



# MPPSC

## State Civil Services

**Madhya Pradesh Public Service Commission**

**Volume - 1**

**Indian Geography**



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# 1 CHAPTER

## India-Size & Location

INDIA being one of the oldest and greatest civilizations of the world is also a melting pot of culture. Its culture and socio-economy is shaped by its diverse geographical features.

India is the seventh largest (2.42% area of the world) and most populated (17.5% population of the world) country in the world.

India is bordered by the Great Himalayas in the north and extends southward, gradually narrowing as it reaches the Tropic of Cancer. From there, it tapers off into the Indian Ocean, lying between the Bay of Bengal to the east and the Arabian Sea to the west.

➤ Situated in the northern hemisphere

✓ Latitudinal Extent (3214 Km):  $8^{\circ}4'N$  to  $37^{\circ}6'N$

✓ Longitudinal Extent (2933 Km):  $68^{\circ}7'E$  to  $97^{\circ}25'E$

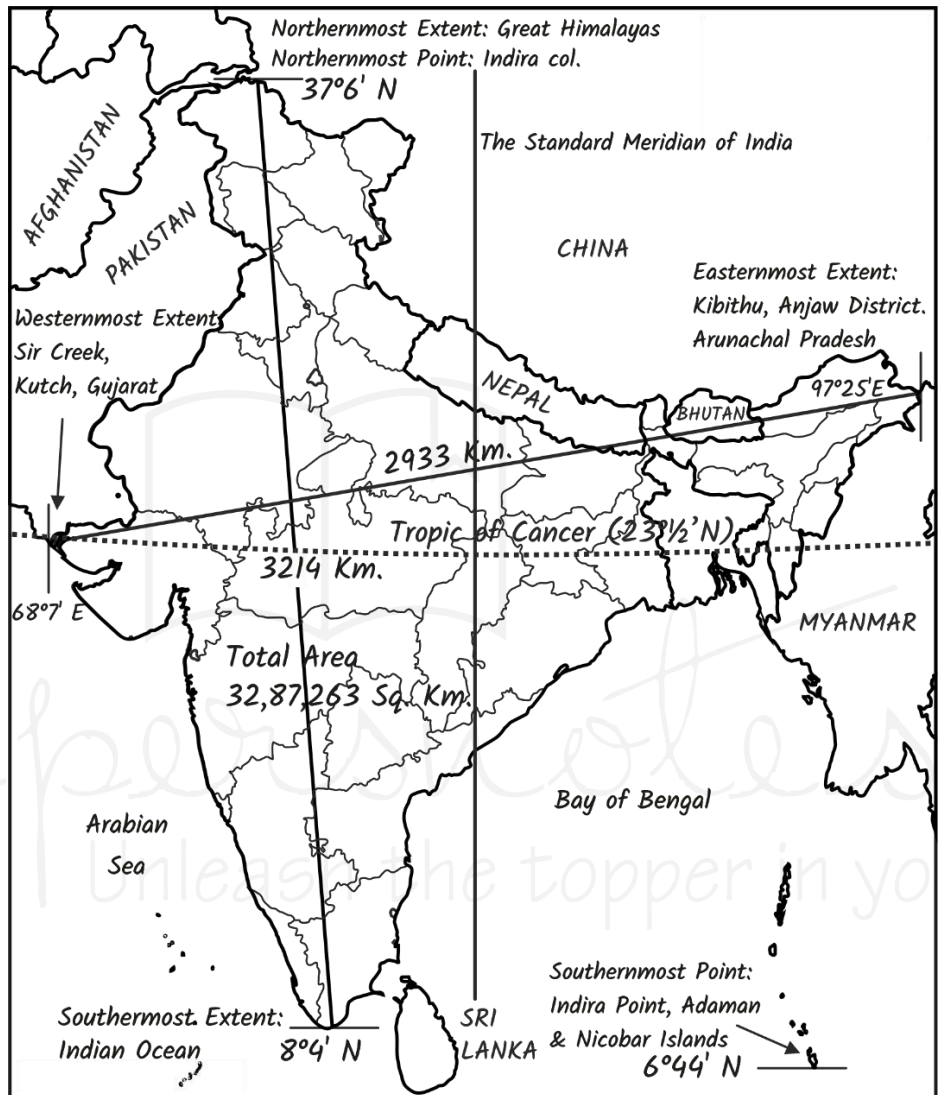
➤ The southernmost point of the country, **Pygmalion Point** or **Indira Point**, is located in the Andaman and Nicobar Islands.

➤ The northernmost point of the country is Indira Col. It is located in Jammu and Kashmir.

➤ North-south extent from Indira Col in Kashmir to Kanniyakumari is 3,214 km.

➤ East-west width from the Rann of Kachachh to Arunachal Pradesh is 2,933 km.

➤ Area: 32,87,263 sq. km



- Total land boundary = 15,200 km.
- Total coastline= 7516.6 Km (Mainland India + Islands)
  - ✓ Without islands = 6100 Km
- Tropic of Cancer passes through the states : Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram. (total 8)

## **1. Bordering Countries:**

|            |   |
|------------|---|
| North-west | Afghanistan (Durand Line) and Pakistan (Radcliffe line)   |
| North      | China (borderline called: McMahon line), Bhutan and Nepal |
| East       | Myanmar, Bangladesh (Longest boundary)                    |
| South      | Sri Lanka (Separated by Palk Strait & Gulf of Mannar)     |

## **2. States sharing International borders:**

|             |  |
|-------------|--|
| Bangladesh  | 5 States: West Bengal, Mizoram, Meghalaya, Tripura, and Assam (4096 km)                          |
| China       | 4 States and 1 UT: Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh and Ladakh (3488 km) |
| Pakistan    | 3 States and 2 UTs: Punjab, Gujarat, Rajasthan and J&K and Ladakh (3323 km)                      |
| Nepal       | 5 States: Uttar Pradesh, Bihar, Uttarakhand, Sikkim, West Bengal (1751 km)                       |
| 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 Greenwich Mean Time by 5 hours and 30 minutes.
  - ✓ States through which Indian Standard Meridian Passes: Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Odisha and Andhra Pradesh.
- Coastal states of India (9): West Bengal, Odisha, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Goa, Maharashtra, and Gujarat.

### 3. Various Channels and their Location

- Ten Degree Channel
  - ✓ Separates the Andaman Islands from the Nicobar Islands.
- Nine Degree Channel
  - ✓ Separates Minicoy Island from the Lakshadweep archipelago.
- Eight Degree Channel
  - ✓ Maritime boundary between the Maldives and India.
  - ✓ Separates the islands of Minicoy and Maldives.
  - ✓ Traditionally known as MalikuKandu and MāmalēKanduDivehi.

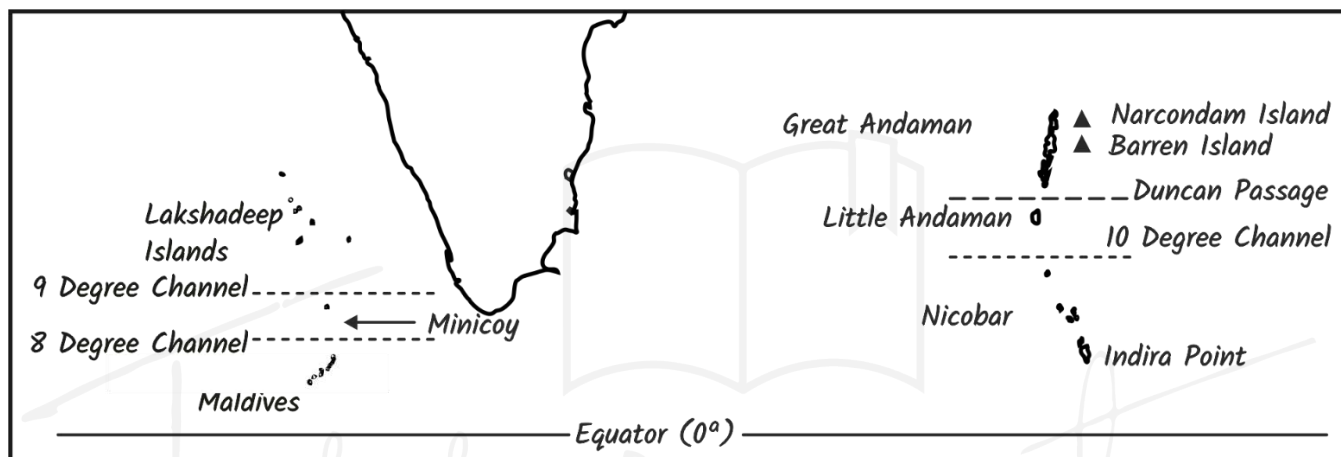
#### Trick to remember

MaMi-8, LakshMi-9, Andman  
Nicobar-10

Ma – Maldives

Mi – Minicoy

Laksh – Lakshadweep



#### Duncan Passage:

- Located in between Great Andaman and Little Andaman.

### 4. Important Facts-

- Largest state (by area)-Rajasthan.
- Smallest state (by area) - Goa.
- Uttar Pradesh is surrounded by a maximum number of states (8 States and 1 UT)- Uttarakhand, Himachal Pradesh, Haryana, Rajasthan, M.P, Jharkhand, Bihar and Chhattisgarh and Delhi.
- Godwin Austin (K2) is the highest point in the Country.

#### Sorbiquets or Nicknames of States in India

|                                       |                  |
|---------------------------------------|------------------|
| Granary of India, Land of Five Rivers | Punjab           |
| All Seasons State                     | Himachal Pradesh |
| Land of the Gods                      | Uttarakhand      |

|   |                          |
|---|--------------------------|
| <i>Sugar Bowl of India</i>                        | <i>Uttar Pradesh</i>     |
| <i>Land of Sunrise in India, The Orchid State</i> | <i>Arunachal Pradesh</i> |
| <i>Abode of Clouds</i>                            | <i>Meghalaya</i>         |
| <i>The Gateway to the East</i>                    | <i>Manipur</i>           |
| <i>The Land of the Hill People</i>                | <i>Mizoram</i>           |
| <i>The Falcon Capital</i>                         | <i>Nagaland</i>          |
| <i>Land of Red River and Blue Hills</i>           | <i>Assam</i>             |
| <i>God's Own Country, Spice Garden of India</i>   | <i>Kerala</i>            |



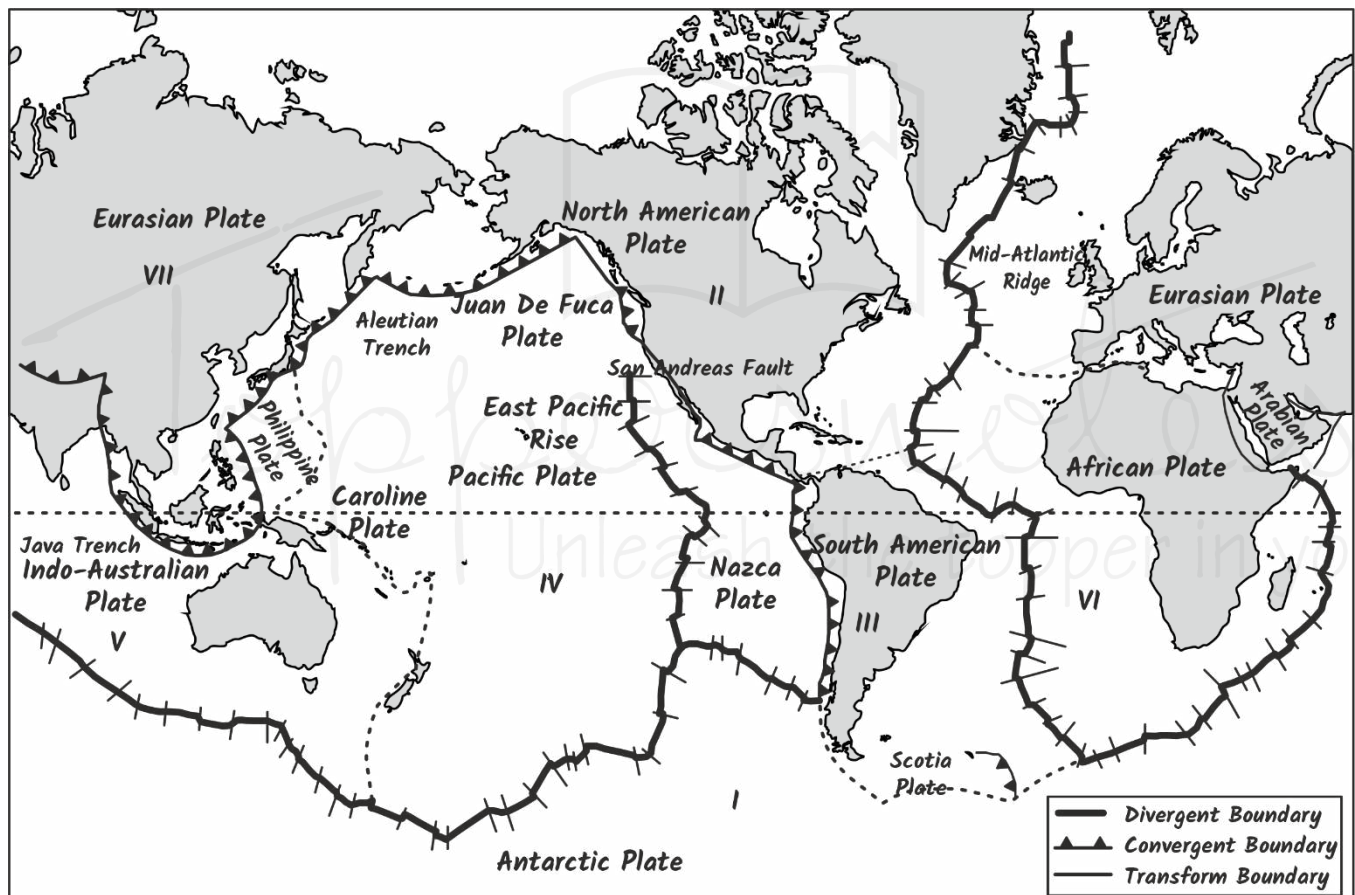
## 2 CHAPTER

# India- Broad Physical Features and Physiographic & Location

India is a large landmass formed during different geological periods which has influenced her relief. Around 250 million years ago, Pangea broke and the Indian plate started its journey northwards. About 50-60 million years ago, the Indian plate collided with the Eurasian plate, leading to the formation of the Himalayas.

### Plate Tectonic Theory:

- Propounded in 1967 by scientists W. J. Morgan, D. McKenzie, and X. Le Pichon
- It explains Earth's lithosphere as divided into rigid plates that float and move over the semi-fluid asthenosphere. (7 major and some minor plates)



- The movement of these plates along the convergent, divergent and transforming boundaries results in phenomena like continental drift, earthquakes, volcanism and mountain building.

### Indian Plate

- The Indian plate includes Peninsular India and the Australian continental portions.
- Tethys Sea separated the Indian and the Eurasian plates.
- **Northern Boundary:** Subduction zone along the Himalayas (Continent-continent convergence)

- **Eastern Boundary:** Extends through the Rakingyoma Mountains (Arakan Yoma) of Myanmar towards the island arc along the Java Trench.
- **Western Boundary:** Follows Kirthar Mountain of Pakistan.

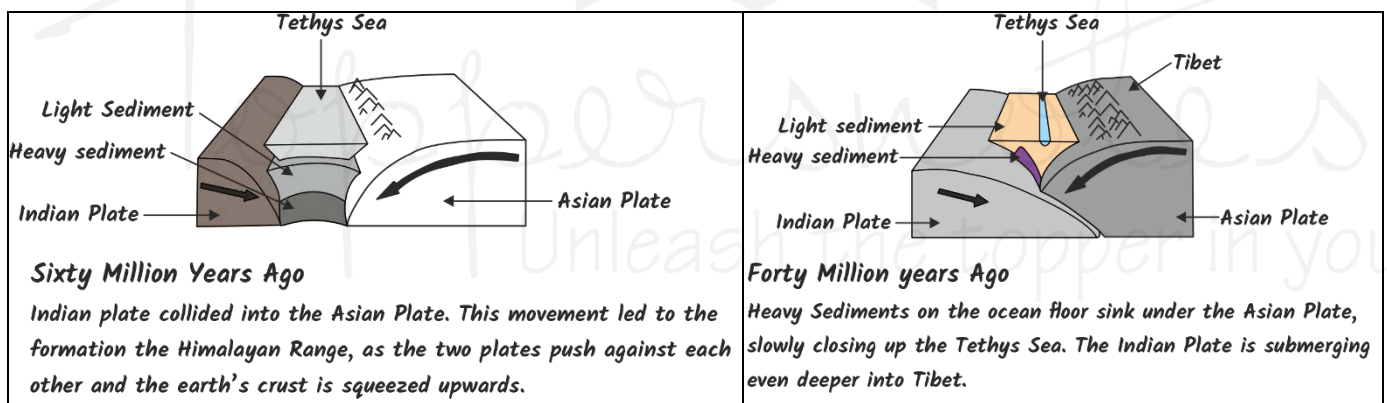
Besides geological formations, different exogenic processes such as weathering, erosion and deposition have created and modified the relief to its present form.

India has all the major physical features of the earth i.e. mountains, plains, deserts, plateaus and islands. On the basis of physical features, India is divided into 6 physiographic divisions:

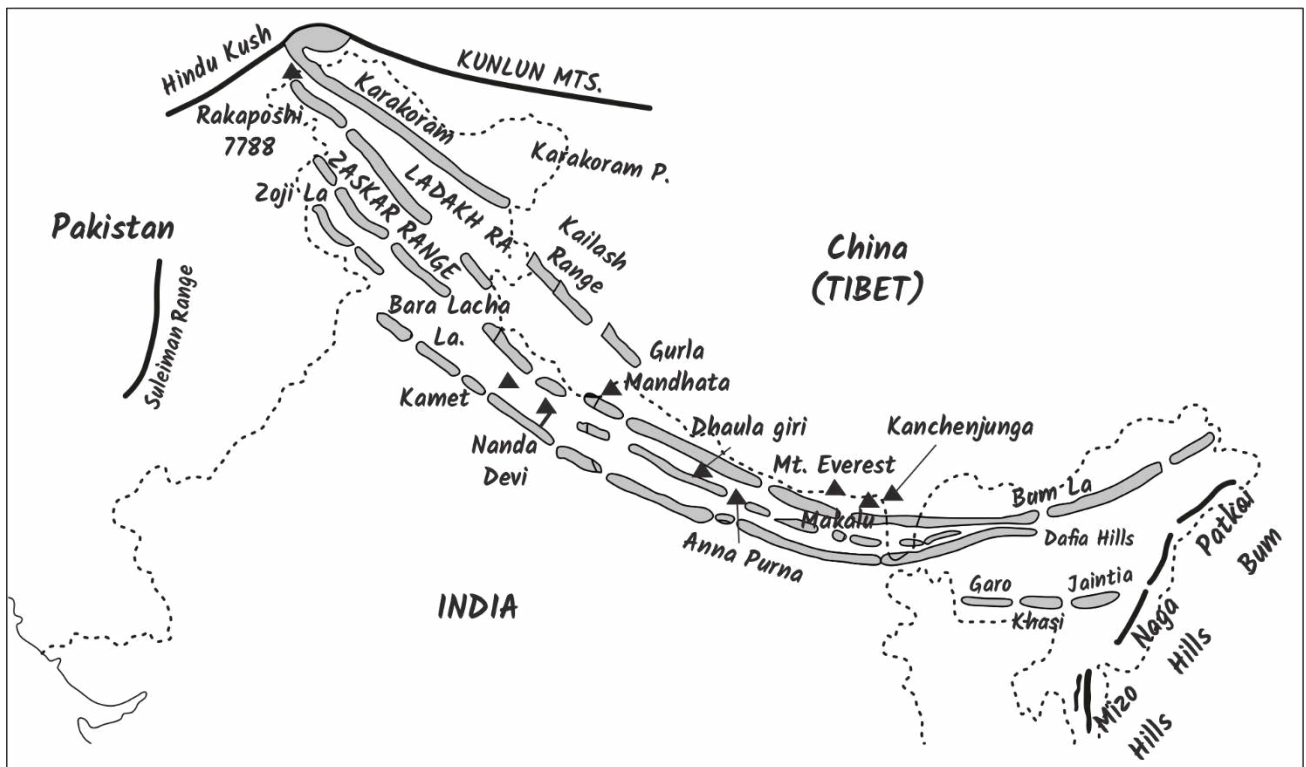
1. Himalayan Mountains
2. Northern Plain
3. Coastal Plains
4. Indian Desert
5. Peninsular Plateau
6. Islands

## 1. Himalayan Mountains

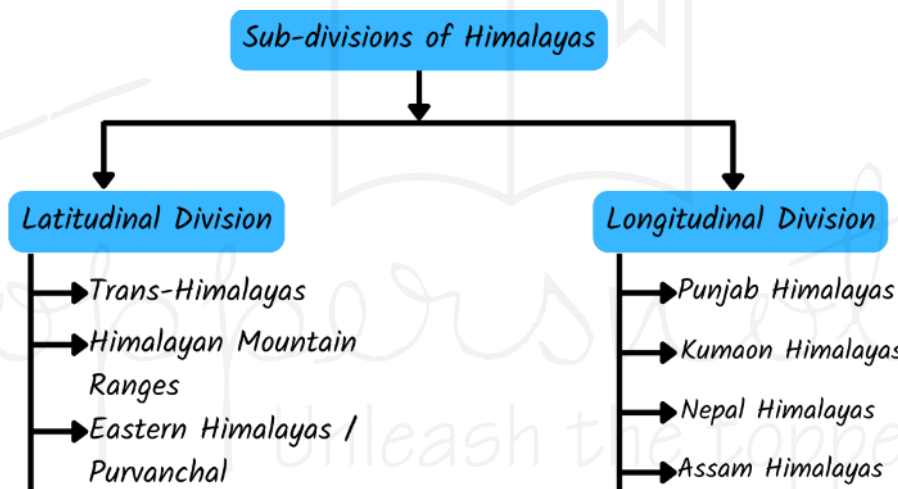
The Himalayas are one of the youngest mountains. The formation of the Himalayas started approximately 60 million years ago, and the process and stages of Himalayas formation are depicted in the following pictures.



- Highest and the youngest fold mountain ranges in the world.
- Length: runs west-northwest to east-southeast in an arc 2,400 km long.
  - ✓ Western anchor: Nanga Parbat
  - ✓ Eastern anchor: Namcha Barwa
- Width: 400 km - 150 km (Wider in the west narrower in the east).
- Altitudinal variations are greater in the eastern half than those in the western half.



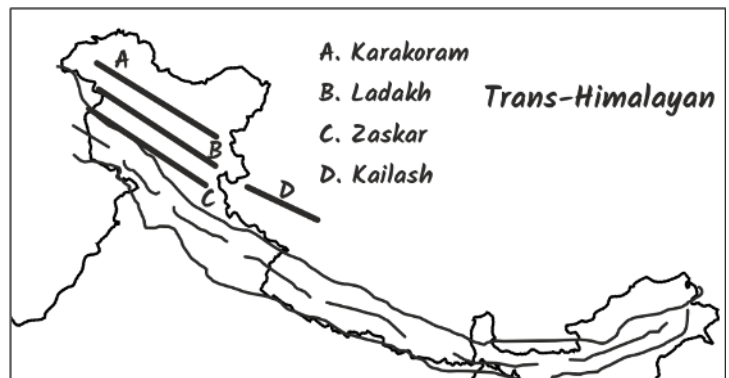
## 1.1 Sub Divisions of the Himalayas



### Latitudinal division of Himalayas:

#### (i) Trans Himalayas-

- Location: North of the Great Himalayas
- Also known as Tibetan Himalaya because most of it lies in Tibet.
- The Trans-Himalayan ranges begin at the Pamir Knot.
- The region is dry and arid, characterized by a lack of vegetation. This is primarily due to its location in the rain shadow of the Main Himalayas, which limits rainfall and contributes to the arid conditions.

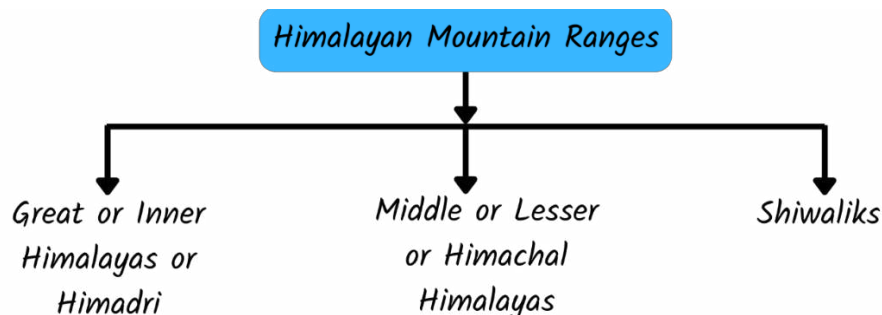


- Length- 1,000 km in east-west direction
- Average elevation- 5000 m above mean sea level.
- Average width - 40 km- 225 km (extremities – central part).
- Prominent ranges:

|                 |  |
|-----------------|--|
| Karakoram Range | <ul style="list-style-type: none"> <li>➤ Northernmost and highest range of the Trans-Himalayas in India.</li> <li>➤ Also known as Krishnagiri range.</li> <li>➤ Extends eastwards from Pamir Plateau to Mount Kailash.</li> <li>➤ It forms India's boundary with Afghanistan and China.</li> <li>➤ Mainly located in Kashmir and Ladakh and famous for Alpine glaciers like Baltoro, Siachin, Batura, Remo glaciers.</li> <li>➤ Highest peak: Godwin Austin (K2) (8611 m) (Highest mountain peak of India).</li> <li>➤ Nubra valley is located b/w Karakoram and Ladakh ranges.</li> </ul> |
| Ladakh Range    | <ul style="list-style-type: none"> <li>➤ Southernmost extent of Karakoram range.</li> <li>➤ Highest Peak – Mt. Rakaposhi (7788 m)</li> <li>➤ Merges with the Kailash range in Tibet.</li> <li>➤ Ladakh is the highest plateau found in India</li> </ul>  |
| Zaskar Range    | <ul style="list-style-type: none"> <li>➤ It is Southernmost range of Trans Himalayas</li> <li>➤ Extension: from the Suru valley to the Karnali river.</li> <li>➤ Highest Peak- Kamet</li> <li>➤ Major rivers- Hanle, Khurna, Zaskar, Suru (Indus), and Shingo Rivers</li> </ul>  |
| Kailash Range   | <ul style="list-style-type: none"> <li>➤ Offshoot of the Ladakh Range.</li> <li>➤ Highest peak - Mount Kailash (6714 m).</li> <li>➤ Mansarovar lake located south of Mount Kailash.</li> <li>➤ River Indus originates here.</li> </ul>   |

### **(ii) Himalayan Mountain Ranges**

- It lies south of the Trans Himalayas and is the longest and highest mountain range of the Northern mountains. It is divided into three parts.



### **(a) Great or Inner Himalayas or Himadri**

- It is the northern most range of the main Himalayas.
- Average height - 6000 m and width is between 100 to 200 km.
- Extension - Mt. Nanga Parbat to Namcha Barwa (2400 km). It is one of the longest - running Fold mountain ranges in the world. It is also the only Himalaya range that maintains its continuity from west to east.
- Features: High relief, deep gorges, vertical slopes, symmetrical convexity, and antecedent drainage.
- Composed of metamorphic and sedimentary rocks.
- Slope of this range is gentle towards north and steep towards the south.
- 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, Dehra Dun etc.

**NOTE:** Dehradun is regarded as the largest Dun having length of about 35 to 45 kilometers and a width of about 22-25 kilometers.

### **Some Highest Peaks of the Himalayas**

| Peak           | Country | Height in metres |
|----------------|---------|------------------|
| Mt. Everest    | Nepal   | 8848             |
| Kanchenjunga   | India   | 8598             |
| Makalu         | Nepal   | 8481             |
| Dhaulagiri     | Nepal   | 8172             |
| Nanga Parbat   | India   | 8126             |
| Annapurna      | Nepal   | 8078             |
| Nanda Devi     | India   | 7817             |
| Kamet          | India   | 7756             |
| Namcha Barwa   | India   | 7756             |
| Gurla Mandhata | Nepal   | 7728             |

### **(b) Middle/ Lesser/ Himachal Himalaya:**

- Most rugged mountain system and lies b/w the Shiwaliks in the south and the Greater Himalayas in the north.
- Rocks in this zone have been metamorphosed due to violent thrusts and compression. Therefore, this range mainly consists of metamorphosed rocks.
- Average altitude - 3,700 - 4,500 metres and average width - 50 to 80 Km.

- Ranges – Pir panjal, Dhauladhar, Nag Tibba.
- Famous valley of Kashmir, the Kangra and Kullu Valley in Himachal Pradesh are also a part of the Himachal ranges.
  - ✓ Well known for its hill stations like Shimla, Mussoorie and Darjeeling.
- These ranges are cut across by the Jhelum and Chenab river.
- Pir Panjal in Jammu and Kashmir and Dhauladhar in Himachal Pradesh are the local names of this range.
- The south-facing slopes of this range are steep and generally devoid of vegetation. The north-facing gentle slopes of this range are covered by dense vegetation.
- Temperate Grassland found in these range are known as Murg (Gulmurg, Sonmurg) in Kashmir and Bugyal and Payar in Uttarakhand.
- Karewa-Thick glacial deposits found in Kashmir valley useful for saffron cultivation.

| Important ranges of Lesser Himalayas | Region                        |
|--------------------------------------|-------------------------------|
| Pir Panjal Range                     | J&K (south of Kashmir Valley) |
| Dhauladhar Range                     | Himachal Pradesh              |
| Mussoorie Range and Nag Tibba Range  | Uttarakhand                   |
| Mahabharat Lekh                      | Nepal                         |

### (c) Shiwaliks:

- Also known as Outer Himalayas and located b/w Great Plains and Lesser Himalayas.
- Altitude- 600-1500 metres.
- Length- 2,400 km - Potwar Plateau to Brahmaputra valley.
- Width - 50 km - 15 km (Himachal Pradesh -Arunachal Pradesh).
- Almost unbroken except for 80-90 km - valley of Tista and Raidak River.
- Covered with thick forests from North-East India up to Nepal.
- Highly dissected by seasonal streams called – Chos.
- Flat valley found between Shiwalik and Middle Himalayas are called Duns in west and Duars in the east, very useful for rice cultivation.
- Different names:

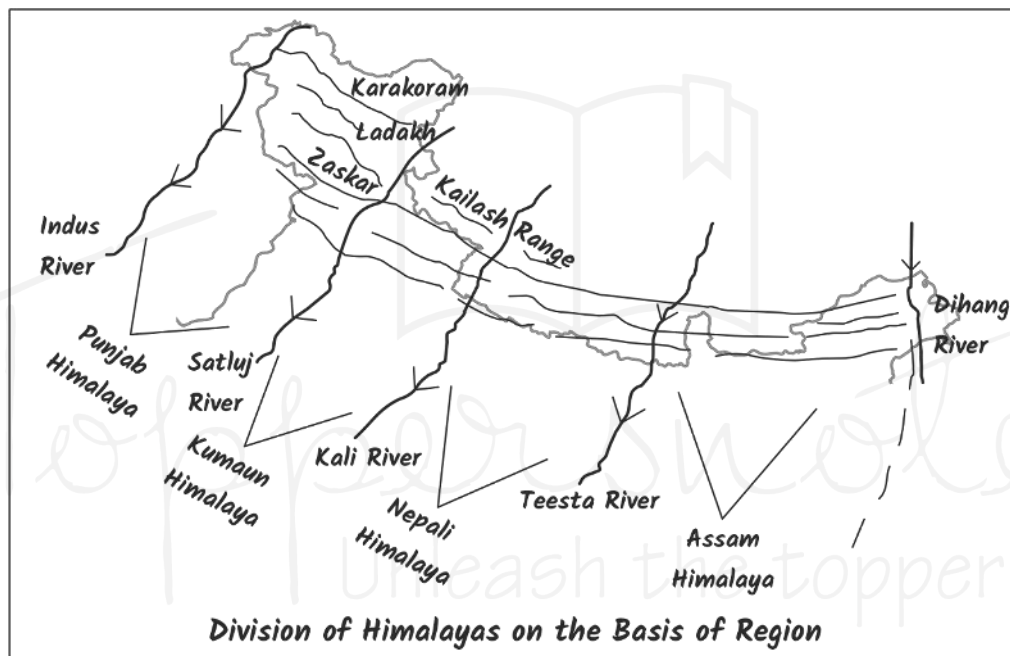
| Name of Shiwaliks                  | Region            |
|------------------------------------|-------------------|
| Jammu Hills                        | Jammu             |
| Dafla, Miri, Abor and Mishmi Hills | Arunachal Pradesh |
| The Dhang Range, Dudhwa Range      | Uttarakhand       |
| Churia Ghat Hills                  | Nepal             |

### (iii) Purvanchal

- These ranges have general alignment from the north to the south direction.
- In the north, they are known as Patkai Bum, Naga hills, the Manipur hills and in the south as Mizo or Lushai hills.
- Have loose, fragmented sedimentary rocks like shale, mudstone, sandstone, quartzite
- These are low hills, inhabited by numerous tribal groups practising Jhum cultivation. It is also one of the Biodiversity Hotspots in the world.
- The Barak is an important river in Manipur and Mizoram.
- Mizoram which is also known as the 'Molassis basin' which is made up of soft unconsolidated deposits.

### Longitudinal Division / Regional Division of Himalayas

Divided by Sir Sidney Burrard on the basis of the river valleys: 4 parts



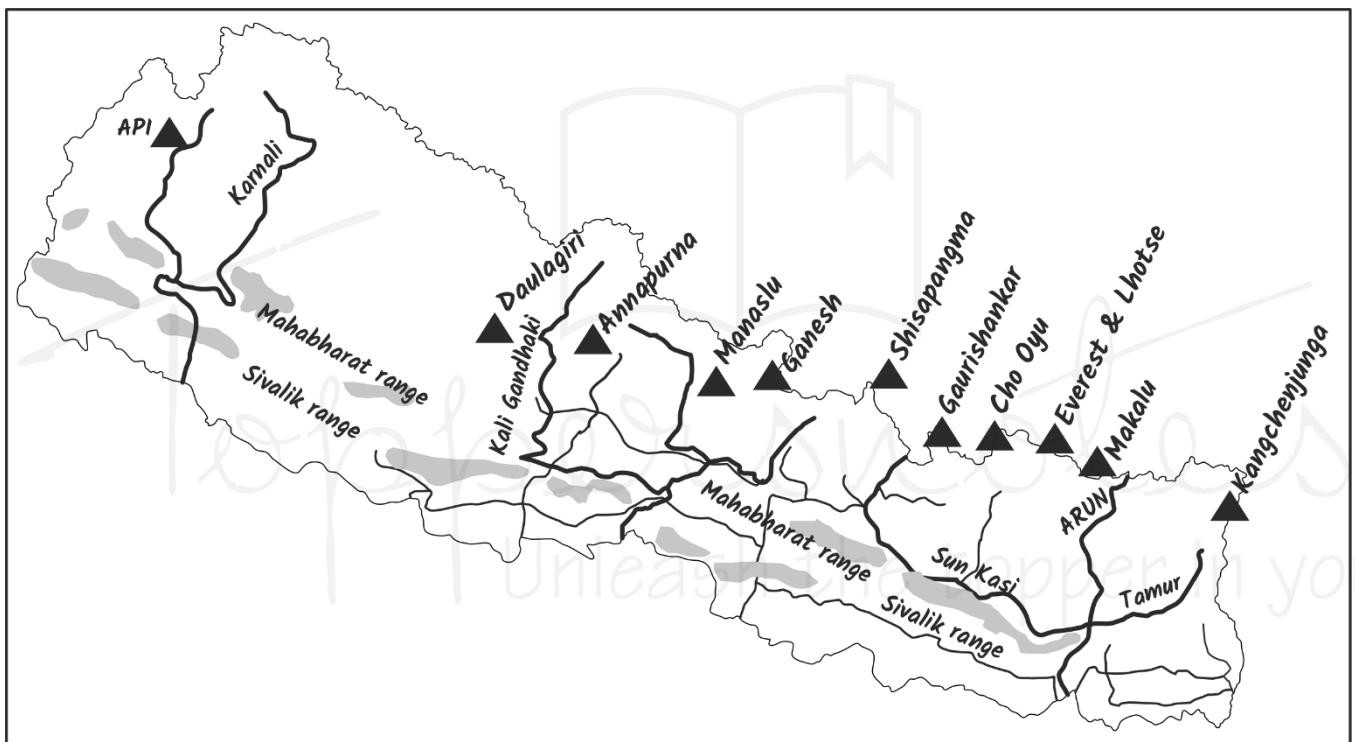
#### (i) Punjab Himalayas:

- Located between Indus and Satluj river. It is also called as Kashmir or Himachal Himalayas.
- Length- 560 kms and Width - 320 kms
- Zaskar range:- northern boundary and Shiwaliks:- Southern boundary
- 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.
- Important pilgrimage places-Vaishnodevi, Amarnath cave.

## **(ii) Kumaun Himalayas**

- Length-320 km and Located b/w Satluj and Kali river.
- Major mountain ranges - Nag Tibba, Dhauladhar, Mussoorie, and parts of the Greater Himalayas.
- Major peaks - Nanda Devi, Kamet, Badrinath, Kedarnath, etc.
- Major rivers - Gangotri, Yamunotri, Pindari, etc.
- World famous "Valley of Flowers" is situated in this range. The places of pilgrimage such as the Gangotri, Yamunotri, Kedarnath, Badrinath and Hemkund Sahib are also situated in this part.
- Has tectonic valleys- Kulu, Manali, and Kangra.
- More prone to Seismicity and landslides.

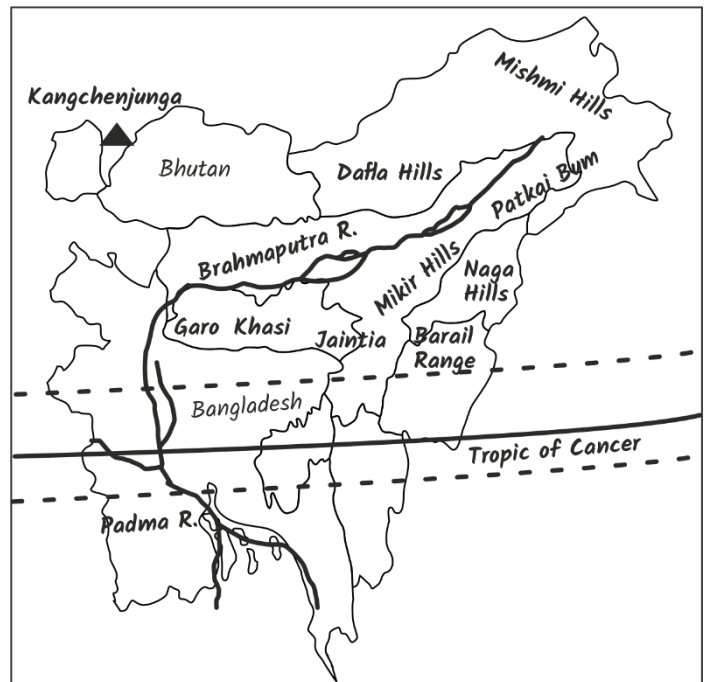
## **(iii) Nepal Himalaya**



- Length- 800 km and between Kali river in the west and Tista river in the east.
- Great Himalayas attain maximum height in this portion.
- Major peaks- Mt. Everest, Kanchenjunga, Makalu, Annapurna, Gosainthan and Dhaulagiri.
- Major rivers- Ghaghara, Gandak, Kosi, etc.
- Major valleys- Kathmandu and Pokhara lacustrine valleys (previously lakes).
- In place of the Shiwaliks, the 'duar topography' found in this region which have also been used for the development of tea gardens.

#### (iv) Assam Himalayas

- Length- 750km and Located between Tista in the west and Brahmaputra (Dihang gorges) in the east.
- Rainfall > 200cms and shows a marked dominance of fluvial erosion due to heavy rainfall.
- Inhabited by tribes some of the prominent ones from west to east are the Monpa, Abor, Mishmi, Nyishi and the Nagas.
- Important peaks - Namcha Barwa (7756 m) Kula Kangri (7554 m) ChomoLhari (7327 m).
- Major hills - Aka hills, Dafla hills, Miri hills, Abor hills, Mishmi hills, and Namcha Barwa, Patkai bum, Manipur hills, Blue Mountain, Tripura range, and Braille range.
- Major passes- Bomdi La, Yang Yap, Diphu, Pangsau, Tse La, Dihang, Debang, Tunga, and Bum La.



**NOTE** - Andaman and Nicobar islands are extensions of eastern Himalayas.

### 1.2 Important Passes of Himalayas

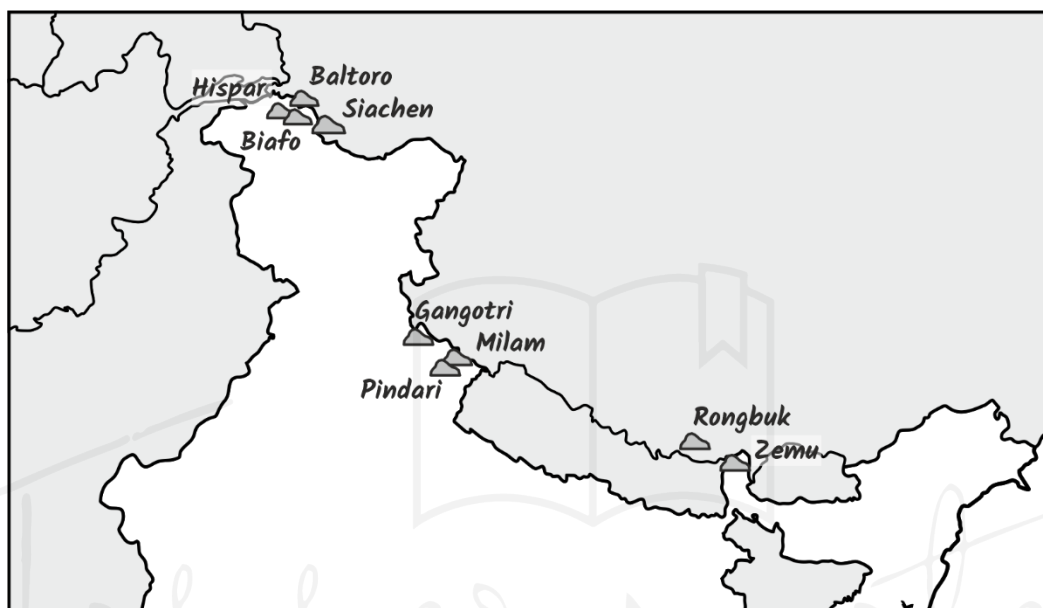
#### (i) Passes of J&k and Ladakh

|                 |   |
|-----------------|---|
| Banihal Pass    | Situated in Pir- Panjal Range.<br>Jawahar Tunnel  |
| Zoji La         | Connects Srinagar with Kargil and Leh.  |
| Burzil La       | Srinagar- Kishan Ganga Valley<br>Joins the Valley of Kashmir with the Deosai Plains of Ladakh.      |
| Pir-Panjal Pass | A traditional pass from Jammu to Srinagar.<br>Shortest roadway access to Kashmir valley from Jammu. |
| Khardung La     | Connects Leh and Siachen glaciers.<br>Located in Ladakh range.                                      |
| Thang La        | Located in Ladakh.  |
| Aghil Pass      | North of Mount Godwin-Austen in Karakoram.  |

(ii) **Other passes-**

| State             | Passes  |
|-------------------|---|
| Himachal Pradesh  | Shipki la, Bara lacha, Debsa and Rohtang pass |
| Uttarakhand       | Lipulekh, Mana and Niti pass                  |
| Sikkim            | Nathu la and Jelep la pass                    |
| Arunachal Pradesh | Bomdi la, Dihang, Diphu and Pangsan pass      |
| Manipur           | Tuju pass                                     |

**1.3 Major Glaciers in India**



| Glacier                     | Location             | State/UT    | Key Features  |
|-----------------------------|----------------------|-------------|---|
| Siachen Glacier<br>(76 km)  | Karakoram<br>Range   | Ladakh      | Largest glacier in India; strategic military importance.      |
| Gangotri Glacier<br>(30 km) | Garhwal<br>Himalayas | Uttarakhand | Source of the Ganges River (Bhagirathi).                      |
| Yamunotri Glacier<br>(6 km) | Garhwal<br>Himalayas | Uttarakhand | Source of the Yamuna River.                                   |
| Pindari Glacier<br>(3.2 km) | Kumaon<br>Himalayas  | Uttarakhand | Popular trekking destination; source of the Pindar River.     |
| Milam Glacier<br>(16 km)    | Kumaon<br>Himalayas  | Uttarakhand | Source of the Gori Ganga River; near the Indo-Nepal border.   |
| Zemu Glacier<br>(26 km)     | Eastern<br>Himalayas | Sikkim      | Largest glacier in the Eastern Himalayas; near Kangchenjunga. |