cover.
  - Forms a natural boundary along the border between India and Pakistan.
  - Came into existence in the Pleistocene age.
  - Believed to be submerged in sea during the Mesozoic era.
    - Evidence - wood fossils park at Aakal and marine deposits around Brahmsar, near Jaisalmer.

- Underlying rock structure of desert – the extension of the Peninsular plateau.
- Major desert land features - mushroom rocks, shifting dunes and oasis (mostly in its southern part).
- Also known as Marustali (the dead land) and Bagar.
- Comprises of aeolian wind deposits
- Dry climate and alluvial deposits
- 2 parts:
  - Northern part - sloping towards Sindh.
  - Southern part - towards Rann of Kutch.
- Most rivers in this region are ephemeral.
- Sand dunes - elevation 150 m
- Metamorphic Rocks
- Short seasonal streams originating from Aravallis
- Oasis in its southern part
- High and low dunes separated by sandy plains and low barren hills, or bhakars, rise abruptly from the surrounding plains.
  - Dunes - continual motion and varying shapes and sizes.
  - Barchan/Barkhan- crescent-shaped sand dune produced by the action of wind
- Climate:
  - Subtropical desert climate - persistent high pressure and subsidence.
  - Southwest Monsoon rainfall in the summer seasons.
  - Low annual rainfall (4-20 inches) as compared to the other parts of India.
  - Coldest month - January
  - Hottest month - May and June.

- **Average temperature -**
  - **Summers-** 75-70 degrees Celsius
  - **Winters-** 39-50 degrees Celsius
- **Biodiversity and Vegetation:**
  - **Major features:**
    - **Drought-resistant scrub trees** like khejri and propolis
    - **Animals** like blackbucks, gazelle, and partridges
    - **Migratory birds** such as ducks, geese, and grouse.
  - **Herbaceous plants** like cactus, neem, khejri, acacia nilotica-can accommodate varying temperatures and difficult climatic conditions.
  - **Wild animals** like leopard, Asiatic wild cat (*Felis silvestris ornata*), chousingha (*Tetracerus quadricornis*), chinkara (*Gazella bennettii*), Bengal desert fox (*Vulpes bengalensis*), Blackbuck (antelope) and several species of reptiles.

- **Harsh natural environment and extreme temperature variations** - severely inhibit vegetation growth.

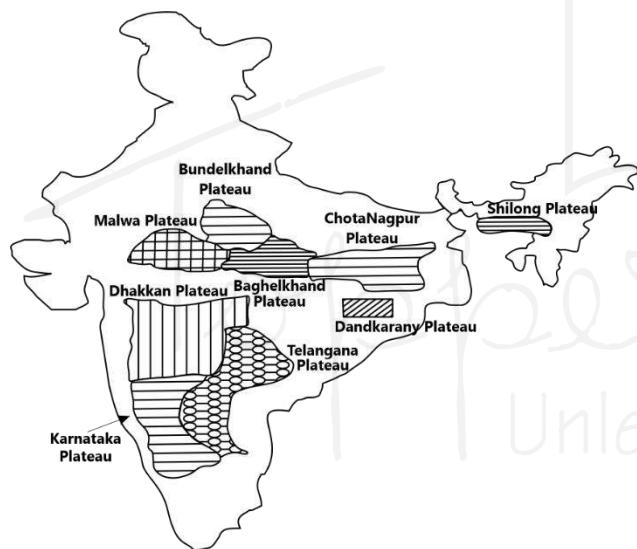
#### B. Cold Desert

- Located in **Kashmir and Himachal Pradesh**.
- Somewhere **Between Tibet and India**
- **Harsh climatic conditions** - low rainfall and high elevation (3000 – 5000m above Sea Level).
- **Blizzards, snowstorms and avalanches are common**.
- **Soil is not very fertile**
- **Very short growing seasons**.
- **Minimal water resources** - glacier-fed streams.

#### C. White Salt Desert of Kutch

- Also known as **White Rann** or Great Rann of Kutch.
- **Area-** 2898 square miles
- **Covers-** Gujarat and Sind region in Pakistan.
- **Overall covering of white salt** furnishing it a **snow-covered aura**.
- **Extreme temperatures:**
  - **Summers:** 50 degree celsius
  - **Winter-** < 0 degree celsius.

## 4. Peninsular Plateau



- Roughly **triangular** in shape.
- **Extension:**
  - **Apex** - at Kanyakumari.
  - **NW-** Delhi ridge
  - **East-** Rajmahal hills
  - **West-** Gir range
  - **South-** Cardamom hills
- An **extension** also seen in **northeast** i.e. **Shillong** and **Karbi-Anglong plateau**.
- **Area** - 16 lakh sq km (India as a whole is 32 lakh sq km).
- **Height-** 600-900 m above sea level (varies from region to region).
- Most rivers flow **west to east**, indicating general slope.
- **Ranges:**

- **Exception:** Narmada-Tapti flows - east to west.
- One of the **oldest** and **most stable landforms** of earth.
- **Highly stable block** composed mostly of **Archaean gneisses** and **schists**.
- Made up of different **patland plateaus** like Hazaribagh plateau, the Palamu plateau, the Ranchi plateau, the Malwa plateau, the Coimbatore plateau and Karnataka plateau, etc.
- **Important physiographic features:** tors, block mountains, rift valleys, spurs, bare rocky structures, series of hummocky hills and wall-like quartzite dykes offering natural sites for water storage.
- **3 groups on the basis of relief features**

#### A. Central Highlands

- **Northern part** of the peninsular plateau.
- **Also known as** Madhya Bharat Pathar/ Madhya Bharat Plateau/ Central Highlands.
- **East of the Marwar** or Mewar Upland.
- **Location:**
  - **North of Narmada River**.
  - **West - Aravallis**.
  - **South- Satpura** ranges (formed by a series of scarp plateaus)
- **General Elevation:** 700-1,000 m
- **Slopes** - north and northeastern directions.
- **Rivers:**
  - **Chambal river** - rift valley.
  - **Kali Sindh-** flows from Rana Prataph Sagar.
    - **Tributaries-** Banas, Parwan and Parbati.

<b>Aravalli</b>	<ul style="list-style-type: none"> <li>• One of the <b>oldest mountain ranges</b>.</li> <li>• <b>Sedimentary, metamorphosed</b> rocks.</li> <li>• <b>Elevation</b>- 400-600 m (few hills well above 1,000 m).</li> <li>• Presently, seen as a <b>discontinuous ridge</b> from <b>Delhi to Ajmer</b></li> <li>• <b>Highest peak</b>- Gurushikhar, Mt Abu (1722m).</li> <li>• <b>Regional names</b>- 'Jarga' near Udaipur and 'Delhi Ridge' near Delhi.</li> </ul>
<b>Vindhya range</b>	<ul style="list-style-type: none"> <li>• <b>Source of many north-flowing rivers</b> that meet Yamuna.</li> <li>• Represents the <b>water divide of central India</b>.</li> <li>• <b>Major river: Mahi</b> <ul style="list-style-type: none"> <li>○ Origin from <b>north side of Vindhya</b></li> <li>○ A <b>west-flowing</b> river.</li> </ul> </li> <li>• As an <b>escarpment running parallel to the Narmada-Son valley</b></li> <li>• <b>Location:</b> Gujarat, Rajasthan border to MP., UP, Chhattisgarh and Jharkhand</li> <li>• <b>3 major divisions:</b> Bharner hills, Kaimur hills and Parasnath hills</li> <li>• <b>General elevation:</b> 300- 650 m.</li> <li>• Most made up of <b>sedimentary rocks</b> of ancient ages.</li> <li>• <b>Watershed</b> Between <b>Gangetic and peninsular river</b> systems.</li> </ul>
<b>Satpura range</b>	<ul style="list-style-type: none"> <li>• <b>Run</b> Between <b>Narmada and Tapi</b>, parallel to Maharashtra-MP border.</li> <li>• Found from <b>Gujarat</b> (Rajpipla hills) to <b>Chhattisgarh</b>.</li> <li>• <b>Major part in MP</b></li> <li>• <b>3 divisions:</b> <b>Rajpipla</b> hills, <b>Mahadev</b> hills and <b>Maikal</b> hills</li> <li>• A <b>block mountain</b> having <b>India's biggest rift valley</b>.</li> <li>• <b>Major rivers:</b> <ul style="list-style-type: none"> <li>○ North - <b>Narmada</b></li> <li>○ South - <b>Tapti</b></li> </ul> </li> <li>• <b>Major folds:</b> Maikal Hills, Mahadeo Hills near Pachmarhi, Kalibhit, Asirgarh, Bijargarh, Barwani and Arwani (extends to Rajpipla Hills in Eastern Gujarat).</li> <li>• <b>Highest peak</b>- Dhupgarh (1,350 m) near Pachmarhi (<b>Mahadev Hills</b>).</li> <li>• <b>Amarkantak</b> (1,127 m) - <b>highest peak -Maikal Hills</b>- origin of Narmada and Son.</li> </ul>
<b>Kaimur Range</b>	Eastern portion of the Vindhya Range in MP, UP & Bihar; runs parallel to river Son
<b>Mahadeo Range</b>	Forms the central part of the Satpura Range, located in MP, Highest peak: Dhoopgarh
<b>Maikal Range</b>	Eastern part of the Satpuras range (MP)
<b>Ajanta Range</b>	Maharashtra, south of river Tapi, sheltering caves of world-famous paintings of Gupta period
<b>Rajmahal Hills</b>	<ul style="list-style-type: none"> <li>• Located in Jharkhand made up of lava basaltic rocks</li> <li>• Point of Ganges bifurcation</li> </ul>

• **Major Plateaus**

<b>Marwar upland or Mewar Plateau</b>	<ul style="list-style-type: none"> <li>• to the <b>east of Aravallis</b> in Rajasthan</li> <li>• A <b>rolling plain carved by the Banas River</b> and its tributaries Berach river Khari rivers.</li> <li>• <b>Average elevation</b> - 250-500 m above sea level.</li> <li>• Composed of <b>sandstone, shales and limestones</b> of Vindhyan period.</li> </ul>
<b>Madhya Bharat Pathar</b>	<ul style="list-style-type: none"> <li>• <b>East of Marwar upland</b>.</li> <li>• Also known as <b>Central Highland</b>.</li> <li>• <b>Major river- Chambal</b>. <ul style="list-style-type: none"> <li>○ Kali-Sindh, Banas, and Parbati.</li> </ul> </li> </ul>
<b>Malwa plateau</b>	<ul style="list-style-type: none"> <li>• Lies in <b>Madhya Pradesh</b> Between Aravali and Vindhya.</li> <li>• Composed of an <b>extensive lava flow- black soils</b>.</li> <li>• <b>Narmada river - southern boundary</b>.</li> <li>• Forms a triangle based on the Vindhyan Hills, <b>bounded by</b> <ul style="list-style-type: none"> <li>○ <b>Aravali Range</b> - west</li> <li>○ <b>Madhya Bharat Pathar</b>- north</li> <li>○ <b>Bundelkhand</b>- east.</li> </ul> </li> <li>• <b>2 systems of drainage;</b> <ul style="list-style-type: none"> <li>○ <b>Arabian sea</b> (The Narmada, the Tapi and the Mahi)</li> <li>○ <b>Bay of Bengal</b> (Chambal and Betwa, joining the Yamuna).</li> </ul> </li> </ul>
<b>Bundelkhand plateau</b>	<ul style="list-style-type: none"> <li>• Lies along the borders of <b>UP</b> and <b>MP</b>.</li> <li>• <b>Intensive erosion</b>, semi-arid climate - <b>unfit for cultivation</b>.</li> <li>• Divided by <b>deep valley uplands</b> of the '<b>Bundelkhand Gneiss</b>', consisting of granite and gneiss.</li> <li>• <b>Boundaries:</b> <ul style="list-style-type: none"> <li>○ <b>Yamuna river</b> - north</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ <b>Madhya Bharat Pathar</b> - west</li> <li>○ <b>Vindhyan Scarp lands</b>- east</li> <li>○ <b>South-east and Malwa Plateau</b> - south.</li> <li>● <b>Average elevation</b>- 300-600 m above sea level</li> <li>● <b>Slopes</b> down from Vindhyan Scarp toward Yamuna River.</li> <li>● Characterized by <b>senile</b> (caused by old age) <b>topography</b>.</li> <li>● <b>Rivers</b>: Betwa, Dhasan and Ken.</li> </ul>
<b>Baghelkhand plateau</b>	<ul style="list-style-type: none"> <li>● Lies <b>north to east of the Maikal range</b>.</li> <li>● <b>3 States</b> - UP, MP, and Chhattisgarh</li> <li>● Made of <b>limestone</b> and <b>sandstone</b> in the <b>west</b> and <b>granite</b> in the <b>east</b>.</li> <li>● <b>Separates Ganga</b> basin from <b>Mahanadi</b> basin.</li> <li>● <b>Bounded</b> by the <b>Son</b> river in the <b>north</b>. <ul style="list-style-type: none"> <li>○ <b>Rihand Dam</b> and <b>Govind Ballabh Pant Sagar</b> reservoir (largest manmade lake in India).</li> </ul> </li> <li>● Contains <b>Dharwar</b> and <b>Gondwana</b> rocks.</li> <li>● <b>Major coal fields</b>- Sohagpur, Shahdol coal field</li> <li>● <b>Central segment</b> acts as a <b>water divide</b> Between <b>Son</b> drainage system (north) and <b>Mahanadi</b> River system (south).</li> <li>● <b>General elevation</b> : 150 m to 1,200 m</li> </ul>
<b>Chota Nagpur plateau</b>	<ul style="list-style-type: none"> <li>● <b>North-east part</b> of the Peninsular plateau.</li> <li>● <b>Composed</b> mainly of <b>Gondwana</b> rocks.</li> <li>● <b>Average elevation</b>: 600 to 700 m above sea level.</li> <li>● Consists of a series of <b>step-like sub-plateaus</b> known as <b>patlands</b>.</li> <li>● <b>Mineral rich</b> plateau</li> <li>● Also known as Ruhr <b>of India</b>.</li> <li>● <b>Major rivers</b>: <ul style="list-style-type: none"> <li>○ <b>Son</b> - north-west boundary.</li> <li>○ <b>Damodar, Subarnarekha, North Koel, South Koel</b> and <b>Barkar</b>. <ul style="list-style-type: none"> <li>■ Damodar- <b>flows through the rift valley</b> from west to east.</li> </ul> </li> </ul> </li> <li>● <b>Gondwana coal fields</b> (most coal supply in India) found here.</li> <li>● <b>Rajmahal Hills</b> - northeastern border <ul style="list-style-type: none"> <li>○ Covered by <b>lava flows (Basaltic)</b>.</li> <li>○ Spread in a <b>north-south direction</b></li> <li>○ <b>Average elevation</b> - 400 m .</li> </ul> </li> </ul>
<b>Kathiawar plateau</b>	<ul style="list-style-type: none"> <li>● In Kathiawar region of <b>Gujarat</b></li> <li>● Has many <b>pipe-like volcanic openings</b> giving rise to many <b>hill ranges</b> like <b>Girnar range, Junagarh range, Pavagadh range</b> etc.</li> <li>● <b>Lake Nalsarovar</b> (bird sanctuary) - Northeast boundary.</li> <li>● <b>Little Rann</b>- north.</li> <li>● <b>Volcanic hills</b>- <b>Mandav hills</b> and <b>Balda</b> hills.</li> <li>● <b>Highest point</b>: Mt. Girnar.</li> </ul>

#### B. Deccan Plateau

- **Triangular in shape**.
- **Boundaries**
  - Satpura and the Vindhya- north-west
  - Mahadev and Maikal- north
  - Western Ghats - west
  - Eastern Ghats - east.
- **Average elevation** - 600 m.
  - Rises to **1000 m in south** but subsides to **500 m in the north**.
- **Broadly divided into**:

- **Slope** - west to east (evidenced by flow of rivers).
- **Largest** plateau in **India**
- **Volcanic** in origin.
- **Sedimentary layers** Between layers of solidified lava- **inter-trapping structure**
- **Black soil belt** known as **Deccan trap**.
  - Good for **cotton** and **sugarcane** cultivation
  - Home to rich **mineral resources**
  - Good **hydroelectric power capacity**.

<b>Maharashtra Plateau</b>	<ul style="list-style-type: none"> <li>● <b>Northern part</b> of Deccan Plateau.</li> <li>● Underlain by <b>basaltic rocks</b> of lava origin.</li> <li>● Resembles a <b>rolling plain</b> due to the weathering.</li> <li>● <b>Horizontal lava sheets</b> → formation of typical <b>Deccan Trap topography</b>.</li> <li>● Covered by <b>black cotton soil</b> known as <b>regur</b>.</li> </ul>
<b>Karnataka Plateau</b>	<ul style="list-style-type: none"> <li>● Also known as <b>Mysore plateau</b>.</li> <li>● <b>Tapers to south</b> Between Western and Eastern Ghats; <b>merges</b> with <b>Nilgiris</b>.</li> <li>● Lies to <b>south of Maharashtra plateau</b>.</li> </ul>

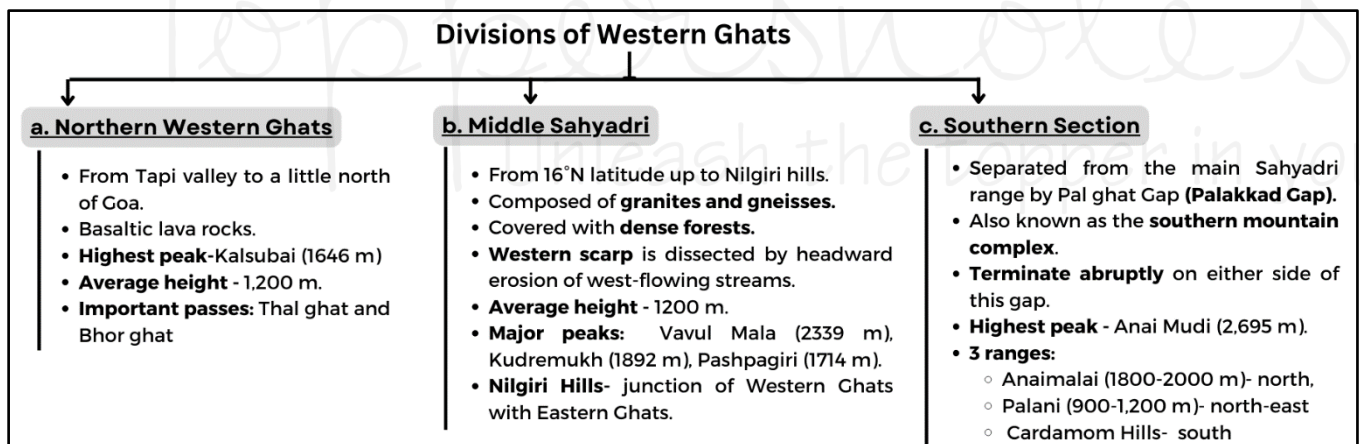
	<ul style="list-style-type: none"> <li>● <b>Baba Budan hills</b> - iron ores</li> <li>● Resembles a <b>rolling plateau</b>.</li> <li>● <b>Average elevation</b> - 600-900 m.</li> <li>● <b>Intensely dissected</b> by rivers from the Western Ghats.</li> <li>● <b>Highest peak</b>- Mullayanagiri - Baba Budan Hills - Chikmagalur.</li> <li>● <b>2 parts</b>: <ul style="list-style-type: none"> <li>○ <b>Malnad</b>- a hilly region covered with dense forests.</li> <li>○ <b>Maidan</b>- rolling plain with low lying granitic hills.</li> </ul> </li> </ul>
<b>Telangana plateau</b>	<ul style="list-style-type: none"> <li>● Consists of <b>Archaean gneisses</b>.</li> <li>● <b>Average elevation</b> - 500-600 m.</li> <li>● <b>Southern part is higher</b> than the northern counterpart.</li> <li>● Divided into <b>Ghats</b> and <b>Peneplains</b></li> <li>● Made up of <b>Dharwar rocks</b> &amp; <b>Gondwana rocks</b> (Godavari valley).</li> <li>● <b>Major rivers</b>- Godavari, Krishna, and Penna .</li> <li>● <b>Rich in mineral resources</b>.</li> <li>● <b>Good rainfall</b> (average of 100 cm/year).</li> </ul>

### C. Northeastern Plateau/ Meghalaya Plateau

- **Extension** seen in Karbi Anglong hills of Assam.
- Receives **maximum rainfall** from the **south-west monsoon**.
- **Garo-Rajmahal Gap** separates this plateau from the **main block**.
  - Formed by **down-faulting**
  - **Filled by sediments** deposited by Ganga and Brahmaputa.
- Western, central and eastern parts known as **Garo Hills** (900 m), **Khasi-Jaintia Hills** (1,500 m) and **Mikir (Rengma) Hills** (700 m).
- **Highest point**- Shillong (1,961 m).

### D. Western Ghats

- Formed by **subduction of Arabian basin** and tilting of peninsula in east and northeast during Himalayan uplift.
- One of the **eight biological diversity hotspots** in the world.
- **Run from Tapi valley** (21° N latitude) to **north of Kanyakumari** (11° N latitude) - 1,600 km.
- **Extent**: Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala.
- **UNESCO World Heritage site**.
- **Influence Indian monsoon** by intercepting the rain-laden South-west monsoon winds.
- known as **Sahyadri till 11° N**.



### E. Eastern Ghats

- **From Odisha to North of Nilgiri hills**
- Run **parallel to eastern coastal plains** of India.
- **Discontinuous** and **dissected by rivers** that drain into Bay of Bengal.

- **Lower in elevation** than western ghats.
  - **Highest peak** - Jindhagada peak (1690 meters).
  - Also known as **Arma Konda** or **Sitamma Konda**.
- **Main crop** - Rice.

<b>Nilgiri Hills</b>	<ul style="list-style-type: none"> <li>● Referred as Blue Mountains, a range of mountains in the westernmost part of Tamil Nadu at the junction of Karnataka and Kerala</li> <li>● Hills are separated from the Karnataka plateau to the north by the Moyar River and from the Anamalai Hills and Palni Hills to the south by the Palghat Gap</li> </ul>
<b>Cardmom Hills</b>	<ul style="list-style-type: none"> <li>● Part of Western Ghats, in southeast Kerala and southwest Tamil Nadu</li> </ul>

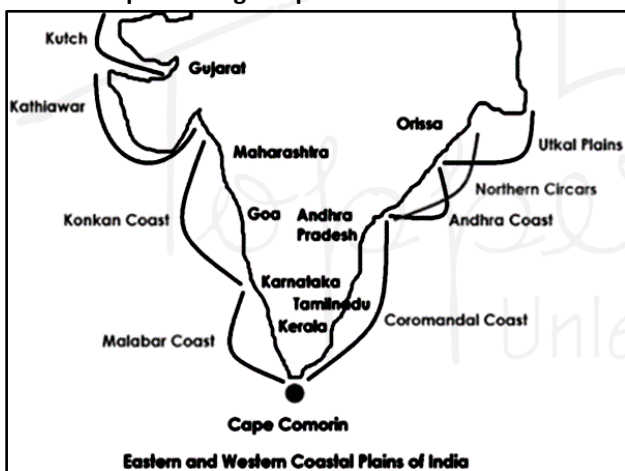
<b>Pachamalai Hills</b>	<ul style="list-style-type: none"> <li>Also known as the Pachais</li> <li>Eastern Ghats in Tamil Nadu</li> </ul>
<b>Anamalai Hills</b>	<ul style="list-style-type: none"> <li>Also known as Elephant Hill a range of mountains in the Western Ghats in Tamil Nadu and Kerala with the highest peak Anaimudi</li> </ul>

## 5. Coastal Plains

- **Area-** 7516.6 km (**Mainland coastline is 6100 km and Island coastline of 1197 km**).
- **States-** Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal and **UTs--** Daman and Diu and Puducherry.
- **Coastal plains in India are of 2 types:**

### A. Eastern Coastal Plains

- **Location:** b/w Bay of Bengal and the Eastern Ghats
- **Width:** 100 – 130 kms
- **Extends from the Ganga delta to Kanyakumari.**
- **Marked by** well-developed deltas of Godavari, Mahanadi, Kaveri, and Krishna.
- **Important geographical features** - Chilika Lake and Pulicat Lake (lagoon).
- **Wider and drier** → resulting in **shifting sand dunes**.
- **Very fertile** for Agriculture.
  - **Delta of river Krishna - Granary of South India.**
- **Emergent in nature - Continental shelf extends up to 500 km into the sea, which makes it difficult for development of good ports and harbours.**



- **Divisions:**

<b>Utkal coast</b>	<ul style="list-style-type: none"> <li>Extending <b>Between Chilika and Kolleru Lake</b></li> <li>Much <b>wider than western coastal plains</b>.</li> <li><b>Intense rainfall</b>.</li> <li>Vulnerable to <b>cyclones</b>.</li> <li><b>Major crops:</b> rice, coconut and banana</li> </ul>
<b>Northern Circar</b>	<ul style="list-style-type: none"> <li>Northern part <b>Between Mahanadi and Godavari, Krishna rivers</b>.</li> </ul>
<b>Andhra coast</b>	<ul style="list-style-type: none"> <li>Between <b>Kolleru and Pulicat Lake</b>.</li> <li>Forms a <b>basin area for Krishna</b></li> </ul>

	and <b>Godavari</b> rivers.
<b>Coromandel coast or Payan Ghat</b>	<ul style="list-style-type: none"> <li><b>Between Pulicat Lake and Kanyakumari</b> in Tamil Nadu.</li> <li>Remains <b>dry in summer</b>.</li> <li>Receives <b>rainfall during winters</b>.</li> </ul>
<b>Golkonda Coast</b>	<ul style="list-style-type: none"> <li>Between the <b>Godavari and Krishna River</b></li> </ul>

### B. Western Coastal Plains

- Stretch from **Gulf of Cambay** (Gulf of Khambhat) in the north to **Cape Comorin** (Kanyakumari).
- Stretch for **1600 km north to south**
- **Width** - 10 to 25 km. (**Widest** off the **Bombay coast**. Rich in oil.)
- **Straight** coastline.
- Affected by **South-West Monsoon** winds over a period of 6 months. Thus, **wetter** than their eastern counterpart.
- **More indented** than eastern coast
  - Provides **natural conditions** for development of **ports and harbours**.
  - **Eg.** Kandla, Mazagaon, JLN port Navha Sheva, Marmagao, Mangalore, Cochin, etc.
- Characterized by a **large number of coves** (a very small bay), **creeks** (a narrow, sheltered waterway such as an inlet in a shoreline or channel in a marsh) and a few **estuaries**. **Eg.** estuaries of Narmada and Tapi.
- Rivers do **not** form any **delta**. Instead form a chain of waterfalls.
- **Kayals** – **Backwaters or shallow lagoons** or the inlets of the sea and lie **parallel to the coastline**.
  - Used for **fishing, inland navigation and tourism**.
  - **Largest - Vembanad lake**.
- **Submergent** coasts.
- **4 divisions:**

<b>Kutch and Kathiawar coast</b>	<ul style="list-style-type: none"> <li><b>Extension of Peninsular plateau</b></li> <li>But <b>treated as a part of Western Coastal Plains</b> as they are now levelled down.</li> <li>Kutch <b>formed by the deposition of silt</b> by the Indus. <ul style="list-style-type: none"> <li>○ <b>Covered with shallow water</b> during the monsoons</li> <li>○ Divided into <b>Great Rann</b> (north) and <b>Little Rann</b> (east).</li> </ul> </li> <li><b>Kathiawar- south</b> of Kutch.</li> </ul>
<b>Konkan coast</b>	<ul style="list-style-type: none"> <li>Between <b>Daman</b> (north) to <b>Goa</b> (south).</li> </ul>

	<ul style="list-style-type: none"> <li>● <b>Rice and cashew</b>- 2 important crops.</li> </ul>
<b>Kanada coast</b>	<ul style="list-style-type: none"> <li>● Between <b>Marmagao</b> and <b>Mangalore</b></li> <li>● Rich in <b>iron deposits</b>.</li> </ul>
<b>Malabar coast</b>	<ul style="list-style-type: none"> <li>● Between <b>Mangalore</b> to <b>Kanyakumari</b>.</li> <li>● Relatively <b>broad</b>.</li> <li>● Consists of <b>lagoons running parallel</b> to the coast in southern Kerala.</li> </ul>

## 6. Islands of India

- **1,382 off-shore** identified islands.

### A. Andaman and Nicobar Archipelago

- In **Bay of Bengal**
- **Extended** in a north-south direction Between **6° 45' N to 13° 45' N**.
- Composed of ~ **265 big and small islands** [203 Andaman + 62 Nicobar Islands]
- **3 main groups** i.e. North, Middle, and South.
- **Duncan passage** - separates Little Andaman from South Andaman.

- Andaman group of islands in the north separated by **Ten Degree Channel** from Nicobar group in the south.
- **Grand Channel** - Between Great Nicobar Islands and Sumatra islands of Indonesia.
- **Coco Strait** - Between North Andaman Islands and Coco Islands of Myanmar.
- **Port Blair**- capital of Andaman Nicobar Islands- in South Andaman.
- **Volcanic island**- Barren and Narcondam Islands (only active volcano in India).
- **Highest peak**- Saddle peak (737 m) in North Andaman.
- **Tropical marine climate** influenced by seasonal flow of monsoon winds.
- **Major earthquake zone**.
- Also known as **Emerald Islands**.
- **Home** to the **only** known paleolithic people, the **Sentinelese**.
  - One of the last humans on earth untouched by modern civilization.
- **State Animal**- dugong (sea mammal)
- **Major islands of Andaman and Nicobar:**

<b>Narcondam Island</b>	<ul style="list-style-type: none"> <li>● India's <b>easternmost Island</b></li> <li>● A <b>small volcanic island</b> of the northern Andaman Sea.</li> <li>● <b>Dormant volcano</b> with a conical shape</li> <li>● <b>No remains of a crater</b> at the top (710 m above sea level)- second tallest point after the Saddle Peak</li> <li>● <b>Proximity to Myanmar</b> - great strategic and geopolitical significance</li> </ul>
<b>Barren Island</b>	<ul style="list-style-type: none"> <li>● Located in <b>Andaman Sea</b>, south of the Narcondam Island.</li> <li>● <b>Only active volcano</b> in the Indian subcontinent.</li> <li>● Also the <b>only active volcano from Sumatra to Myanmar</b>.</li> <li>● <b>Most recent eruption</b> – 2020</li> <li>● <b>Uninhabited</b></li> <li>● <b>2 km wide caldera</b> at the top</li> </ul>
<b>Landfall Island</b>	<ul style="list-style-type: none"> <li>● <b>Northernmost island</b> of Andaman and Nicobar Islands.</li> <li>● Separated from <b>Coco Island</b> of Myanmar by the <b>Coco Channel</b>.</li> <li>● Separated from <b>North Andaman Island</b> by the <b>Cleugh Passage</b>.</li> <li>● <b>Limited tourism</b>.</li> </ul>
<b>North Andaman Island</b>	<ul style="list-style-type: none"> <li>● <b>Northern</b> island of Great Andaman.</li> <li>● <b>Highest point</b>- Saddle Peak (731 metres) present here.</li> <li>● <b>Northern tip</b> known as Cape Price</li> <li>● <b>Part of the Arakan Yoma</b></li> <li>● <b>Main town</b> - Diglipur</li> <li>● Main <b>economic activities</b> – Rice and Orange production.</li> </ul>
<b>Middle Andaman Island</b>	<ul style="list-style-type: none"> <li>● <b>Between North Andaman and South Andaman</b></li> <li>● <b>Home to Jarawa tribe</b>.</li> <li>● <b>Geologically part</b> of the Arakan Yoma</li> <li>● <b>Dependent on Fishing and agriculture</b></li> <li>● <b>Towns:</b> Rangat, Billiground and Mayabunder</li> </ul>
<b>South Andaman Island</b>	<ul style="list-style-type: none"> <li>● <b>Southernmost island</b> of great Andaman Group</li> <li>● <b>3rd largest</b> after Middle and North.</li> </ul>