

For All Competitive Exams



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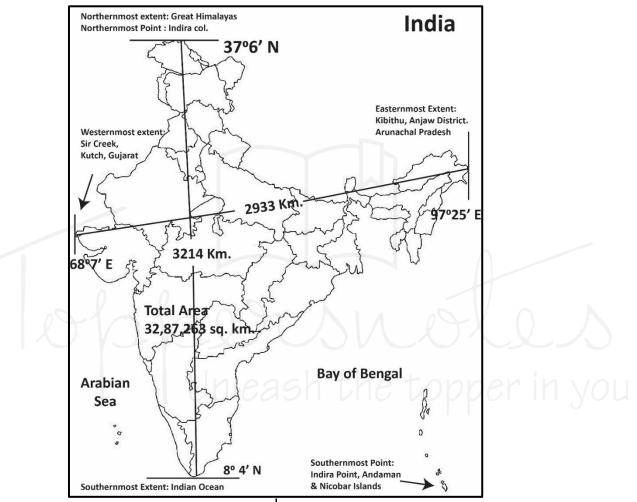
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1 CHAPTER

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:

North-	٠	Afghanistan and Pakistan
west	٠	Indo-Pak border: Radcliffe line
	٠	Pak - Afghanistan border: Durand
		Line
North	٠	China, Bhutan and Nepal
	٠	Indo-China border: McMahon line
East	٠	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)

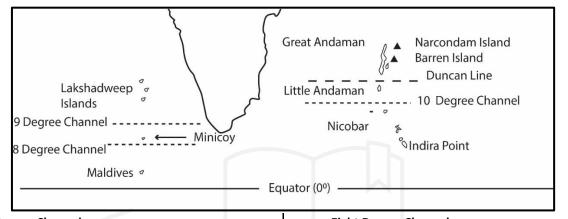
Nepal	5 States: Uttar Pradesh, Bihar,	
	Uttarakhand, Sikkim, West Bengal	
	(1751km)	
Myanmar	4 States: Arunachal Pradesh, Manipur,	
	Mizoram, and Nagaland (1643 km)	
Bhutan	4 States: Arunachal Pradesh, Assam,	
	Sikkim, and West Bengal (699 km)	
Afghanistan	1 UT: Ladakh (106 km)	

Indian Standard Meridian

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

Various Channels and their Location

- 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)



- 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.

Physiographic Divisions of India **CHAPTER**

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

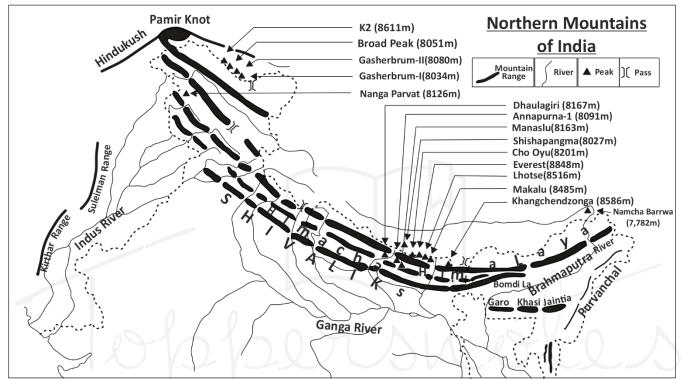
- **Himalayan Mountains** 1.
- 2. Great Plains of India

Indian Desert Δ

5. Coastal Plains

3. Peninsular Plateau 6. Islands

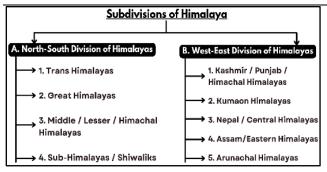
1. Himalayan Mountains

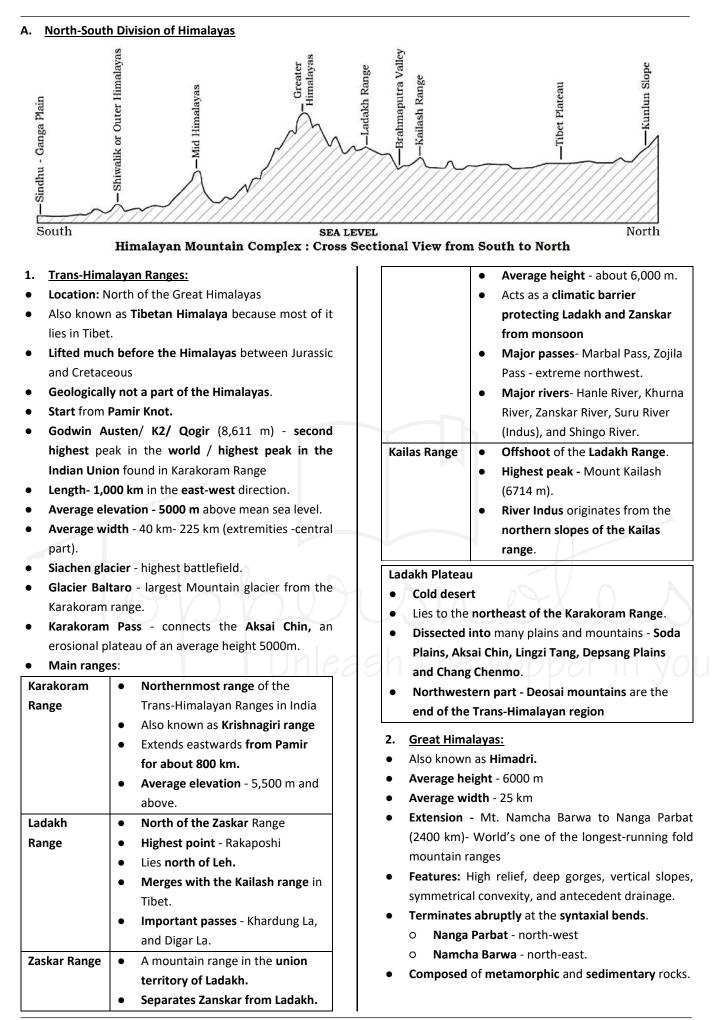


- Highest and the youngest fold mountain ranges of the world.
- One of the highest earthquake-prone regions of the world.
- Length: runs west-northwest to east-southeast in an arc 2,500 km long.
 - Western anchor: Nanga Parbat (lies just south of the northernmost bend of the Indus River)
 - Eastern anchor: Namcha Barwa 0 (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





- 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 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	•	Between the Pir Panjal and the
Kashmir		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	٠	Extends from the foot of the
Valley		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 Mahabhara 		

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.

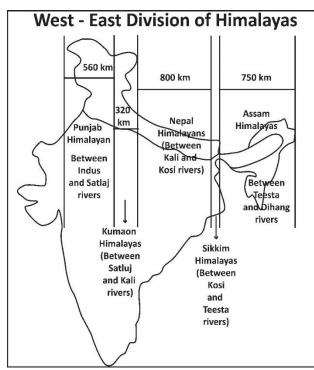
- Cut across by the Jhelum and Chenab rivers.
- Dhauladhar ranges an extension of Pir Panjal into Himachal Pradesh - cut across by the river Ravi.
- Mussoorie ranges divide the waters of Sutlej and Ganga
- Have steep, bare southern slopes [prevents soil formation] and gentler, forest-covered northern slopes.
- Uttarakhand- marked by Mussoorie and Nag Tibba ranges.

Important ranges of	Region
Lesser Himalayas	
Pir Panjal Range	Jammu and Kashmir (south
	of Kashmir Valley)
Dhauladhar Range	Himachal Pradesh
Mussoorie Range and	Uttarakhand
Nag Tibba Range	
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 Pradeshalmost NO forest cover.
- Highly dissected by seasonal streams Chos.
- Valleys part of synclines and hills part of anticlines
- Different names:

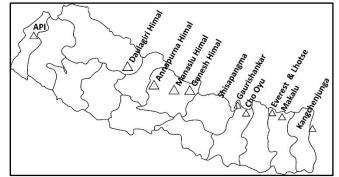
Region	Name of Shiwaliks
Jammu Region	Jammu Hills
Dafla, Miri, Abor and	Arunachal Pradesh
Mishmi Hills	
The Dhang Range, Dundwa	Uttarakhand
Range	
Churia Ghat Hills	Nepal

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. <u>Kumaon Himalayas</u>
- 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:
 - o 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.

urvanchal H	imalayas • Most fractured parts of the Himalayas.				
	 v considered part of the Himalayas Naga fault line - earthquakes and landslides 				
	ral differences, thus, separated from the • Rainfall - 150-200 cm				
	ayan ranges.				
	• Elevation decreases from north to south.				
	rakan Yoma orogenesis. • Convex to the west.				
-	fragmented sedimentary rocks like • Low hills where Jhum cultivation is prevalent.				
Dafla Hills	Location: north of Tezpur and north Lakhimpur				
Abor Hills	Bounded on west by the Aka Hills and on the east by the Abor Range.				
	 Location: region of Arunachal Pradesh in NE of India, near China border Bordered by Mishmi Hills and Miri Hills. 				
	 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	Location: India's NE border between Arunachal Pradesh and Myanmar.				
Hills	 "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.				

. Passes of	Jammu and Kashmir and Ladakh
Banihal	 A famous pass in Jammu and
Pass	Kashmir.
(Jawahar	 Situated in Pir- Panjal Range.
Tunnel)	 Connects Banihal with Qazigund.
Zoji La	Connects Srinagar with Kargil and Leh
20). 20	 Border Road Organization- clears
	and maintains the road, especially
	during winter.
Burzil	Srinagar- Kishan Ganga Valley
Pass	 Joins the Valley of Kashmir with the
	Deosai Plains of Ladakh.
Pir-Panjal	 A traditional pass from Jammu to
Pass	Srinagar.
	• Closed after the partition.
	• Shortest roadway access to Kashmin
	valley from Jammu.
Qara Tagh	 Located in the Karakoram
Pass	Mountains.
	• A subsidiary of the ancient silk route
Khardung	• Highest motorable pass in the
La	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 ir
	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	• Kashmir and China
Pass	• On the Indo-China border
Mintaka	Kashmir and China
Pass	• Tri Junction of India-China and

2. Passes of Himachal Pradesh

Shipki	• Passes through Sutlej Gorge.
La Pass	• Connects Himachal Pradesh with Tibet.
	• India's 3rd border post for trade with
	China (Lipu Lekh and Nathula Pass)
Bara-	Himachal Pradesh- Leh-Ladakh
Lacha	• Situated on the National Highway in
Pass	Jammu and Kashmir.
	• Connects Manali and Leh.
Debsa	• Joins Spiti and Parvati Valley.
Pass	• Between the Kullu and Spiti of

	Himachal Pradesh.		
	• Bypass route of Pin-Parvati Pass.		
Rohtang	High road transportation - high jams		
Pass	• Connects Kullu, Spiti, and Lahaul.		
B. <u>Passes</u>	of Uttarakhand		
Lipu	• Connects Uttarakhand with Tibet.		
Lekh	• Important border post for trade with		
	China.		
	• The pilgrims for Kailash-Manasarovar		
	travel through this pass.		
Mana	• Located in the Greater Himalayas .		
Pass	• Connects Tibet with Uttarakhand .		
	Remains under snow for six months		
Manasha	during winter.Connects Uttarakhand-Tibet.		
Mangsha Dhura	 Connects Uttarakhand-Tibet. Known for landslides. 		
Pass	 Pilgrims for Manasarovar cross this 		
1 4 3 3	route.		
Muling	Seasonal pass		
La	 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	Situated at the end of the Pindari		
Pass	glacier.		
	• Connects the Pindari valley to Milam		
	valley.		
	• Steep and rugged.		
4. <u>Passes</u>	of Sikkim		
Nathu	• Located on the India- China border.		
La Pass	 Forms a part of an offshoot of the 		
Edituss	ancient silk route.		
	 One of the trading borders posts 		
	• One of the trading borders posts between India and China.		
nut l			
Jelep			
La Pass	• Connects Sikkim with Lhasa, the capital		
	of Tibet.		
5. <u>Passes</u>	of Arunachal Pradesh		
Bomdi-La	Connects Arunachal Pradesh-		
DUIIIUI-La	Lhasa, the capital city of Tibet.		
	 Located in the east of Bhutan. 		
Dihang pa			
	states of Arunachal Pradesh.		
	Connects Arunachal Pradesh with		
	Myanmar (Mandalay)		
Diphu pas			
	• Remains open throughout the		
	year for transportation and trade.		
Lekhapan	Remains open throughout a year		
	for transport and trade		

for transport and trade.

Myanmar.

Myanmar.

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Pangsan Pass

Connects Arunachal Pradesh with

Connects Arunachal Pradesh and

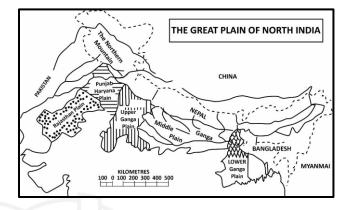
Yonggyap	Connects	Arunachal	Pradesh	with
Pass	Tibet			
Kumjawng	Connects	Arunachal	Pradesh	with
Pass	Myanmar			
Hpungan Pass	Connects	Arunachal	Pradesh	with
	Myanmar			
Chankan Pass	Connects	Arunachal	Pradesh	with
	Myanmar			
Tuiu Dass:				

- 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. North-South Division of Great Plains of India 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. 0 . Most unique feature - porosity. Porous due to the deposition of a huge number of pebbles and rock debris across the alluvial 0 fans. Not suitable for agriculture 0 • **Comparatively narrow** in the **east** Tarai 10-20 km wide marshy region in the south of Bhabar and runs parallel to it. 2. • 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. Uplands (alluvial terrace) formed by deposition of older alluvium. 4. Bangar or • Bhangar Lies above the flood limit of the plains. 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. <u>Regional Classification of Great Plains</u>

- 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	between the Jhelum and
Doab	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.

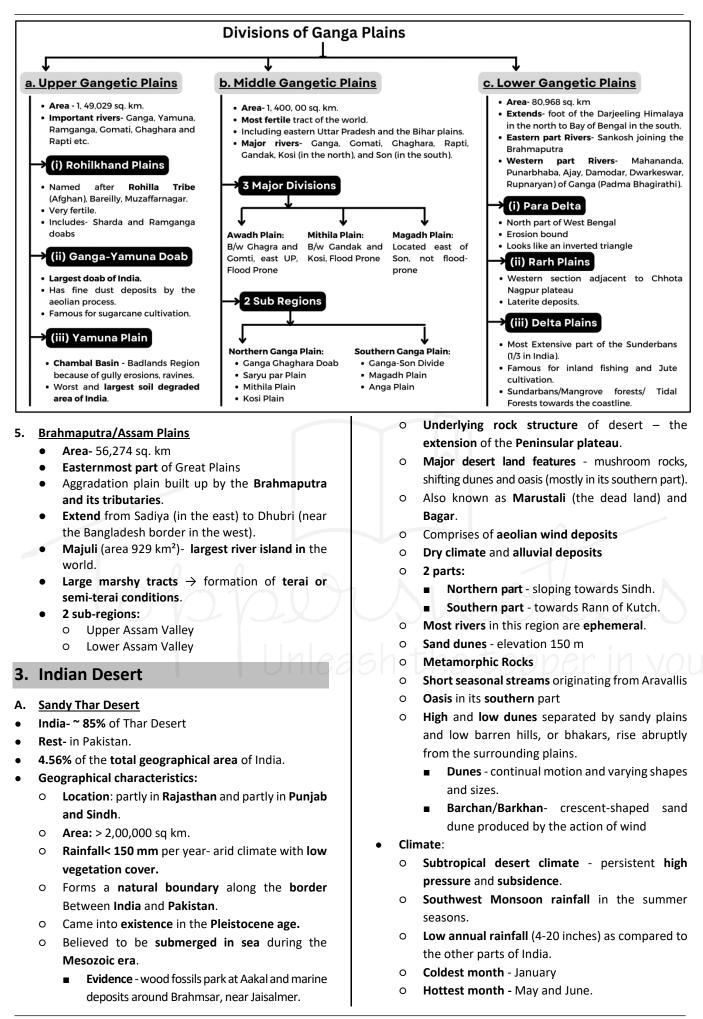
- Total area 1.75 lakh sq km.
- Average elevation 250 m above mean sea level.
- Eastern boundary Delhi-Aravali ridge.
- Northern part [Shivalik hills] is intensively eroded by numerous streams called Chaos.
 Resulted in enormous gullying.
- South of Satluj river Malwa plain of Punjab.
- Area between 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. <u>Ganga Plain</u>

- 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'.



- 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.

4. Peninsular Plateau

Bundelkhand Plateau Malwa Plateau Dhakkan Plateau Dhakkan Plateau Baghelkhand Plateau Dandkarany Plateau Telangana Plateau Karnataka Plateau

- Roughly triangular in shape.
- Extension:
 - Apex at Kanyakumari.
 - **NW** Delhi ridge
 - o 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**.

- 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:
 - o Summers: 50 degree celsius
 - Winter- < 0 degree celsius.
 - 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 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.

Ranges:

 Sedimentary, metamorphosed rocks. Elevation- 400-600 m (few hills well above 1,000 m).
• 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.
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.
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:
o North - Narmada
o South - Tapti
Major folds: Maikal Hills, Mahadeo Hills near Pachmarhi, Kalibhit, Asirgarh, Bijagarh, Barwan
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.
Eastern portion of the Vindhya Range in MP, UP & Bihar; runs parallel to river Son
Forms the central part of the Satpura Range, located in MP, Highest peak: Dhoopgarh
Eastern part of the Satpuras range (MP)
Maharashtra, south of river Tapi, sheltering caves of world-famous paintings of Gupta period
Located in Jharkhand made up of lava basaltic rocks
 Point of Ganges bifurcation

Marwar	to the east of Aravallis in Rajasthan		
upland or	• A rolling plain carved by the Banas River and its tributaries Berach river Khari rivers.		
Mewar	Average elevation - 250-500 m above sea level.		
Plateau	Composed of sandstone, shales and limestones of Vindhyan period.		
Madhya	East of Marwar upland.		
Bharat Pathar	Also known as Central Highland.		
	Major river- Chambal.		
	 Kali-Sindh, Banas, and Parbati. 		
Malwa	Lies in Madhya Pradesh Between Aravali and Vindhya.		
plateau	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 		
	o 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	• Lies along the borders of UP and MP .		
plateau	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	Lies north to east of the Maikal range.		
plateau	• 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	North–east part of the Peninsular plateau.		
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	In Kathiawar region of Gujarat		
plateau	• 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.		
3. <u>Deccan Plate</u>			
Triangular ir			
Boundaries	Volcanic in origin.		
	and the Vindhya- north-west • Sedimentary layers Between layers of solidified lava		
	ev and Maikal- north inter-trapping structure		
	n Ghats - west • Black soil belt known as Deccan trap.		
	Ghats - east. O Good for cotton and sugarcane cultivation		
 Average elev 	vation - 600 m. • Home to rich mineral resources		
	• 1000 m in south but subsides to 500 m • Good hydroelectric power capacity.		
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in the n Broadly divi Maharashtra P	ided into: 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.		
in the n Broadly divi	ided into: 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. • Also known as Mysore plateau.		
in the n Broadly divi Maharashtra P	ided into: 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.		

	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, and Penna .	
	Rich in mineral resources.	
	• Good rainfall (average of 100 cm/year).	

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.

	Divisions of Weste	ern Ghats	ISX U I
↓ a. Northern Western Ghats	↓ b. Middle Sahyadri		c. Southern Section
 From Tapi valley to a little north of Coa. Basaltic lava rocks. Highest peak-Kalsubai (1646 m) Average height - 1,200 m. Important passes: Thal ghat and Bhor ghat 	erosion of west-flow • Average height - 120 • Major peaks: Va Kudremukh (1892 m	tes and gneisses. forests. lissected by headward ving streams.	 Separated from the main Sahyadri range by Pal ghat Gap (Palakkad Gap). Also known as the southern mountain complex. Terminate abruptly on either side of this gap. Highest peak - Anai Mudi (2,695 m). 3 ranges: Anaimalai (1800-2000 m)- north, Palani (900-1,200 m)- north-east Cardamom Hills- south
Eastern Ghats			vation than western ghats.
From Odisha to North of Nilgiri hills		 Highest peak - Jindhagada peak (1690 meters). 	
Run parallel to eastern coastal plains of India.		o Also kno	own as Arma Konda or Sitamma Konda.
Discontinuous and dissected by	Discontinuous and dissected by rivers that drain		Rice.
into Bay of Bengal.			
Nilgiri Hills • Referre	d as Blue Mountains, a ra	ange of mountains in	the westernmost part of Tamil Nadu at
the jun	the junction of Karnataka and Kerala		
Hills are	• Hills are separated from the Karnataka plateau to the north by the Moyer River and from the		
Anamal	ai Hills and Palni Hills to t	the south by the Palgh	nat Gap
Cardmom Hills • Part of	Part of Western Ghats, in southeast Kerala and southwest Tamil Nadu		

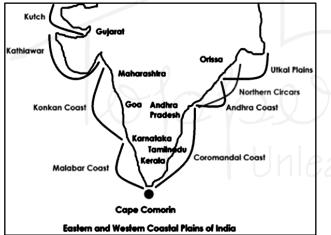
Pachamalai Hills	 Also known as the Pachais Eastern Ghats in Tamil Nadu
Anamalai Hills	 Also known as Elephant Hill a range of mountains in the Western Ghats in Tamil Nadu and Kerala with the highest peak Anaimudi

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. 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:

Utkal coast	 Extending Between Chilika and Kolleru Lake Much wider than western coastal plains. Intense raisfall
	 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	• Between Pulicat Lake and
coast or Payan	Kanyakumari in Tamil Nadu.
Ghat	• Remains dry in summer.
	• Receives rainfall during
	winters.
Golkonda Coast	• Between the Godavari and
	Krishna River

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:

Kutch and	•	Extension of Peninsular plateau
Kathiawar	•	But treated as a part of Western
coast		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
		o Divided into Great Rann
		(north) and Little Rann (east).
	٠	Kathiawar- south of Kutch.
Konkan coast	•	Between Daman (north) to Goa (south).