Toppersnotes
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GENERAL AWARENESS

For All Competitive Exams

SIERRA INNOVATIONS

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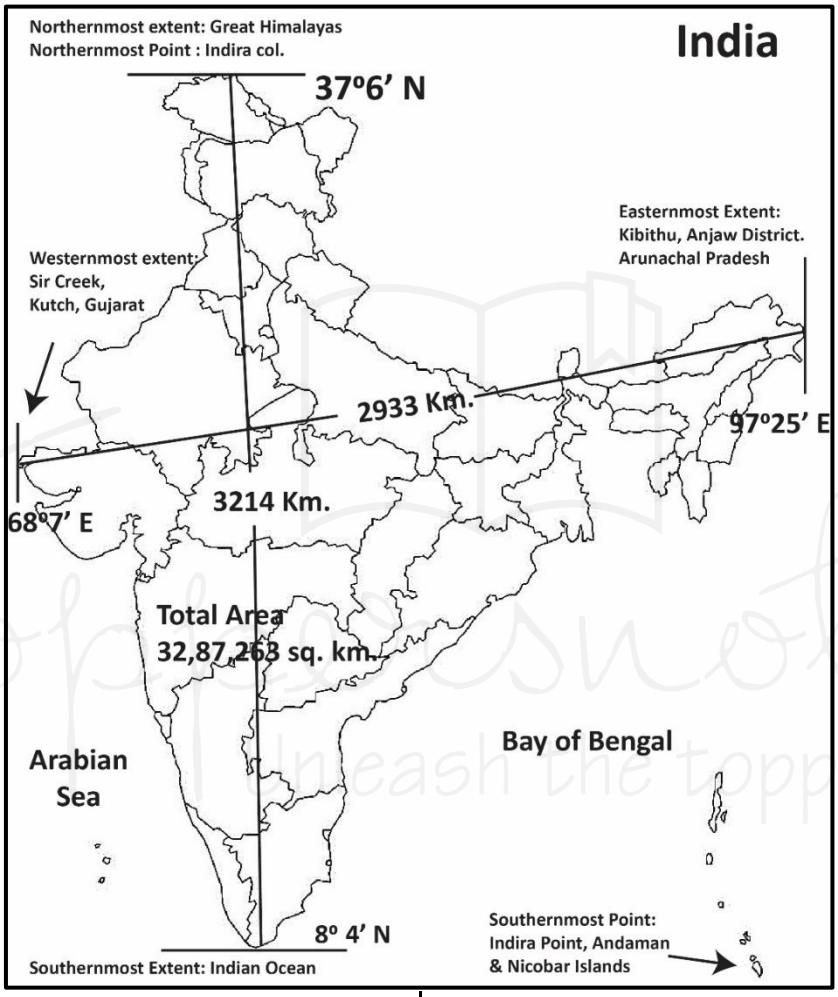
1 CHAPTER

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:

North-west	● Afghanistan and Pakistan ● Indo-Pak border: Radcliffe line ● Pak - Afghanistan border: Durand Line
North	● China, Bhutan and Nepal ● Indo-China border: McMahon line
East	● Myanmar, Bangladesh ● Longest boundary with Bangladesh
South	● Sri Lanka ● Separated by Palk Strait & Gulf of Mannar

States sharing International borders:

Bangladesh	**5 States:** West Bengal, Mizoram, Meghalaya, Tripura, and Assam (**4096 km)**
China	**4 States and1 UT:** Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh and Ladakh (**3488 km)**
Pakistan	**3 States and 2 UTs:** J&K, Punjab, Gujarat, Rajasthan and Ladakh (**3323 km)**

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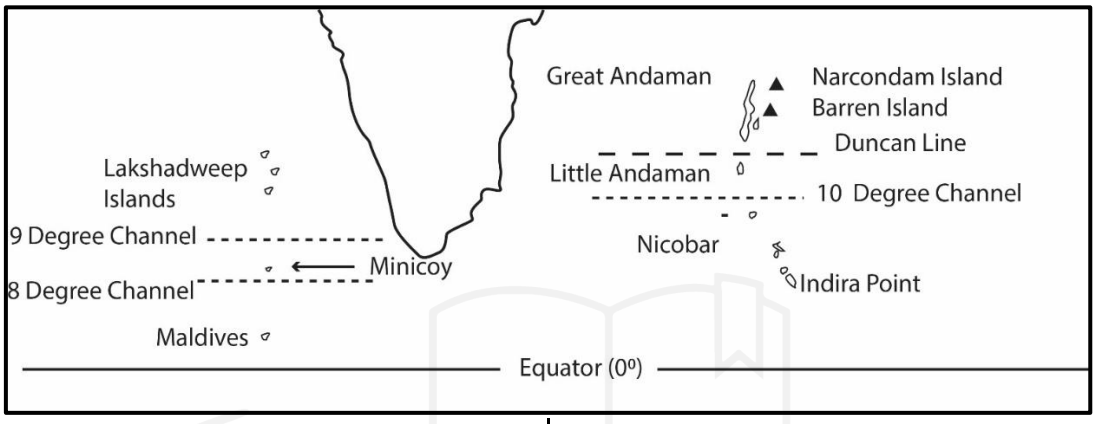
Nepal	**5 States:** Uttar Pradesh, Bihar, Uttarakhand, Sikkim, West Bengal **(1751km)**
Myanmar	**4 States**: Arunachal Pradesh, Manipur, Mizoram, and Nagaland (**1643 km)**
Bhutan	**4 States**: Arunachal Pradesh, Assam, Sikkim, and West Bengal (**699 km)**
Afghanistan	**1 UT:** Ladakh (**106 km)**

- **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

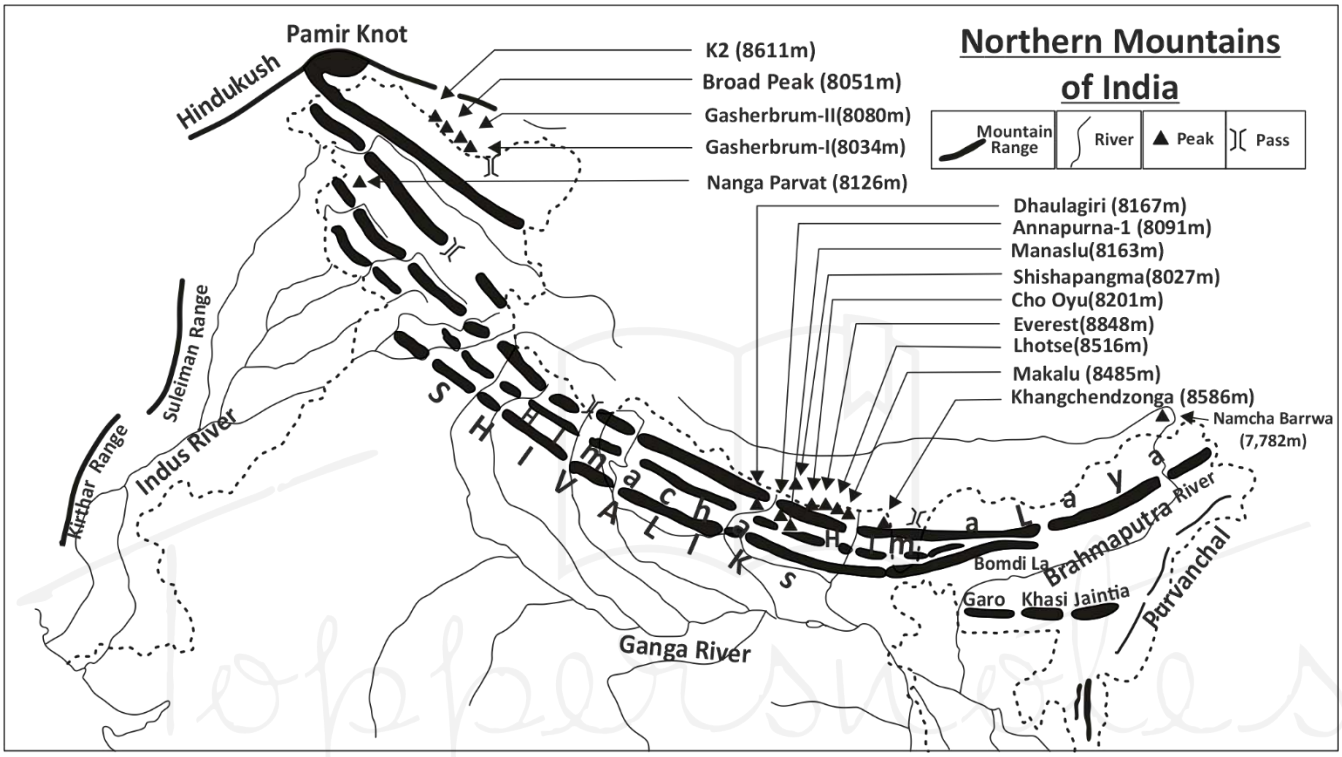
- A strait in the Indian Ocean.
- Located in between South Andaman and Little Andaman.
- Also lies within the EEZ of India, protected by the integrated tri-services Andaman and Nicobar Command of Indian Military.
- **Width**: ~ 48km.

2 CHAPTER Physiographic Divisions of India

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

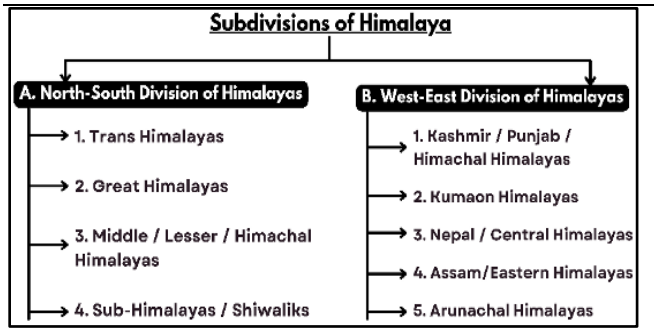
1. Himalayan Mountains
2. Great Plains of India
3. Peninsular Plateau
4. Indian Desert
5. Coastal Plains
6. Islands

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



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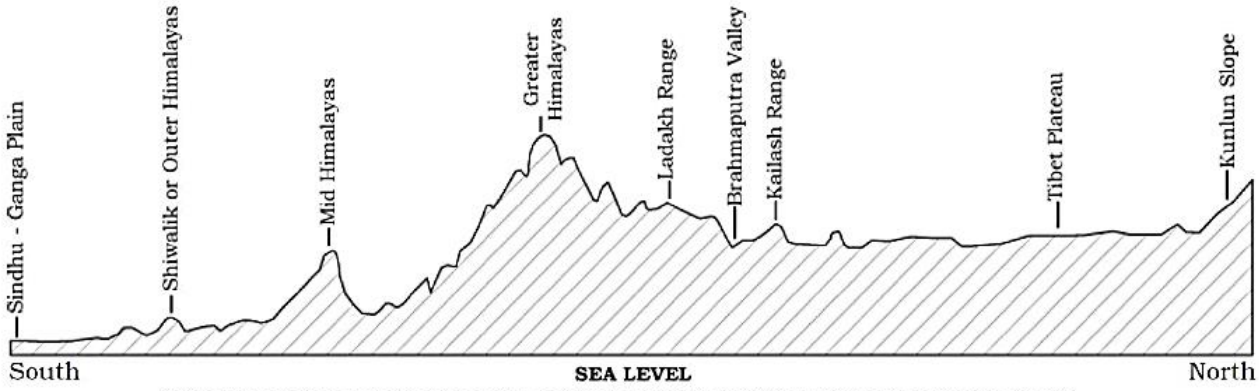
A. North-South Division of Himalayas



Himalayan Mountain Complex : Cross Sectional View from South to North

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**:

Karakoram Range	● **Northernmost range** of the Trans-Himalayan Ranges in India ● Also known as **Krishnagiri range** ● Extends eastwards **from Pamir for about 800 km.** ● **Average elevation** - 5,500 m and above.
Ladakh Range	● **North of the Zaskar** Range ● **Highest point** - Rakaposhi ● Lies **north of Leh.** ● **Merges with the Kailash range** in Tibet. ● **Important passes** - Khardung La, and Digar La.
Zaskar Range	● A mountain range in the **union territory of Ladakh.** ● **Separates Zanskar from Ladakh.**
	● **Average height** - about 6,000 m. ● Acts as a **climatic barrier protecting Ladakh and Zanskar from monsoon** ● **Major passes**- Marbal Pass, Zojila Pass - extreme northwest. ● **Major rivers**- Hanle River, Khurna River, Zanskar River, Suru River (Indus), and Shingo River.
Kailas Range	● **Offshoot** of the **Ladakh Range**. ● **Highest peak -** Mount Kailash (6714 m). ● **River Indus** originates from the **northern slopes of the Kailas range**.

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. <u>Middle/ Lesser/ Himachal Himalaya:</u>

- **Most rugged** mountain system.
- Lies **between** the **Shiwaliks** 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**

Valley of Kashmir	• Between the **Pir Panjal** and the **Zaskar Range** (average elevation- 1,585 m) • **Composed** of alluvial, lacustrine [lake deposits], fluvial [river action] and glacial deposits. • **Jhelum River meanders** through these deposits and cuts **a deep gorge** in Pir Panjal.
Kangra Valley	• **Extends from** the foot of the **Dhauladhar Range to the south of Beas**.
Kullu Valley	• In the **upper course of the Ravi** • A **transverse valley.**

- **Most important range** - Dhaula Dhar 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**.

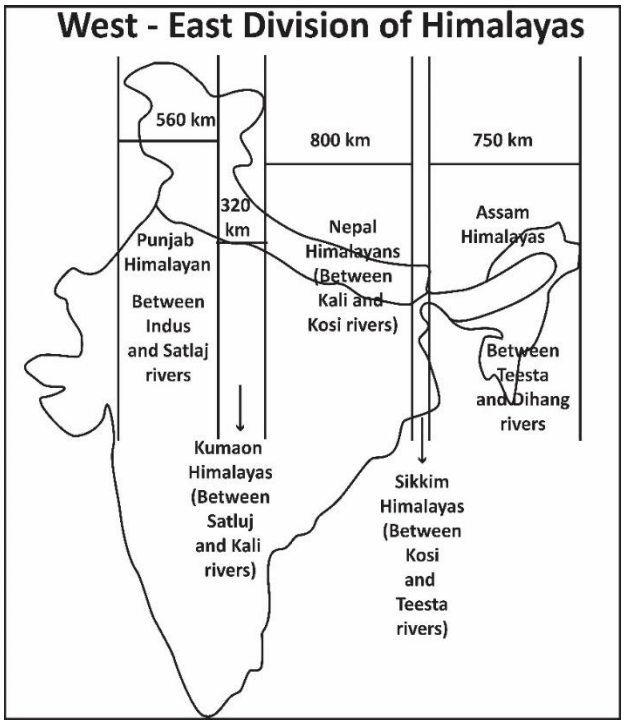
Important ranges of Lesser Himalayas	Region
Pir Panjal Range	Jammu and Kashmir (south of Kashmir Valley)
Dhauladhar Range	Himachal Pradesh
Mussoorie Range and Nag Tibba Range	Uttarakhand
Mahabharat Range	Nepal

4. <u>Sub-Himalayas/ Shiwaliks:</u>

- 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:**

Region	Name of Shiwaliks
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

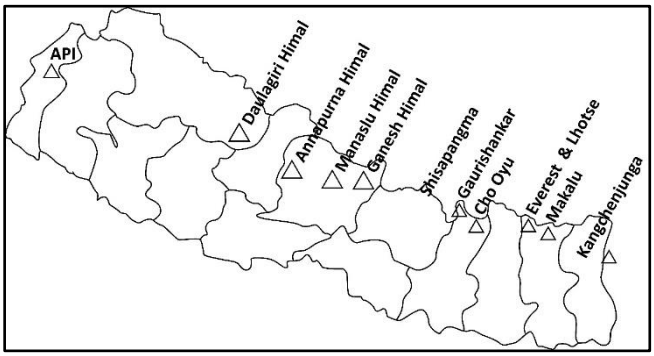
- Located **between Indus and Satluj gorge**
- **Length**- 560 kms
- **Width** - 320 kms
- **Zaskar range -** northern boundary and **Shiwaliks -** Southern boundary
- **Characterized by** ridge and valley topography (Kashmir Valley is the syncline basin) formed by the Lacustrine deposits (**Karewas**- 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**:

Dafla Hills	● **Location**: north of Tezpur and north Lakhimpur ● Bounded on **west** by the **Aka Hills** and on the **east** by the **Abor Range.**
Abor Hills	● **Location:** region of Arunachal Pradesh in NE of India, near China border ● Bordered by **Mishmi Hills** and **Miri Hills.** ● **Drained by the Dibang River**, a tributary of the Brahmaputra.
Mishmi Hills	● **Location:** southward extension of the Great Himalayan ranges. ● **Northern and eastern parts touch China.**
Patkai Bum Hills	● **Location:** India's NE border between Arunachal Pradesh and Myanmar. ● **"Patkai" - "to cut chicken"** in Tai-Ahom language. ● **Originated by the same tectonic processes** that resulted in the **formation of the Himalayas** in the Mesozoic. ● Have **conical peaks, steep slopes** and **deep valleys** ● **Not** as **rough** as the **Himalayas**. ● Whole region is **surrounded by forests** composed of sandstones.
Naga Hills	● **Location:** extending into Myanmar forms a divide between India and Myanmar. ● **Highest peak** - Saramati. ● Receive a **heavy monsoon rainfall** and densely forested.
Manipur Hills	● **Location:** north of Nagaland, Mizoram in the south, upper Myanmar in east and Assam in the west bound Manipur Hills. ● **Border** between **Manipur and Myanmar.** ● **Loktak Lake** - only floating national park of the world. ● **Keibul-Lamjao national park** situated here.
Mizo Hills	● **Location-** south-eastern Mizoram state. ● **Formerly** known as **Lushai Hills.** ● **Highest part**- Blue Mountain. ● Part of the **North Arakan Yoma system.** ● Also known as **'Molasses basin'** - made up of **soft unconsolidated deposits.** ● **Shifting agriculture** and some **terrace cultivation** practised.
Tripura Hills	● series of **parallel north-south folds**, **decreasing** in **elevation** to **south**. ● Merge into **greater Ganges-Brahmaputra lowlands** (aka Eastern Plains).
Mikir Hills	● **Location-** south of the Kaziranga National Park, Assam. ● Part of the **Karbi Anglong Plateau.** ● **Mikir Hills** - oldest landform in Assam. ● **Radial drainage pattern** ● **Major rivers**- Dhansiri and Jamuna. ● **Highest peak –** Dambuchko.
Garo Hills	● **Location:** Meghalaya state. ● **Highest peak**: Nokrek Peak.
Khasi Hills	● Part of **Garo-Khasi Range** in Meghalaya. ● **Cherrapunji** - East Khasi Hills. ● **Highest peak**: Lum Shyllong.
Jaintia Hills	● **Location:** further to the east of the Khasi Hills.
Barail Hill	● **Location:** North Cachar Hill District. ● **Southwestern extension** of the **Patkai Range.** ● Runs in a **south-westerly direction from southern Nagaland** and parts of **northern Manipur** up to the Jaintia Hills of Meghalaya.

Himalayan Passes

1. Passes of Jammu and Kashmir and Ladakh

Banihal Pass (Jawahar Tunnel)	● A famous pass in Jammu and Kashmir. ● Situated in **Pir- Panjal Range**. ● Connects **Banihal with Qazigund**.
Zoji La	● Connects **Srinagar with Kargil and Leh.** ● **Border Road Organization**- clears and **maintains** the road, especially during winter.
Burzil Pass	● **Srinagar- Kishan Ganga Valley** ● Joins the Valley of **Kashmir with** the **Deosai Plains of Ladakh**.
Pir-Panjal Pass	● A traditional pass **from Jammu to Srinagar**. ● **Closed after the partition**. ● **Shortest roadway access to Kashmir** valley from Jammu.
Qara Tagh Pass	● Located in the **Karakoram Mountains**. ● A **subsidiary of the ancient silk route.**
Khardung La	● **Highest motorable pass** in the country (5602 m). ● **Connects Leh and Siachen** glaciers. ● **Closed** during the **winter**.
Thang La	● Located in **Ladakh**. ● **Second highest motorable** mountain **pass** in **India**.
Aghil Pass	● **North of Mount Godwin-Austen** in Karakoram. ● Connects **Ladakh with Xinjiang province** of China.
Chang-La	● Connects **Ladakh with Tibet.**
Lanak La	● **Aksai Chin** in Ladakh region. ● Connects **Ladakh and Lhasa**. ● **Chinese** authorities have built a **road to join Xinjiang with Tibet**.
Khunjerab Pass	● **Kashmir** and **China** ● On the **Indo-China border**
Mintaka Pass	● **Kashmir and China** ● **Tri Junction** of **India-China** and **Afghanistan border**

2. Passes of Himachal Pradesh

Shipki La Pass	● Passes **through Sutlej Gorge.** ● **Connects Himachal Pradesh with Tibet.** ● **India's 3rd border post** for **trade with China** (Lipu Lekh and Nathula Pass)
Bara-Lacha Pass	● **Himachal Pradesh- Leh-Ladakh** ● Situated **on the National Highway** in Jammu and Kashmir. ● Connects **Manali and Leh**.
Debsa Pass	● Joins **Spiti and Parvati Valley.** ● **Between the Kullu and Spiti** of Himachal Pradesh. ● **Bypass** route of **Pin-Parvati Pass.**
Rohtang Pass	● **High road transportation**- high jams ● Connects **Kullu, Spiti, and Lahaul.**

3. Passes of Uttarakhand

Lipu Lekh	● Connects **Uttarakhand with Tibet.** ● **Important border post** for trade with China. ● The **pilgrims for Kailash-Manasarovar travel** through this pass.
Mana Pass	● Located in the **Greater Himalayas**. ● Connects **Tibet with Uttarakhand.** ● **Remains under snow for six months** during winter.
Mangsha Dhura Pass	● Connects **Uttarakhand-Tibet**. ● **Known for landslides**. ● **Pilgrims for Manasarovar** cross this route.
Muling La	● **Seasonal pass** ● Connects **Uttarakhand with Tibet** ● Snow covered during the winter season
Niti Pass	● **Joins Uttarakhand with Tibet.** ● Remains **snow-covered during the winter** season.
Traill's Pass	● Situated at the **end of the Pindari glacier**. ● Connects the **Pindari valley to Milam valley**. ● **Steep** and rugged.

4. Passes of Sikkim

Nathu La Pass	● Located on the **India- China border.** ● Forms a part of an **offshoot of the ancient silk route.** ● One of the **trading borders posts between India and China.**
Jelep La Pass	● Passes **through the Chumbi valley.** ● Connects **Sikkim with Lhasa**, the capital of Tibet.

5. Passes of Arunachal Pradesh

Bomdi-La	● Connects **Arunachal Pradesh-Lhasa**, the capital city of Tibet. ● Located in the **east of Bhutan.**
Dihang pass	● **Located** in the **Northeastern states of Arunachal Pradesh.** ● **Connects Arunachal Pradesh with Myanmar** (Mandalay)
Diphu pass	● An alternate route to **Myanmar.** ● **Remains open throughout the year** for transportation and trade.
Lekhapani	● **Remains open throughout** a year for transport and trade. ● Connects **Arunachal Pradesh with Myanmar**.
Pangsan Pass	Connects **Arunachal Pradesh and Myanmar**.

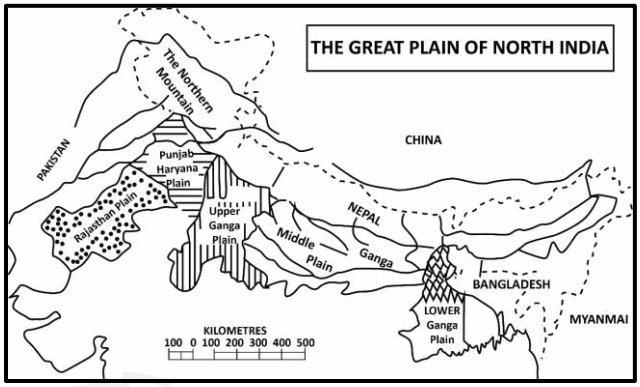
Yonggyap Pass	Connects **Arunachal Pradesh with Tibet**
Kumjawng Pass	Connects **Arunachal Pradesh with Myanmar**
Hpungan Pass	Connects **Arunachal Pradesh with Myanmar**
Chankan Pass	Connects **Arunachal Pradesh with Myanmar**

Tuju Pass:

- **Manipur.**
- Connects **Imphal to Myanmar**.

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, Yamunanager 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. <u>North-South Division of Great Plains of India</u>

1. Bhabar	● Along the **foot of Siwaliks** with remarkable continuity **from Indus to Tista.** ● **8-16 km wide belt** consisting of **gravel and unassorted sediments** ● **Deposited** by **Himalayan rivers** in the foreland zone **due to sudden slope break**. ● **Himalayan rivers deposit** their loads along the **foothills** in the form of **alluvial fans.** ○ **Coarser sediments** merged to build up piedmont plain/ Bhabar. ● Most **unique feature** - **porosity**. ○ Porous due to the **deposition of a huge number of pebbles** and **rock debris** across the alluvial fans. ○ **Not suitable for agriculture** ● **Comparatively narrow** in the **east**
2. Tarai	● **10-20 km wide marshy region** in the **south of Bhabar** and runs parallel to it. ● **Wider in eastern parts** of the Great Plains - Brahmaputra valley due to heavy rainfall. ● **Re-emergence of underground streams** of the Bhabar belt ● Most of Terai land (especially in Punjab, Uttar Pradesh and Uttarakhand) has been **reclaimed and turned into agricultural land** over some time. ● Receives **high rainfall** and has **excessive humidity**. ● Has **underground streams** $\rightarrow$ ground **marshy**. ● **Suitable for** wheat, maize, rice, rice, sugarcane, etc.
3. Khadar	● **Younger alluvium** of flood plains of numerous rivers ● Also known as **Bet/betlands** (in Punjab). ● **Contains new alluvial deposits** along the course of the river. ● **Alluvium** – light-coloured and poor calcareous matter consisting of sand, silt, mud and clay deposits. ● Suitable for **extensive cultivation**. ● **Rivers in the Punjab-Haryana** plains have **broad floodplains** of Khadar **flanked by bluffs** known as Dhayas.
4. Bangar or Bhangar Plains	● **Uplands** (alluvial terrace) formed by **deposition of older alluvium.** ● **Lies above the flood limit** of the plains. ● **Main constituent: clay.** ● **Rich in humus - high yield.**

	● **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.**

Sindh Sagar Doab	between the **Indus** and **Jhelum** rivers.
Jech Doabs/ Chaj Doab	between the **Jhelum** and **Chenab** rivers.
Rechna Doab	between the **Chenab** and **Ravi** rivers.
Bari Doabs	between the **Ravi** and **Beas** rivers.
Bist Doab	between the **Beas** and **Sutlej** rivers.

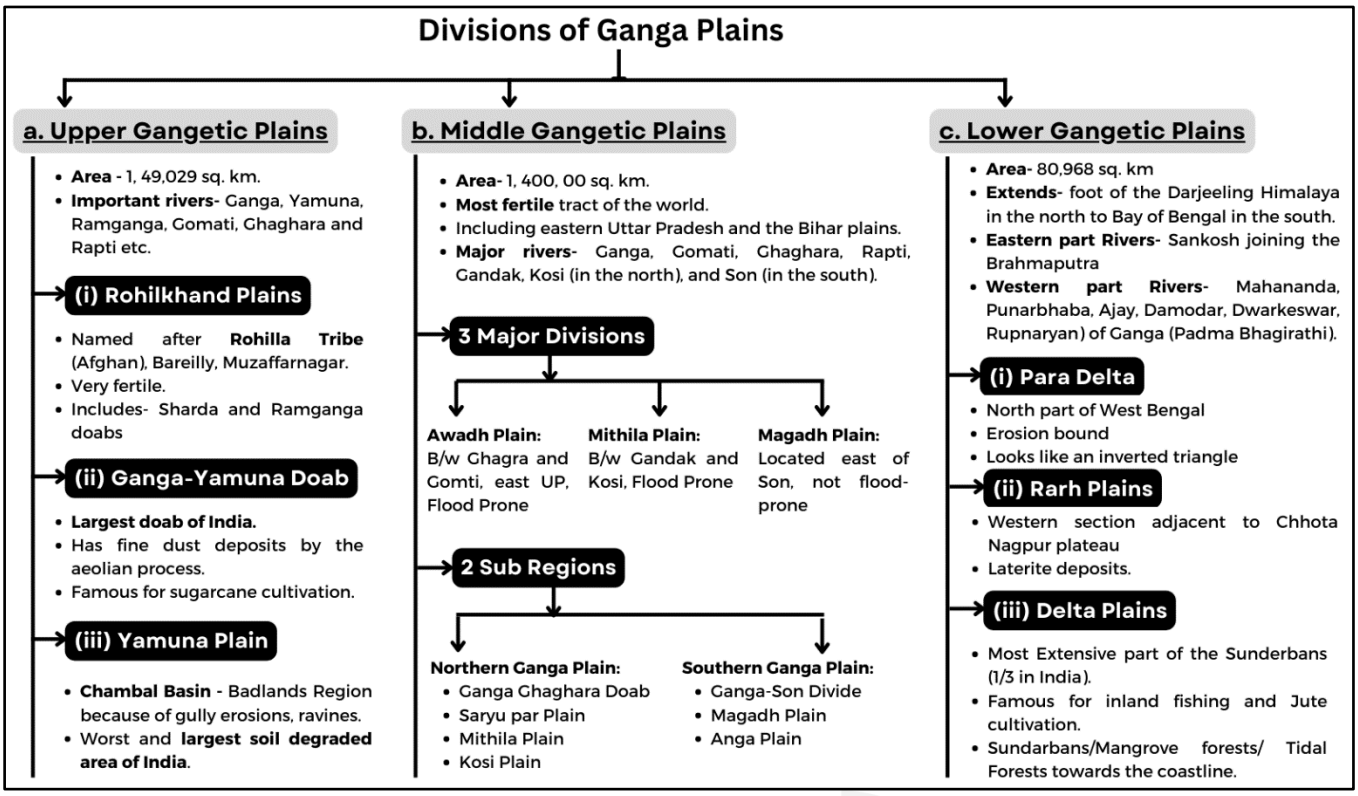
- **Total area** - 1.75 lakh sq km.
- **Average elevation** - 250 m above mean sea level.
- **Eastern boundary** - Delhi-Aravali ridge.
- **Northern part** [Shivalik hills] is **intensively eroded** by numerous **streams** called **Chaos**.
  - Resulted in **enormous gullying**.
- **South of Satluj river** - **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'.



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 km²)- **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 proposis
    - **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.

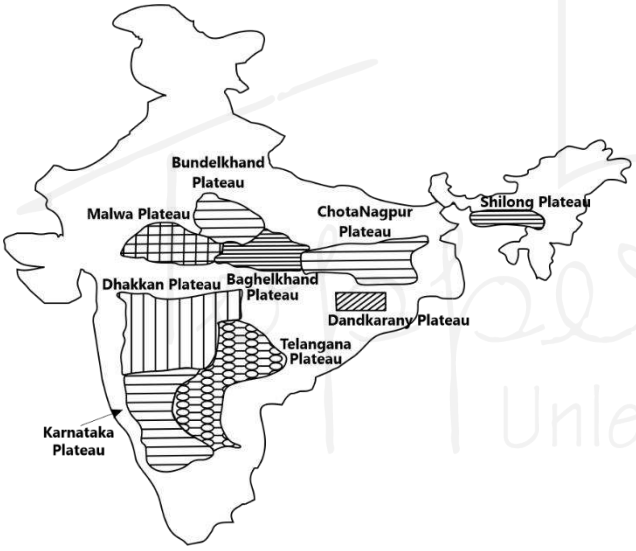
B. Cold Desert

- 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**.
  - **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**

- **Ranges**:

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 scarped 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.

Aravalli	• One of the **oldest mountain ranges**. • **Sedimentary**, **metamorphosed** rocks. • **Elevation**- 400-600 m (few hills well above 1,000 m). • Presently, seen as a **discontinuous ridge** from **Delhi** to **Ajmer** • **Highest peak**- Gurushikhar, Mt Abu (1722m). • **Regional names**- 'Jarga' near Udaipur and 'Delhi Ridge' near Delhi.

Vindhya range	• **Source of many north-flowing rivers** that meet Yamuna.
	• Represents the **water divide of central India.**
	• **Major river**: **Mahi**
	  ○ Origin from **north side of Vindhya**
	  ○ A **west-flowing** river.
	• As an **escarpment running parallel to the Narmada-Son valley**
	• **Location**: Gujarat, Rajasthan border to MP., UP, Chhattisgarh and Jharkhand
	• **3 major divisions:** Bharner hills, Kaimur hills and Parasnath hills
	• **General elevation:** 300- 650 m.
	• Most made up of **sedimentary rocks** of ancient ages.
	• **Watershed** Between **Gangetic and peninsular river** systems.

Satpura range	• **Run** Between **Narmada** and **Tapi**, parallel to Maharashtra-MP border.
	• Found from **Gujarat** (Rajpipla hills) to **Chhattisgarh**.
	• **Major** part in **MP**
	• **3 divisions: Rajpipla** hills, **Mahadev** hills and **Maikal** hills
	• A **block mountain** having **India's biggest rift valley**.
	• **Major rivers**:
	  ○ North - **Narmada**
	  ○ South - **Tapti**
	• **Major folds**: Maikal Hills, Mahadeo Hills near Pachmarhi, Kalibhit, Asirgarh, Bijagarh, Barwani and Arwani (extends to Rajpipla Hills in Eastern Gujarat).
	• **Highest peak**- Dhupgarh (1,350 m) near Pachmarhi (**Mahadev Hills**).
	• **Amarkantak** (1,127 m) - **highest peak** -**Maikal Hills**- origin of Narmada and Son.

Kaimur Range	Eastern portion of the Vindhya Range in MP, UP & Bihar; runs parallel to river Son
Mahadeo Range	Forms the central part of the Satpura Range, located in MP, Highest peak: Dhoopgarh
Maikal Range	Eastern part of the Satpuras range (MP)
Ajanta Range	Maharashtra, south of river Tapi, sheltering caves of world-famous paintings of Gupta period
Rajmahal Hills	• Located in Jharkhand made up of lava basaltic rocks • Point of Ganges bifurcation

- **Major Plateaus**

Marwar upland or Mewar Plateau	• to the **east** of **Aravallis** in Rajasthan • A **rolling plain carved by the Banas River** and its tributaries Berach river Khari rivers. • **Average elevation -** 250-500 m above sea level. • Composed of **sandstone**, **shales** and **limestones** of Vindhyan period.
Madhya Bharat Pathar	• **East** of Marwar upland. • Also known as **Central Highland**. • **Major river**- **Chambal**. ○ Kali-Sindh, Banas, and Parbati.

Malwa plateau	• Lies **in Madhya Pradesh** Between Aravali and Vindhya.
	• Composed of an **extensive lava flow**- **black soils**.
	• **Narmada river** - **southern boundary**.
	• Forms a triangle based on the Vindhyan Hills, **bounded by**
	  ○ **Aravali Range** - west
	  ○ **Madhya Bharat Pathar**- north
	  ○ **Bundelkhand**- east.
	• **2 systems of drainage;**
	  ○ **Arabian sea** (The Narmada, the Tapi and the Mahi)
	  ○ **Bay of Bengal** (Chambal and Betwa, joining the Yamuna).

Bundelkhand plateau	• Lies along the borders of **UP** and **MP**. • **Intensive erosion**, semi-arid climate - **unfit for cultivation**. • Divided by **deep valley uplands** of the **'Bundelkhand Gneiss'**, consisting of granite and gneiss. • **Boundaries**: ○ **Yamuna** river - north

	○ **Madhya Bharat Pathar** - west ○ **Vindhyan Scarp lands**- east ○ **South-east** and **Malwa Plateau** - south. ● **Average elevation-** 300-600 m above sea level ● **Slopes** down from Vindhyan Scarp toward Yamuna River. ● Characterized by **senile** (caused by old age) **topography**. ● **Rivers**: Betwa, Dhasan and Ken.
Baghelkhand plateau	● Lies **north to east of the Maikal range.** ● **3 States** - UP, MP, and Chhattisgarh ● Made of **limestone** and **sandstone** in the **west** and **granite** in the **east**. ● **Separates Ganga** basin from **Mahanadi** basin. ● **Bounded** by the **Son** river in the **north**. ○ **Rihand Dam** and **Govind Ballabh Pant Sagar** reservoir (largest manmade lake in India). ● Contains **Dharwar** and **Gondwana rocks**. ● **Major coal fields**- Sohagpur, Shahdol coal field ● **Central segment** acts as a **water divide** Between **Son** drainage system (north) and **Mahanadi** River system (south). ● **General elevation** : 150 m to 1,200 m
Chota Nagpur plateau	● **North–east part** of the Peninsular plateau. ● **Composed** mainly of **Gondwana rocks**. ● **Average elevation**: 600 to 700 m above sea level. ● Consists of a series of **step-like sub-plateaus** known as **patlands**. ● **Mineral rich** plateau ● Also known as Ruhr **of India**. ● **Major rivers**: ○ **Son** - north-west boundary. ○ **Damodar**, **Subarnarekha**, **North Koel**, **South Koel** and **Barkar**. ■ Damodar- **flows through the rift valley** from west to east. ● **Gondwana coal fields** (most coal supply in India) found here. ● **Rajmahal** Hills - northeastern border ○ Covered by **lava flows** (**Basaltic**). ○ Spread in a **north-south direction** ○ **Average elevation** - 400 m .
Kathiawar plateau	● In Kathiawar region of **Gujarat** ● Has many **pipe-like volcanic openings** giving rise to many **hill ranges** like **Girnar range**, **Junagarh range**, **Pavagadh range** etc. ● **Lake Nalsarovar** (bird sanctuary) - Northeast boundary. ● **Little Rann**- north. ● **Volcanic hills**- **Mandav hills** and **Balda** hills. ● **Highest point**: Mt. Girnar.

B. <u>Deccan Plateau</u>

- **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.**
- **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**.
- **Broadly divided into:**

Maharashtra Plateau	● **Northern part** of Deccan Plateau. ● Underlain by **basaltic rocks** of lava origin. ● Resembles a **rolling plain** due to the weathering. ● **Horizontal lava sheets** → formation of typical **Deccan Trap topography**. ● Covered by **black cotton soil** known as **regur**.
Karnataka Plateau	● Also known as **Mysore plateau.** ● **Tapers** to **south** Between Western and Eastern Ghats; **merges** with **Nilgiris**. ● Lies to **south of Maharashtra plateau.**

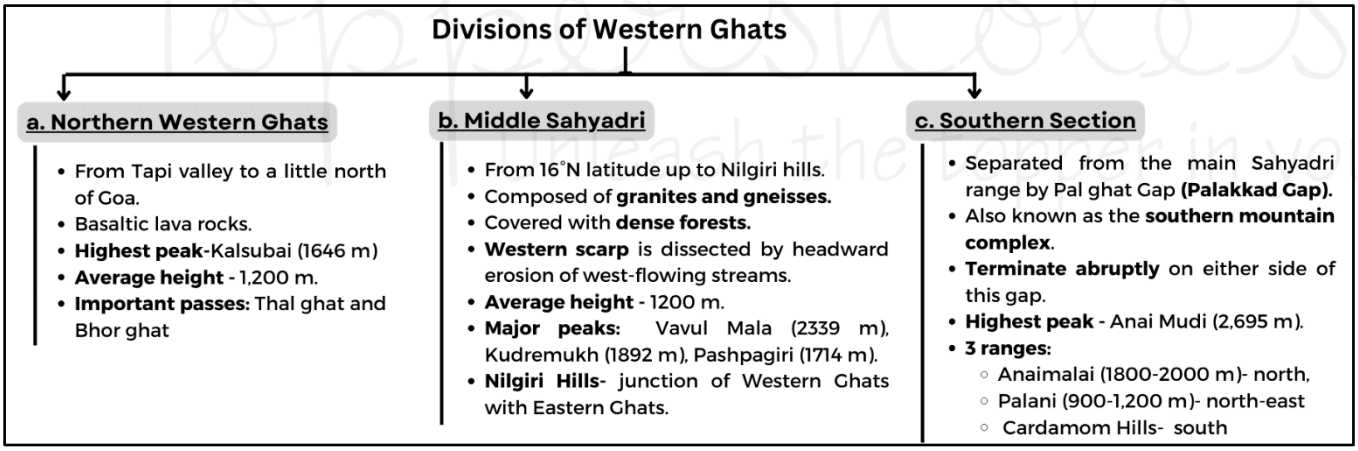
	● **Baba Budan hills** - iron ores ● Resembles a **rolling plateau**. ● **Average elevation** - 600-900 m. ● **Intensely dissected** by **rivers** from the Western Ghats. ● **Highest peak**- Mullayanagiri - Baba Budan Hills - Chikmagalur. ● **2 parts:** ○ **Malnad**- a hilly region covered with dense forests. ○ **Maidan**- rolling plain with low lying granitic hills.
Telangana plateau	● Consists of **Archaean gneisses**. ● **Average elevation** - 500-600 m. ● **Southern part is higher** than the northern counterpart. ● Divided into **Ghats** and **Peneplains** ● Made up of **Dharwar** rocks & **Gondwana rocks** (Godavari valley). ● **Major rivers**- Godavari, Krishna, andPenna . ● **Rich** in **mineral resources**. ● **Good rainfall** (average of 100 cm/year).

C. <u>Northeastern Plateau/ Meghalaya Plateau</u>

- **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. <u>Western Ghats</u>

- 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. <u>Eastern Ghats</u>

- **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.

Nilgiri Hills	• Referred as Blue Mountains, a range of mountains in the westernmost part of Tamil Nadu at the junction of Karnataka and Kerala • Hills are separated from the Karnataka plateau to the north by the Moyer River and from the Anamalai Hills and Palni Hills to the south by the Palghat Gap
Cardmom Hills	• Part of Western Ghats, in southeast Kerala and southwest Tamil Nadu

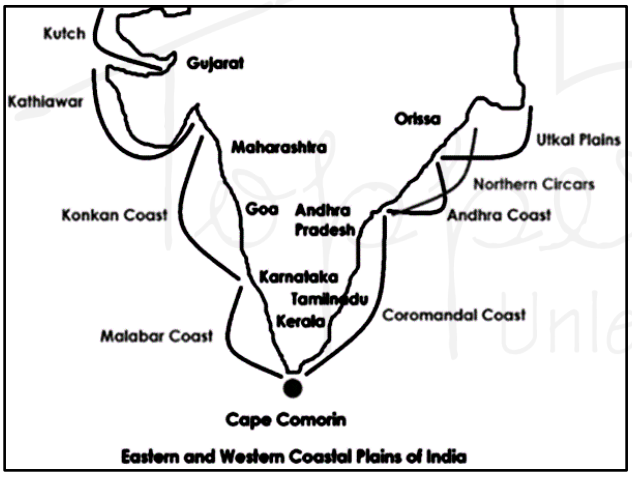
Pachamalai Hills	• Also known as the Pachais • Eastern Ghats in Tamil Nadu
Anamalai Hills	• Also known as Elephant Hill a range of mountains in the Western Ghats in Tamil Nadu and Kerala with the highest peak Anaimudi

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. <u>Eastern Coastal Plains</u>

- **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**.



Eastern and Western Coastal Plains of India

- **Divisions**:

Utkal coast	• Extending **Between Chilika** and **Kolleru Lake** • Much **wider than western coastal plains**. • **Intense rainfall**. • Vulnerable to **cyclones**. • **Major crops**: rice, coconut and banana
Northern Circar	• Northern part Between **Mahanadi and Godavari, Krishna rivers.**
Andhra coast	• Between **Kolleru** and **Pulicat Lake**. • Forms a **basin area for Krishna** and **Godavari** rivers.
Coromandel coast or Payan Ghat	• **Between Pulicat** Lake and **Kanyakumari** in Tamil Nadu. • Remains **dry in summer.** • Receives **rainfall during winters**.
Golkonda Coast	• Between the **Godavari** and **Krishna River**

B. <u>Western Coastal Plains</u>

- 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:**

Kutch and Kathiawar coast	• **Extension of Peninsular plateau**
	• But **treated as a part of Western Coastal Plains** as they are now levelled down.
	• Kutch **formed by the deposition of silt** by the Indus.
	  ○ **Covered with shallow water** during the monsoons
	  ○ Divided into **Great Rann** (north) and **Little Rann** (east).
	• **Kathiawar- south** of Kutch.

Konkan coast	• Between **Daman** (north) to **Goa** (south).