

सम-सामयिक
घटना
चक्र

परीक्षा संवाद के 29 वर्ष

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See Cover Page - 2

Pictorial Presentation...

GS 3

Drishti

(3rd in 7 Part Series)

Saturn

- Second largest planet in the Solar System (in size and mass)
- Other Name - Globe of Gases and Galaxy like planet
- Characteristics - Probably best known for the system of planetary rings that make it visually unique



Uranus

- Orbital Period → about 84 Earth Years
- Period of rotation along its axis → 17.2 hours
- Density → 1.27 g/cm³



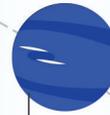
Jupiter

- Other name - Miniature Solar System
- Fastest rotating planet on its axis in the Solar System
- Largest planet of the Solar System



Neptune

- Average distance from the Sun → 4495.1 million km.
- Orbital Period → 165 Earth Years³
- Density → 1.6 g/cm³



Mars

- Other Name - Red Planet
- Enormous Shield Mountain - 'The Nix Olympia' (Olympus Mons)
- Two natural Satellite named Phobos and Deimos



Venus

- Brightest Planet of Solar System
- No any natural satellite
- Hottest Planet in the Solar System



Earth

- Other Name - Green Planet / Blue Planet
- Axial Tilt - 23½°
- Third nearest planet to the Sun



Mercury

- Smallest Planet of Solar System
- No Natural Satellite
- Diurnal range of temperature → apx. average 610°C



SUN

Solar System :
Specific Facts

General GEOGRAPHY

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Preface

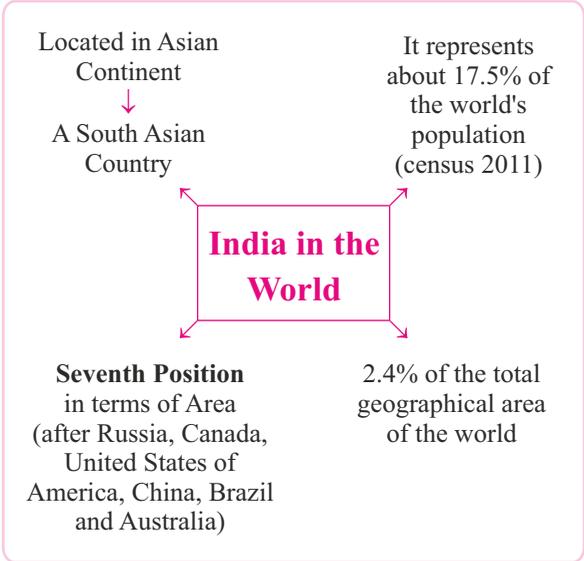
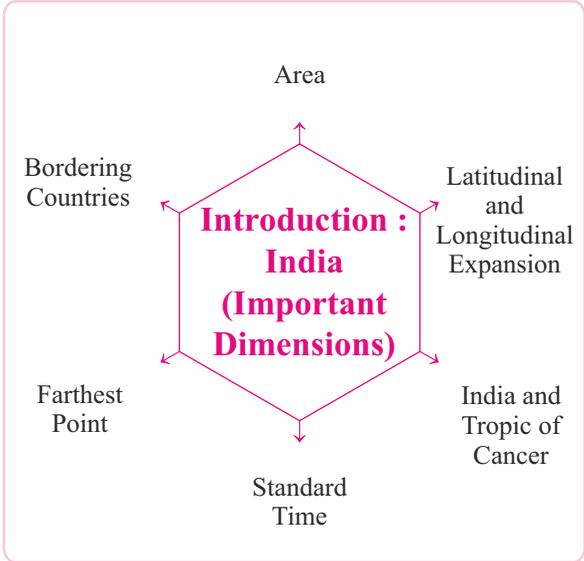
There are two main objectives of **Pictorial Presentation** of various subjects of **General Studies**. The **First One** - to gain confidence in studying the entire subjects in a short time. The **Other One** - these facts should get imprinted on the brain of the readers. Consequently the aspirants will be able to remember the facts within no time in the examination hall. Our aim is that an aspirant should be able to solve at least two questions more from each topic because of imbibing this very effective pictorial representation.

A good book is one that depicts and imbibe happiness. While presenting this subject matter, it has been kept in mind that only the important and relevant facts should get a place in this presentation along with no factual error at all. Moreover only the Purvavalokan related facts have been incorporated here. While presenting this book before the readers, we have worked hard to assay all key facts with utmost accuracy. Undoubtedly, we are in a position to say that there is 99.9 percent accuracy or above. This book is **well designed, handy, and appropriate for revision at the eleventh hours of the examination with appropriate design elements and a sense of originality.**

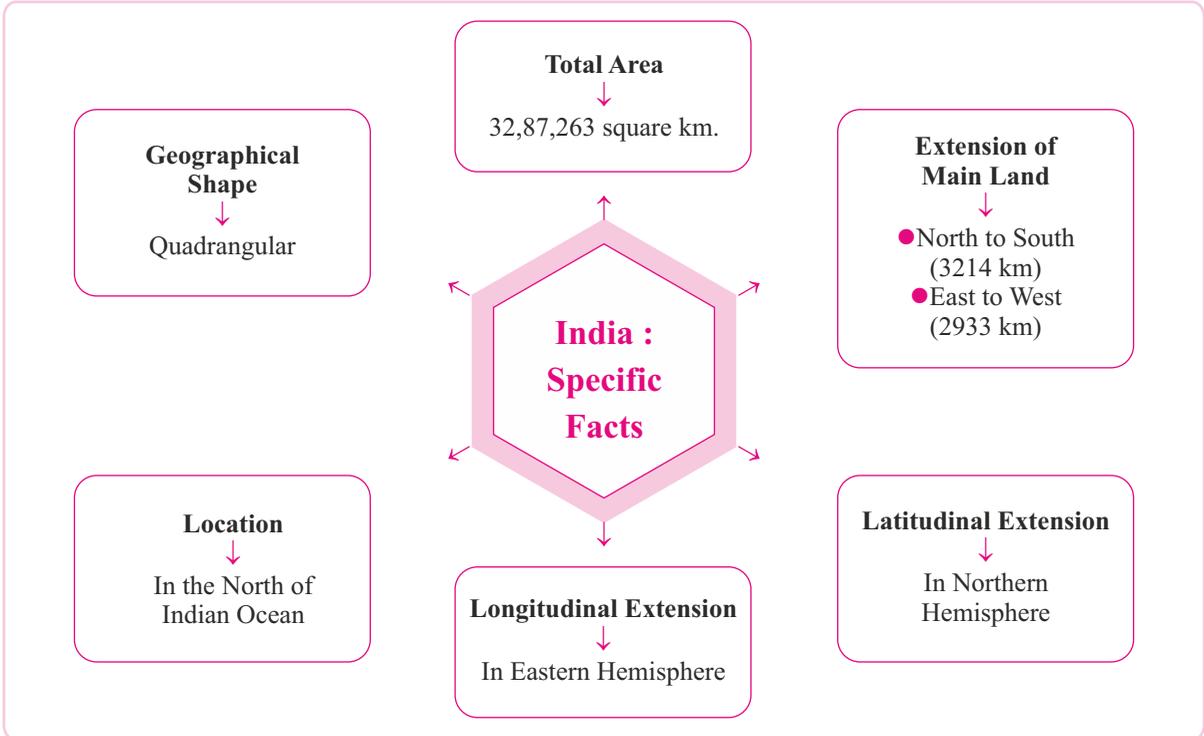
Despite all efforts to make this book very efficacious, if any doubt arises regarding facts, readers are always welcomed to contact on our **WHATSAPP platform**. You may **WHATSAPP** on mobile number **8081655444**. Your doubts will be resolved within 72 hours compulsorily.



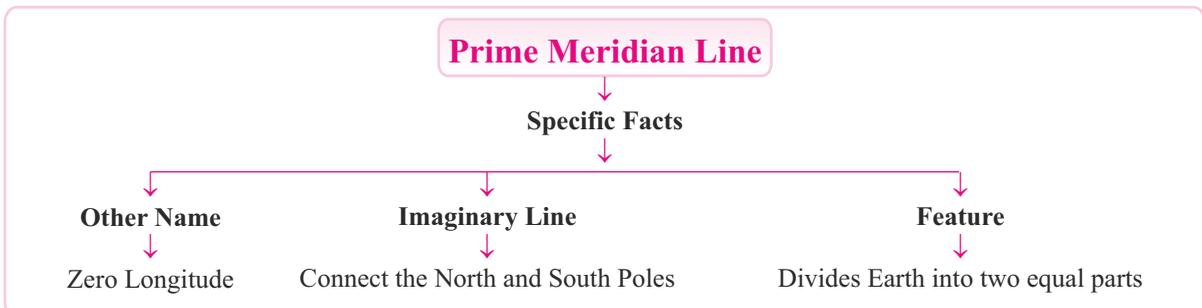
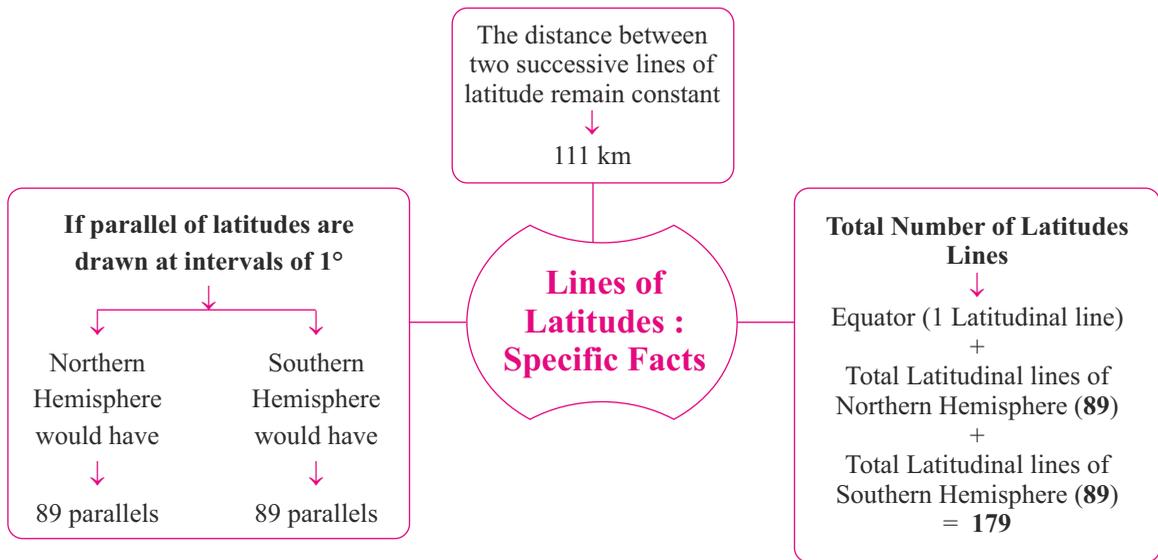
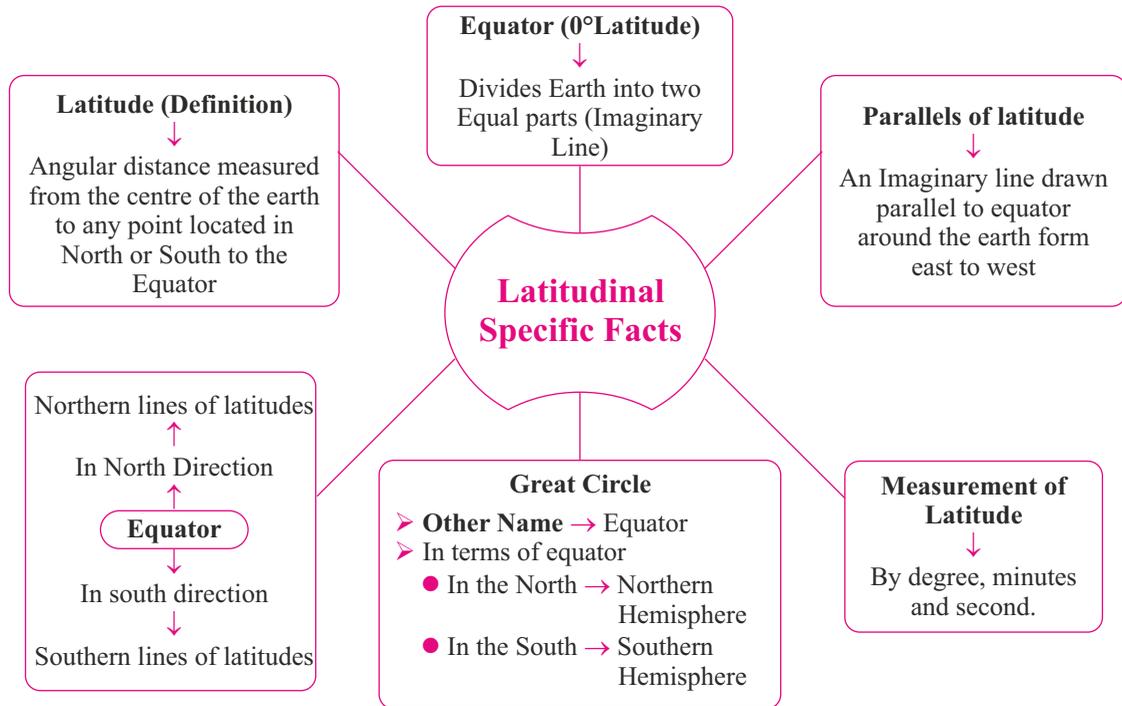
Indian Geography



Area



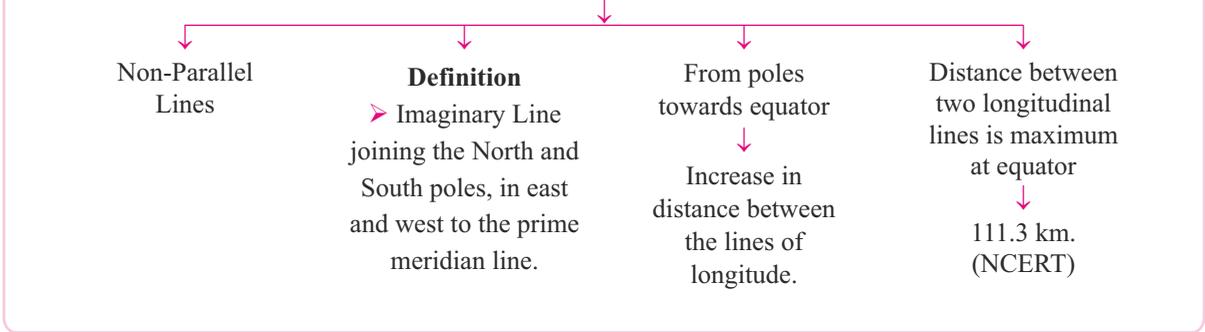
Latitudinal Extension



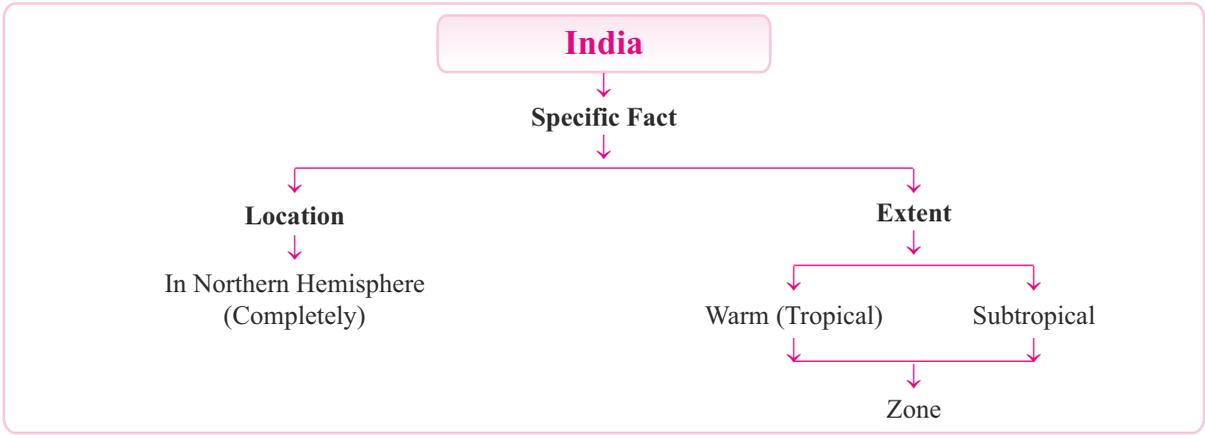
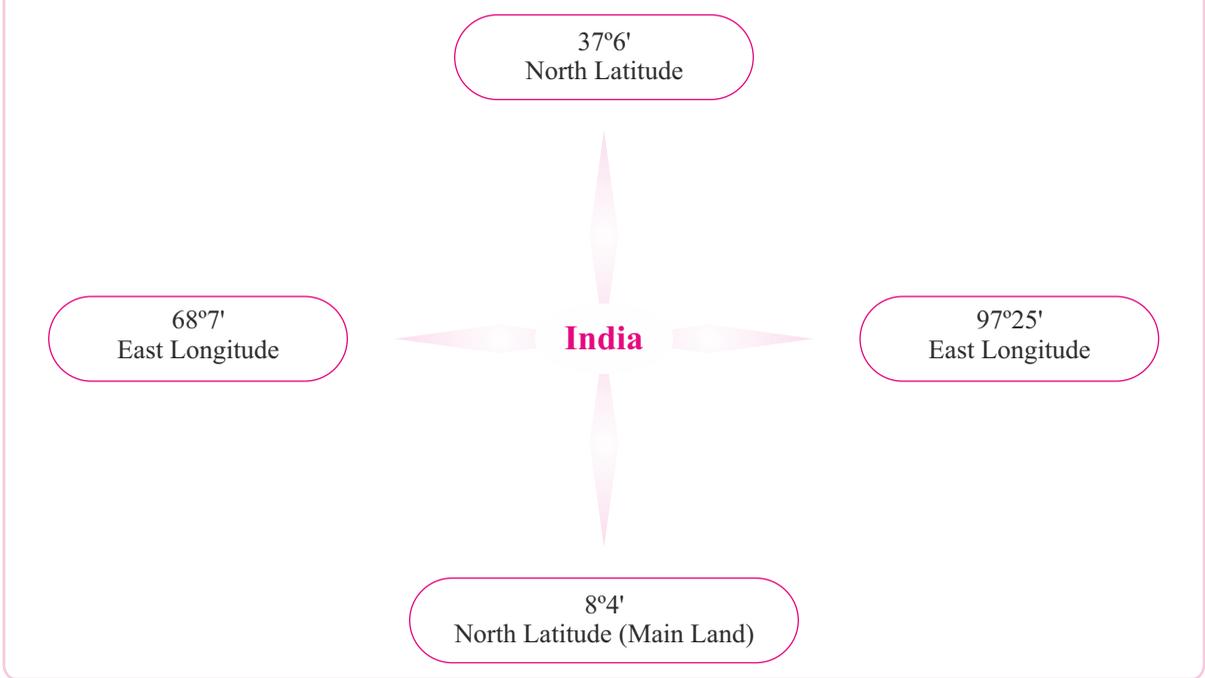
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Meridians of Longitude

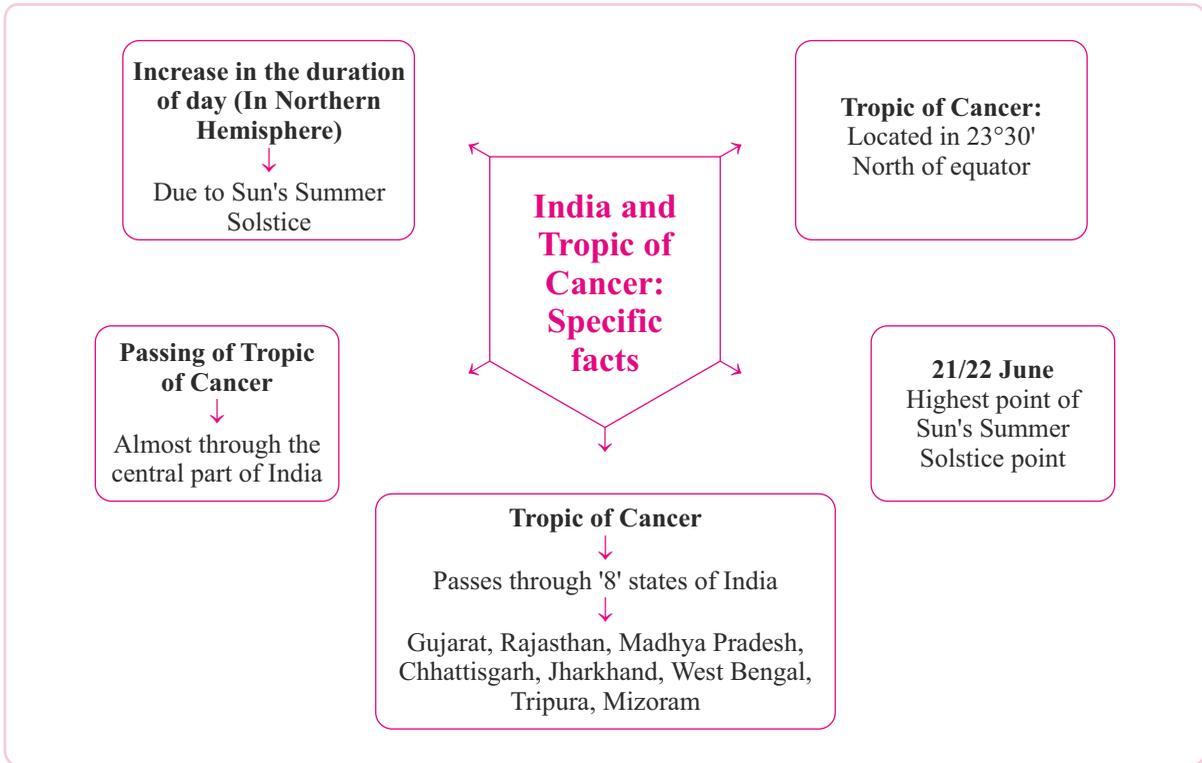
Lines of Longitudes



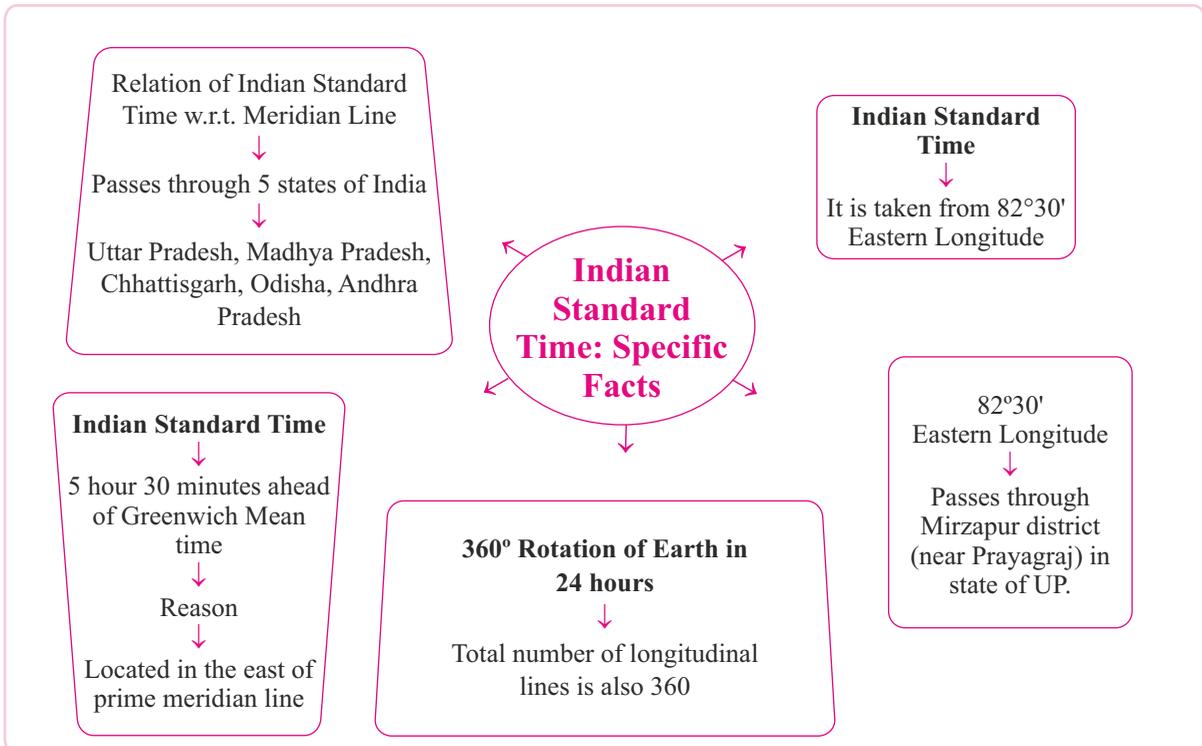
Expansion of India



India and Tropic of Cancer



Standard Time



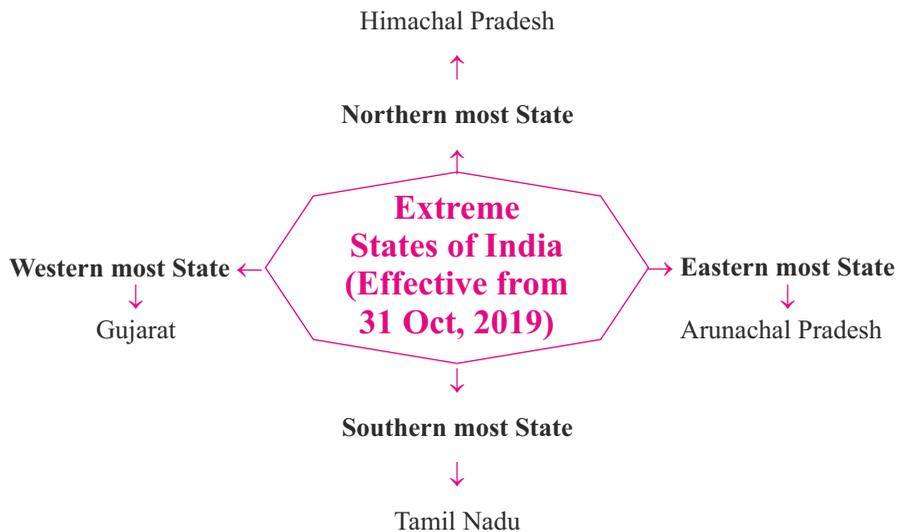
Specific Fact

- **Total Longitude lines** $\left\{ \begin{array}{l} \rightarrow 180^\circ \text{ (East)} \\ \rightarrow 180^\circ \text{ (West)} \end{array} \right. \rightarrow 360^\circ$
- **Great Circle** → Divides Earth into two equal parts

Prime Meridian Line

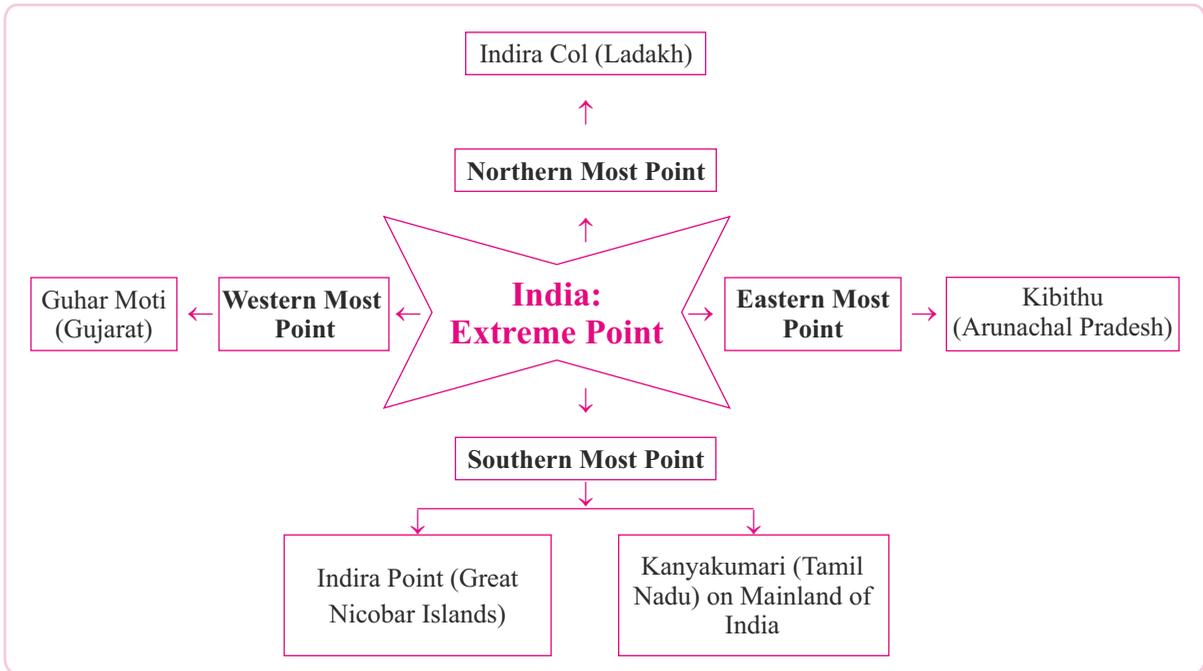
- **Prime Meridian** $\left\{ \begin{array}{l} \rightarrow \text{Going toward East} \rightarrow \text{Time} \rightarrow \text{Ahead of GMT} \\ \rightarrow \text{Going towards West} \rightarrow \text{Time} \rightarrow \text{Behind GMT} \end{array} \right.$
- **Calculation of time from 0° to 180° East** → 12 hour ahead of Greenwich Mean Time.
- **Calculation of time from 0° to 180° West** → 12 hour behind of Greenwich Mean Time.
- **Time difference between 180° East and 180° West longitudes** → 24 hours
- **International Date line (imaginary line) relationship.**
 Line drawn on earth's surface excluding land.
 Segments approximately along the 180° East and West meridians.

Extreme State/Point

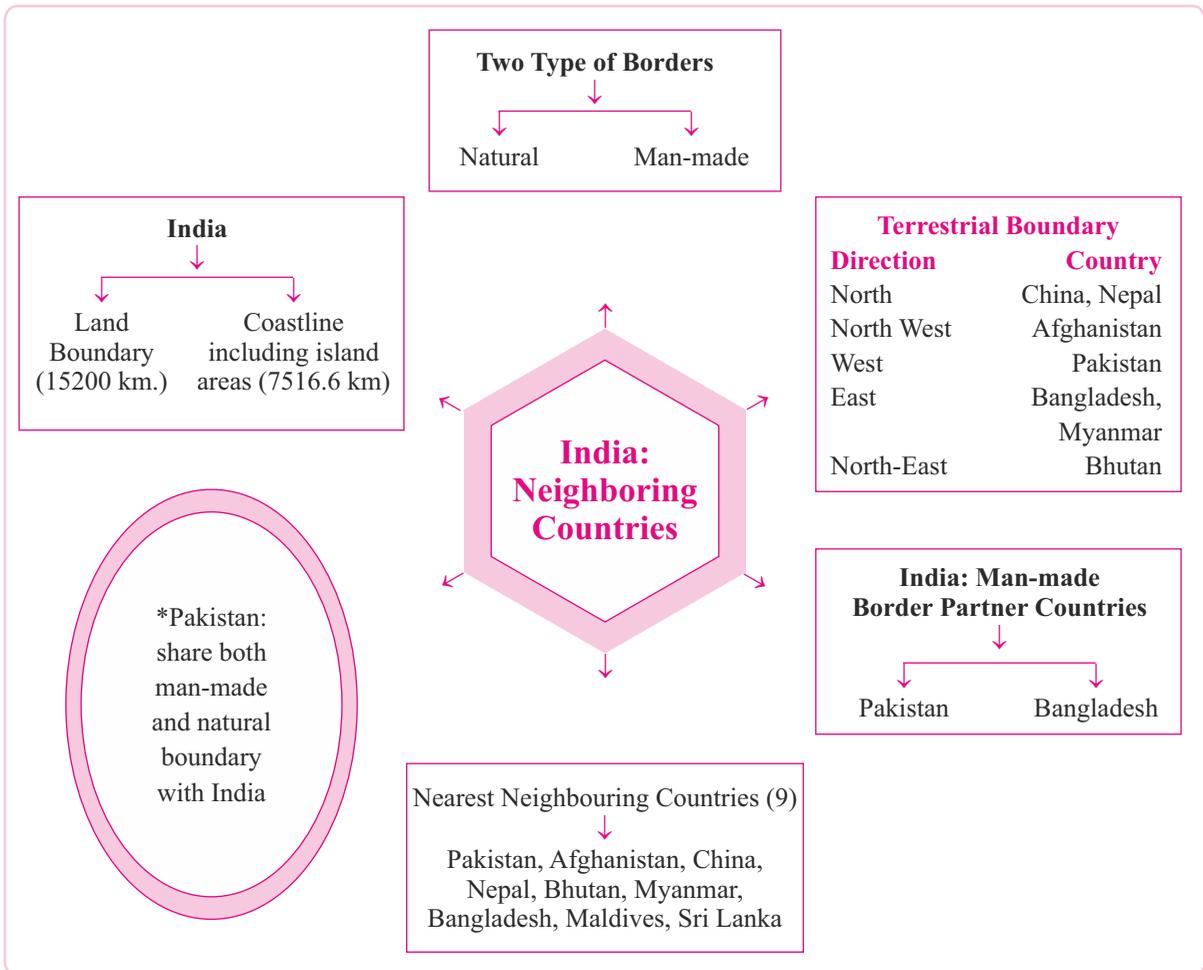


Extreme Point In States and Union Territories

Ladakh ← **Northern Point** → **Southern Point** → Andaman & Nicobar Islands



Bordering Countries

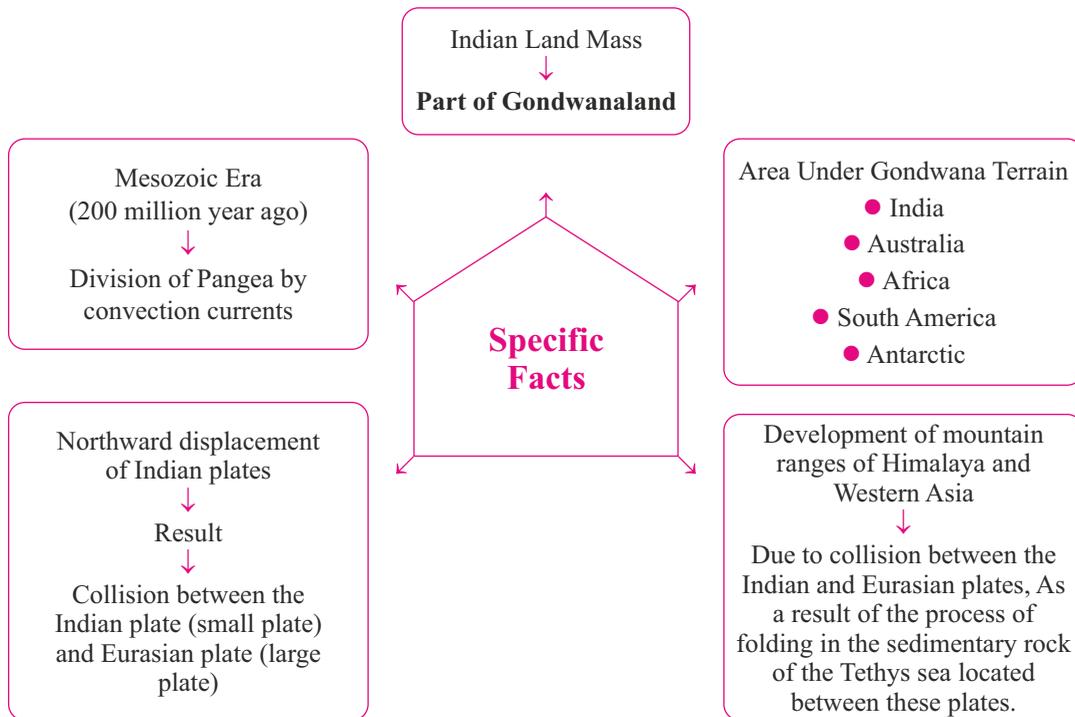
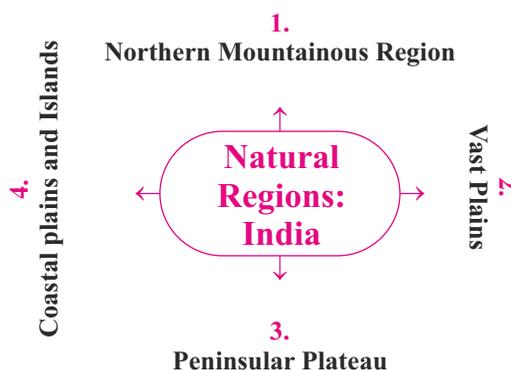
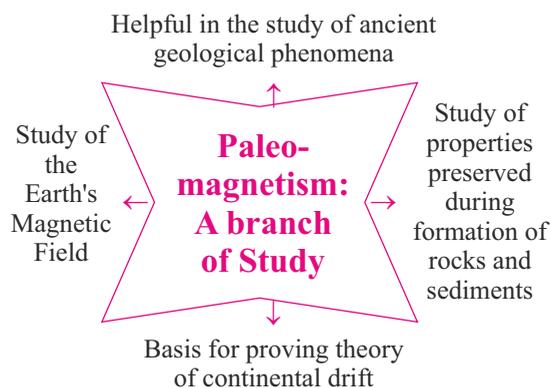


Important Facts

- | | |
|---|---|
| <ul style="list-style-type: none"> ➤ The place of India where the Bay of Bengal, Arabian Sea and Indian Ocean meet
- Kanyakumari (Tamil Nadu) ➤ Indian state which is surrounded by Bangladesh on three side
- Tripura ➤ Boundary line between India and Pakistan is an example of - Super-imposed Boundary | <ul style="list-style-type: none"> ➤ Difference between Indian Standard Time (IST) and Greenwich Mean time (GMT) is
- 5:30 hours ➤ Number of villages in India is
- 649,481 (Census: 2011) ➤ India has longest terrestrial border with Bangladesh while the shortest terrestrial border is with
- Afghanistan |
|---|---|

Physical Division

Natural Regions of India



Peninsular Plateau: Related Facts

- Oldest part of the earth's surface (in geographical terms)
- Most stable part of India (Peninsular part)
- The outskirts of peninsular plateau
 - ↓
 - Meghalaya Plateau**
 - ↓
 - Due to Fault separated from Peninsular India by 'Malda Gap'
- Formation of Peninsular Plateau
 - ↓
 - Igneous and Metamorphic form low hills and wide valley made off with igneous and metamorphic rocks

Exam Facts

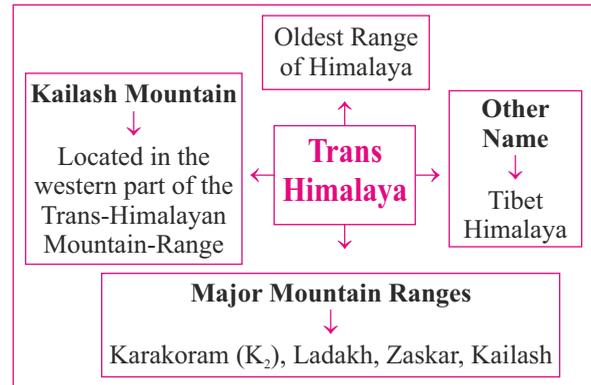
- Entire mountain range of Himalaya shows
 - **Young topography**
- Extremely high peaks, deep valleys and fast flowing rivers are related to
 - **Himalayan Mountain range**
- Artesian wells are found
 - **in the terai region of Himalayas**

Northern Mountain Region

Major Peaks of Great Himalayas

Mount Everest:
8848.86 meters height NP declared by Nepal and China (Highest peak in the World)

Kanchenjunga:
Third highest peak of World (Sikkim, India)



Important Facts

- The vast Himalaya on the northern border of India are geologically young and from the point of formation, it is - **New Fold Mountain Range**
- Highest Mountain Range of the world
 - **Range The Himalaya**
- The Nature of Great Himalaya range is
 - **Asymmetric**
- The Himalaya receives most of its rainfall
 - **from the South West Monsoon**
- The Himalayas are composed of parallel ranges, out of which the oldest range is
 - **Great Himalaya Range**
- Karakoram mountain range is part of
 - **Trans-Himalaya**
- The sacred mountain of Hinduism which is located in the western part of trans-Himalayan Mountain Range
 - **Kailash Mountain**
- It form the easternmost boundary of the Himalayas
 - **Brahmaputra River**
- The width of Himalaya is 150 km in Arunachal Pradesh whereas in Kashmir its width is - **400 km.**
- Pamir knot is located
 - **in the Trans-Himalayan (Tibet)**
- Western Ghat mountains and Deccan Trap were originated respectively in
 - **Cenozoic era and Cretaceous Period**

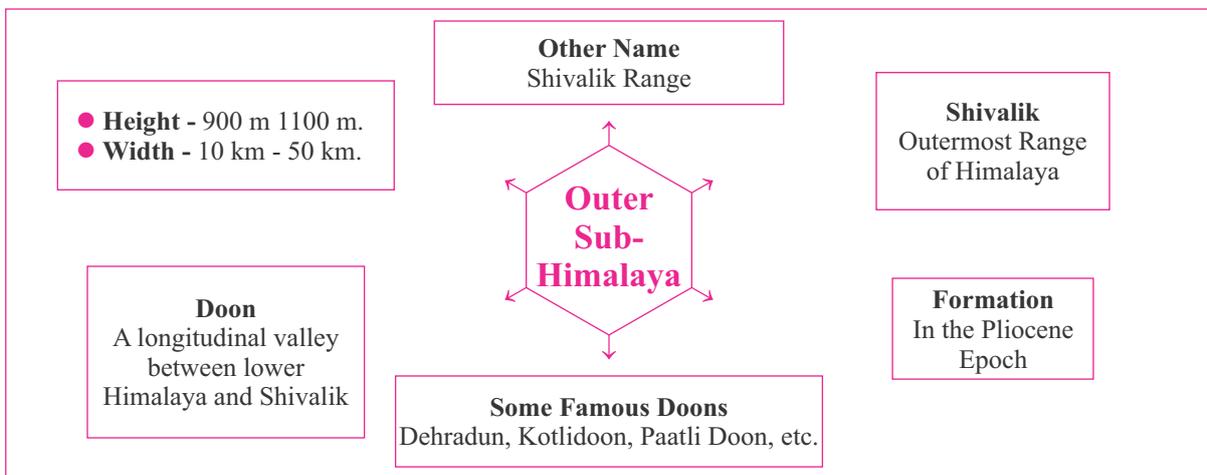
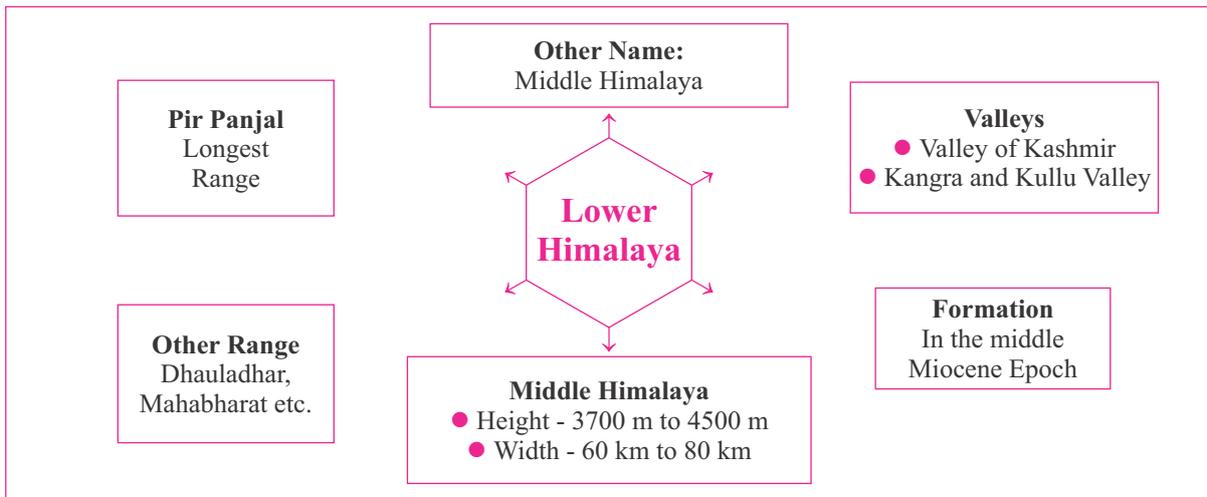
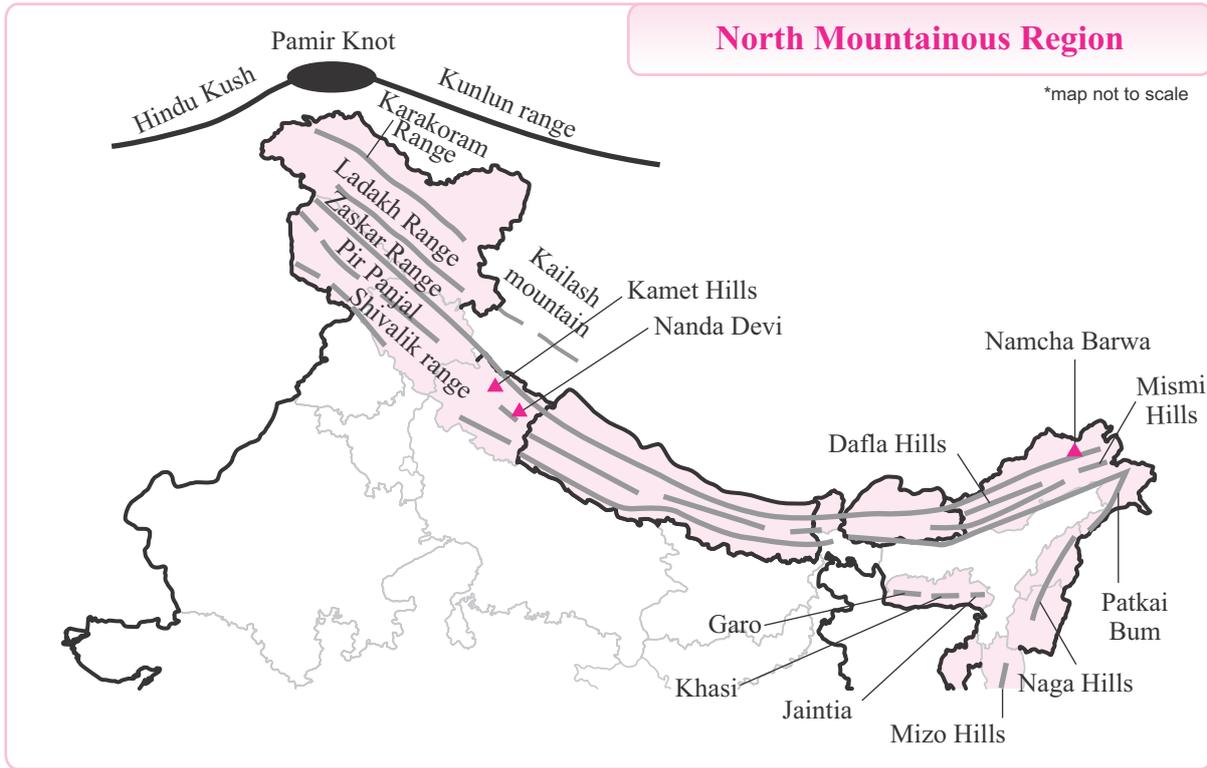
Great Himalaya : Specific Facts

Other Name: Himadri/Inner Himalaya

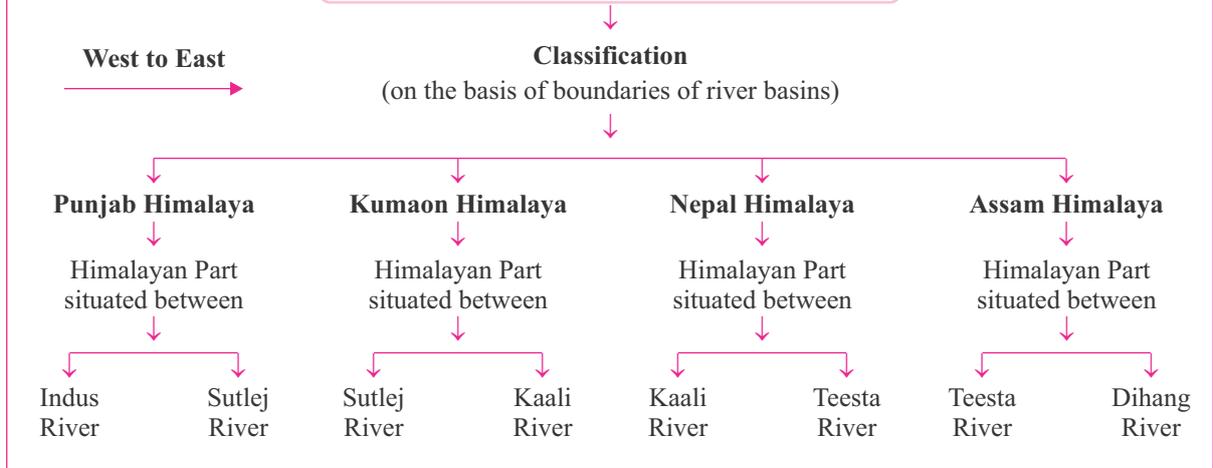
Oldest range of Himalayas

Formation: In the Oligocene Epoch

Annapurna and Dhaulagiri Peaks are located in North-Central and central region of Nepal respectively

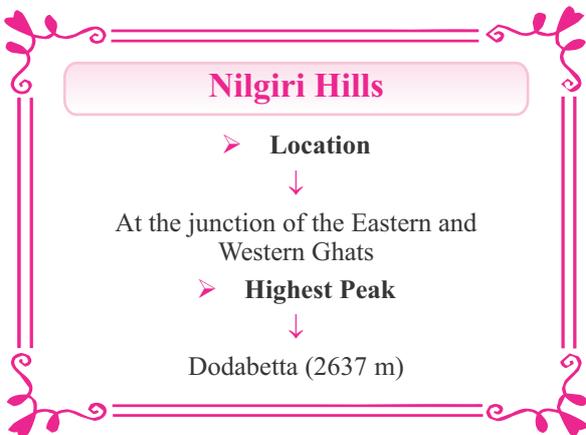
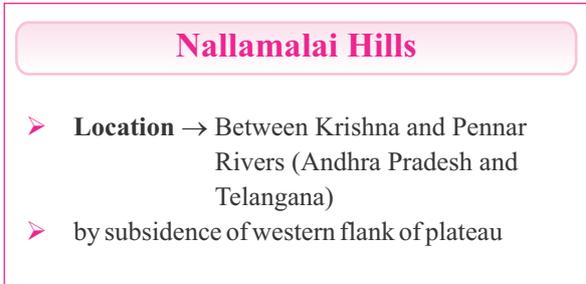
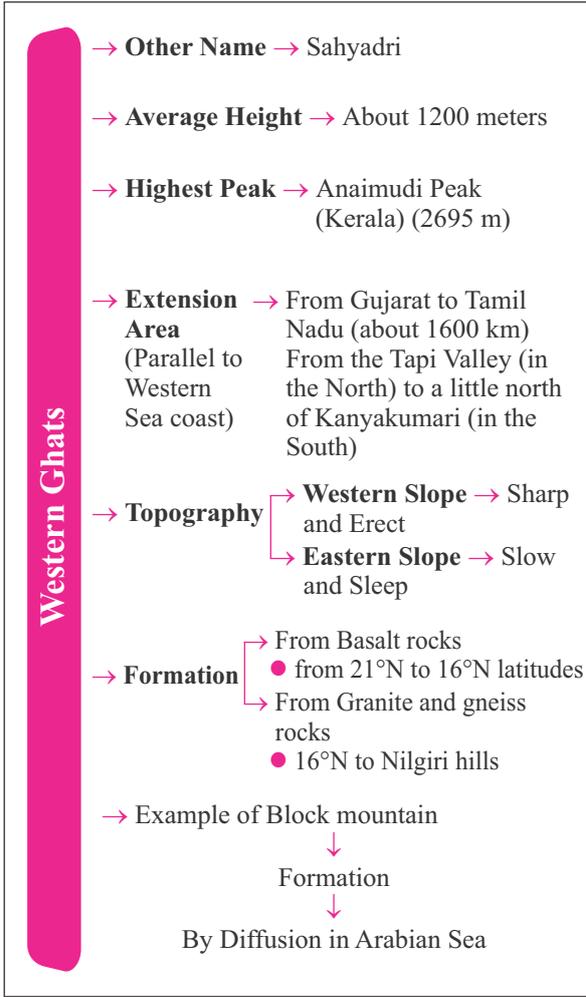
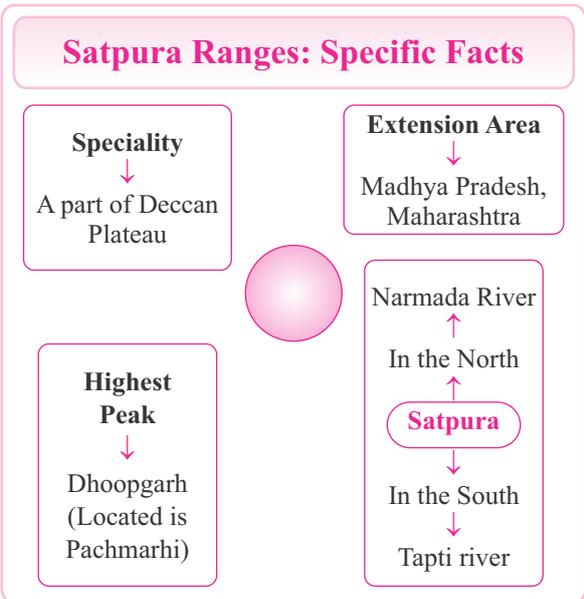
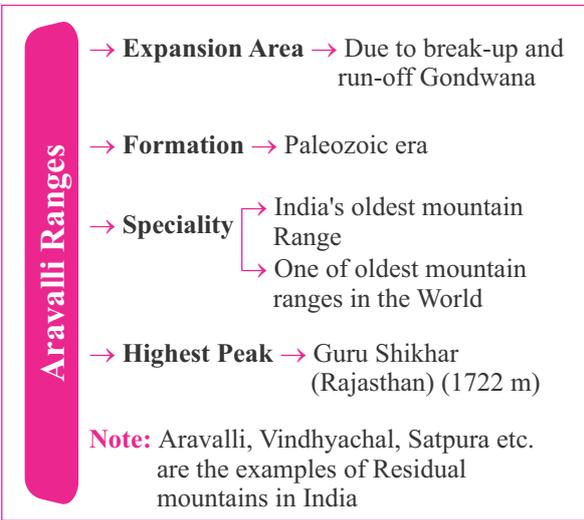
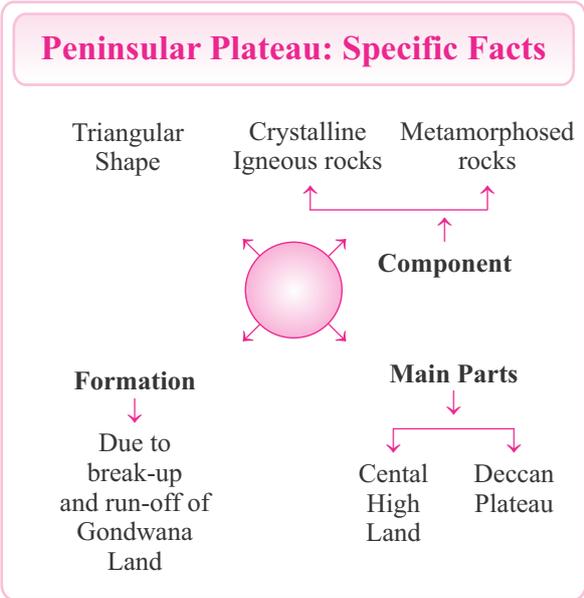


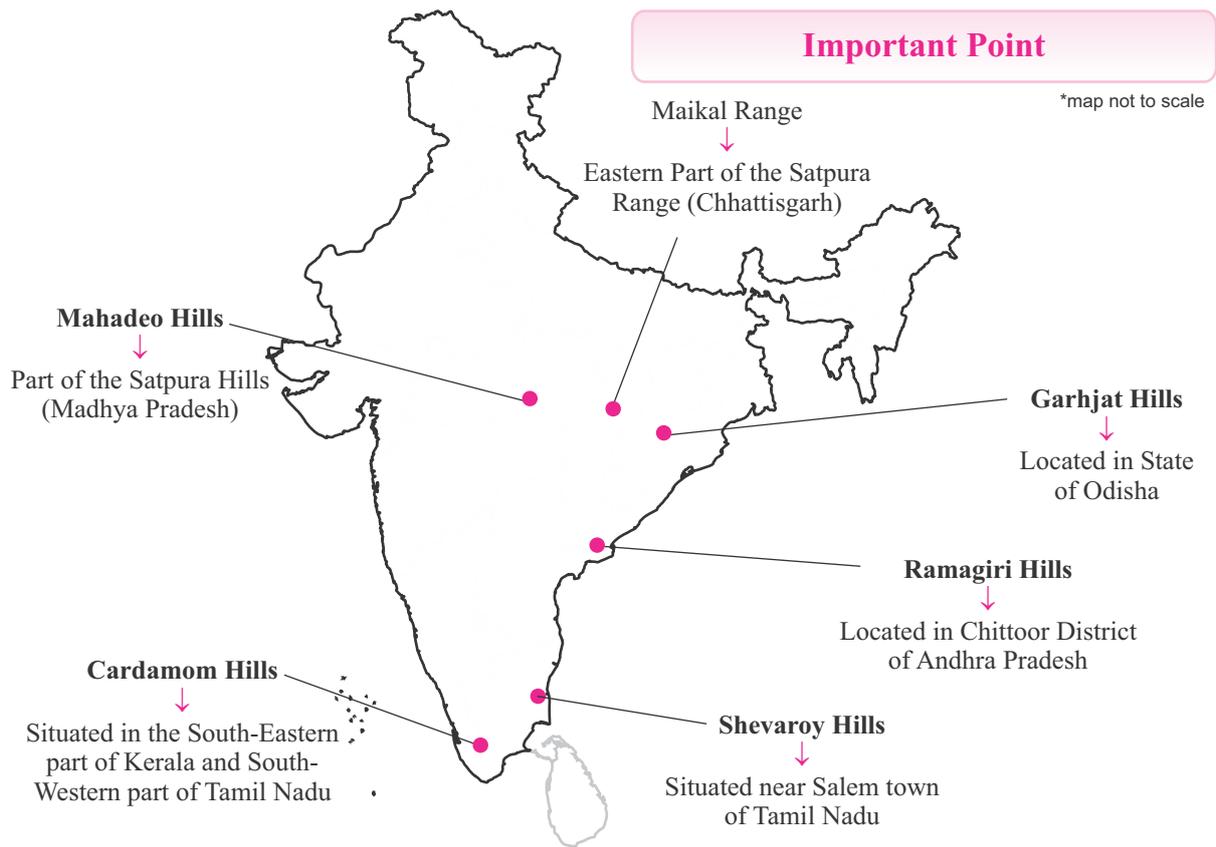
Geographical Division of Himalaya



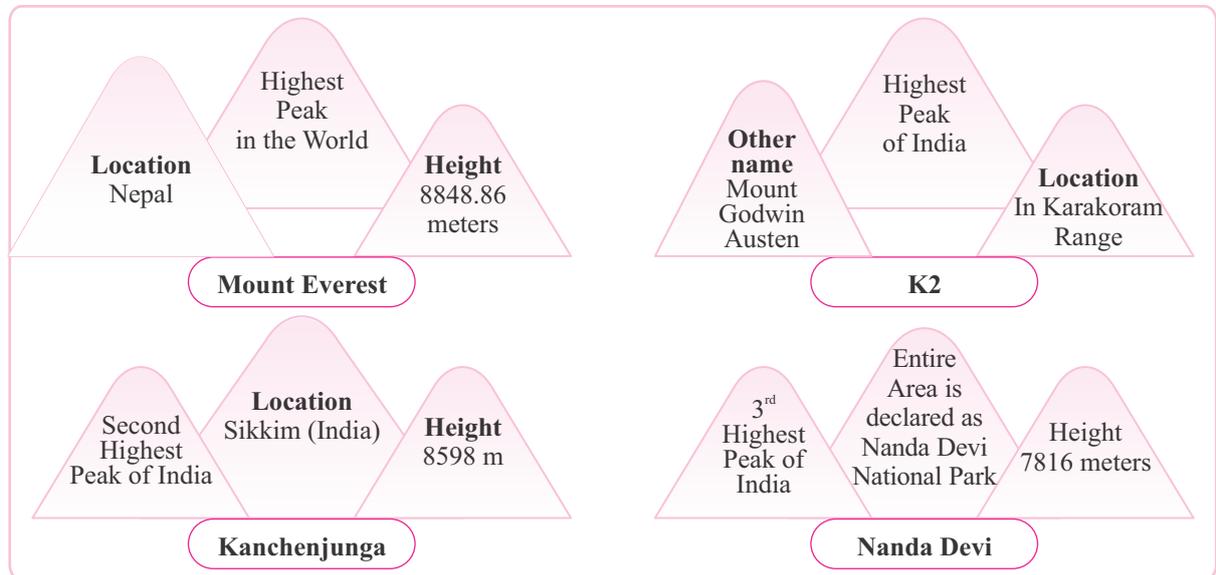
Mountain Ranges and Hills of South and Central India







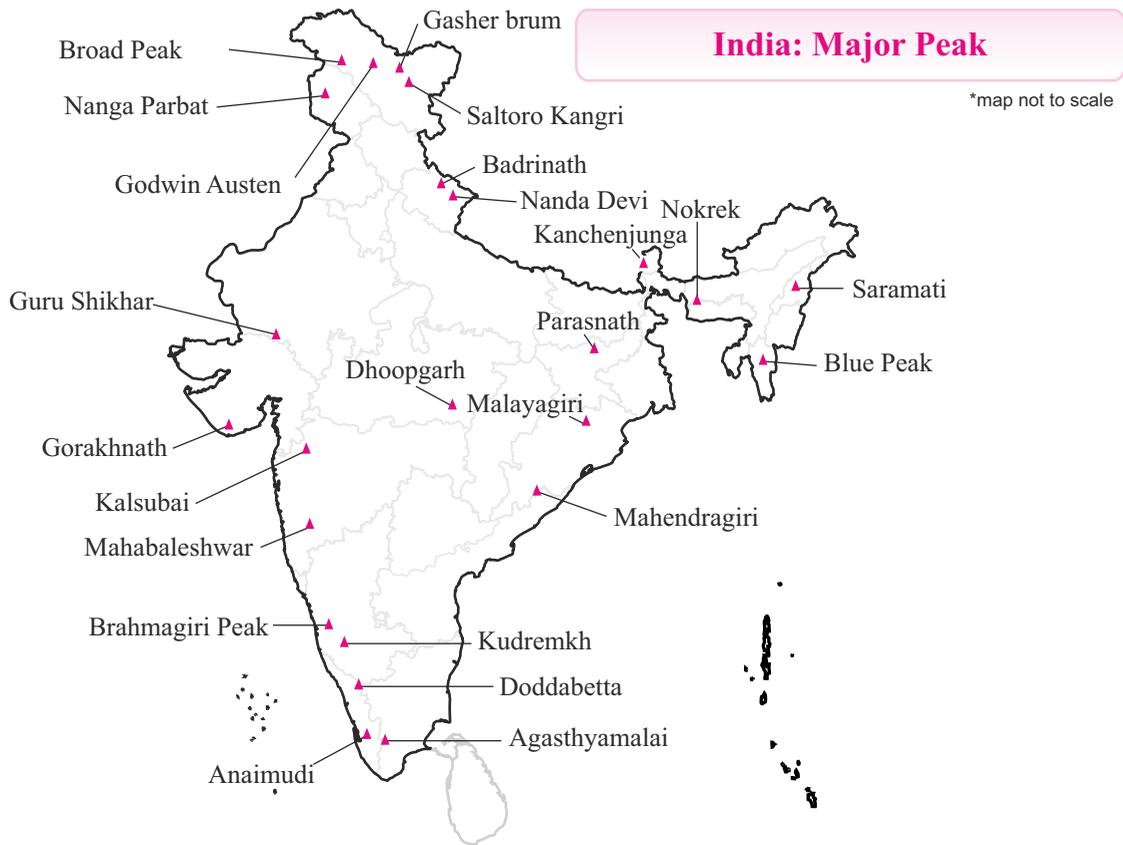
Mountain Peaks



Exam Facts

- Largest Deposits of coal in India are found in - **Gondwana Rock**
- 'Karewas' topography is found in - **Kashmir Himalayas**
- Newest Fold mountains in the world are found in

- **- Himalayan Mountain Range**
- FAO declared Koraput traditional agriculture (Odisha), Pampore Saffron heritage (Kashmir valley) and Kuttanad below Sea level farming system as - **Global Important Agriculture Heritage System (GIAHS)**



India Major Valleys : Specific Fact

➤ **Kullu Valley**

● **Location**

Between Dhauladhar and Pir Panjal Ranges
(Himachal Pradesh)

➤ **Dzukou Valley**

● **Location**

Nagaland

➤ **Nelang Valley**

● **Location**

Near Indo-China border (Uttarakhand)

● **Events**

- Closed for civilians after 1962 war
- Re-opened for tourists from May 2015

➤ **Yumthang Valley**

● **Location**

Gangtok (Sikkim)

● **Other Name**

Sikkim valley of flowers sanctuary

➤ **Markha Valley**

● **Location**

Ladakh (Union Territory)

➤ **Sangla Valley**

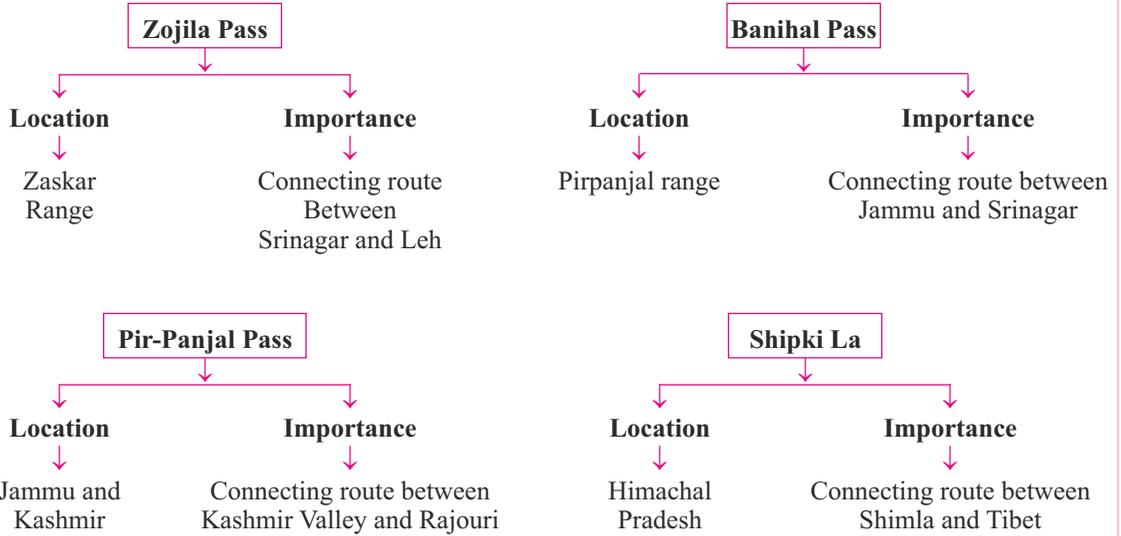
● **Location**

Kinnaur (Himachal Pradesh)

● **Key Feature**

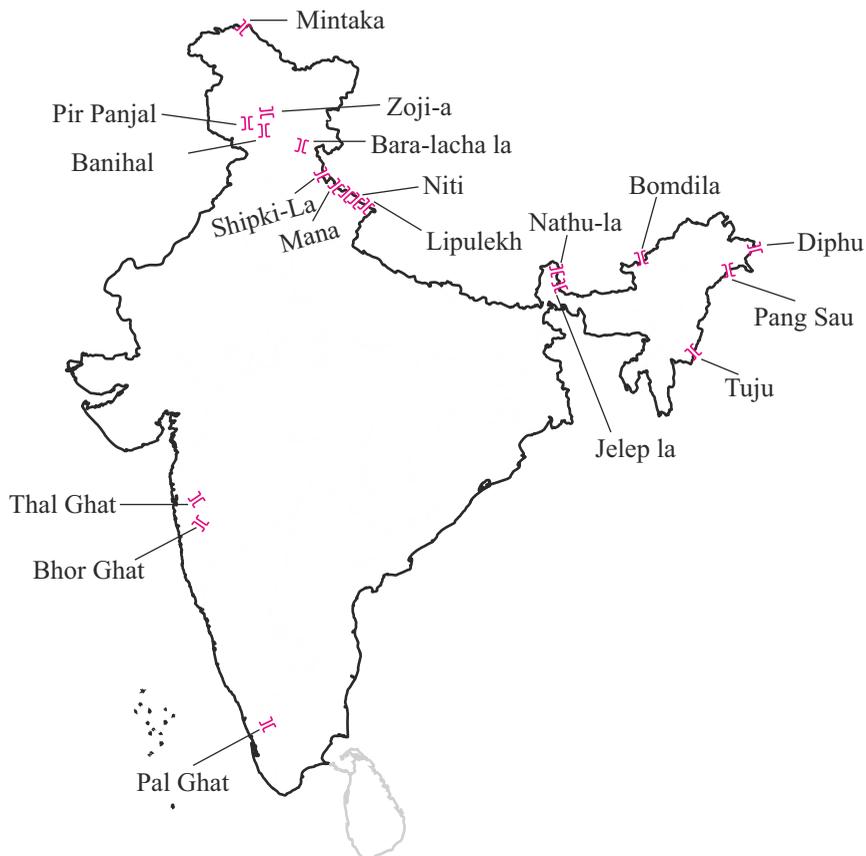
Surrounded by hills and Baspa River

India: Major Passes

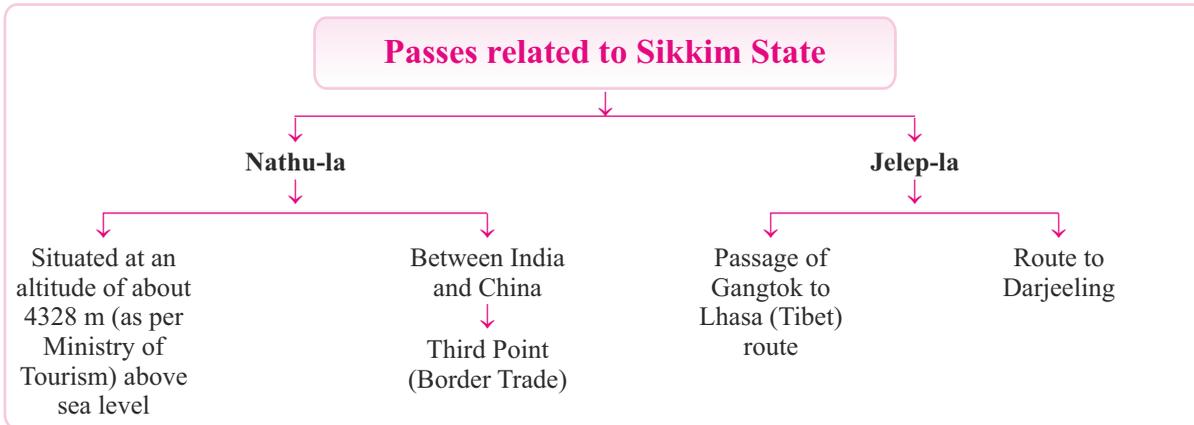
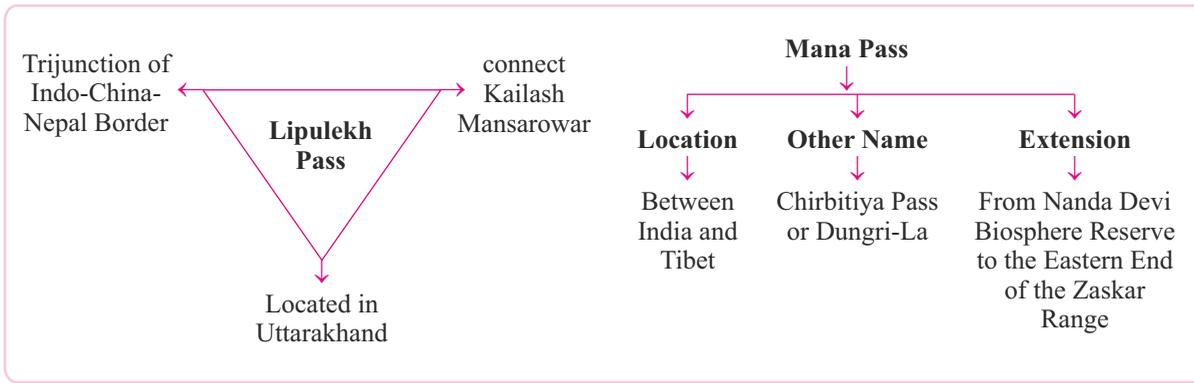
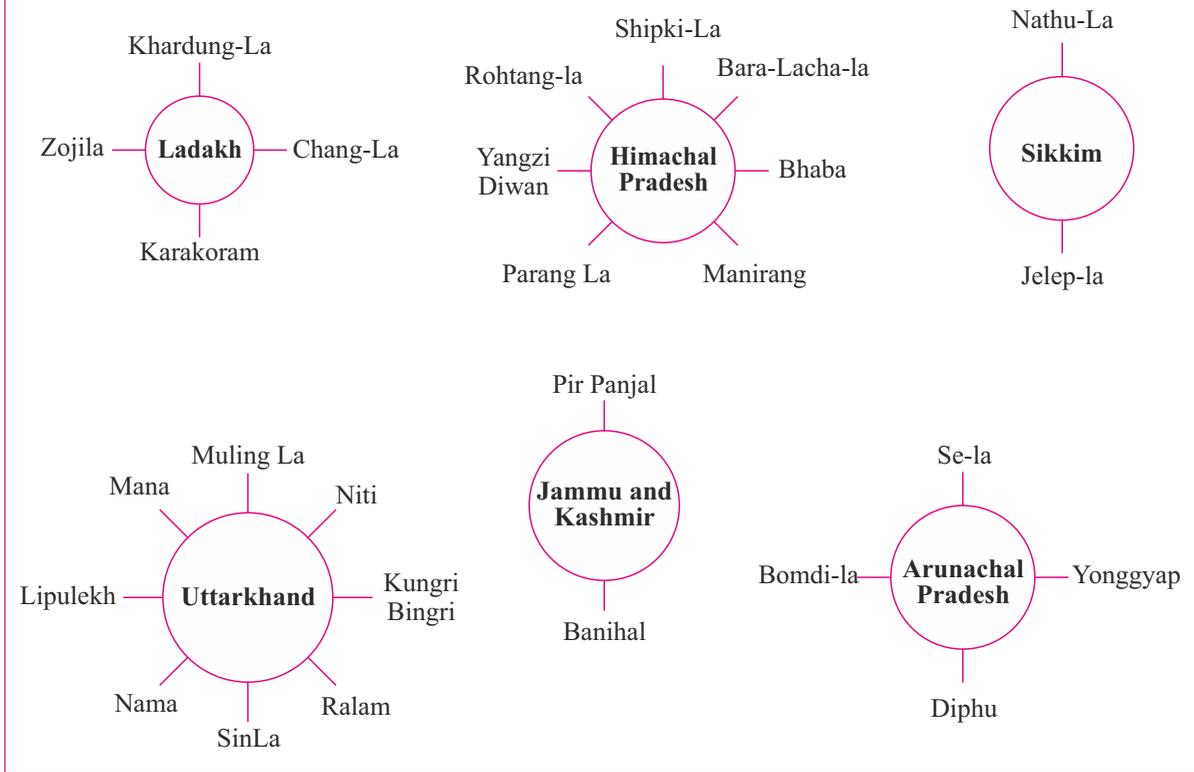


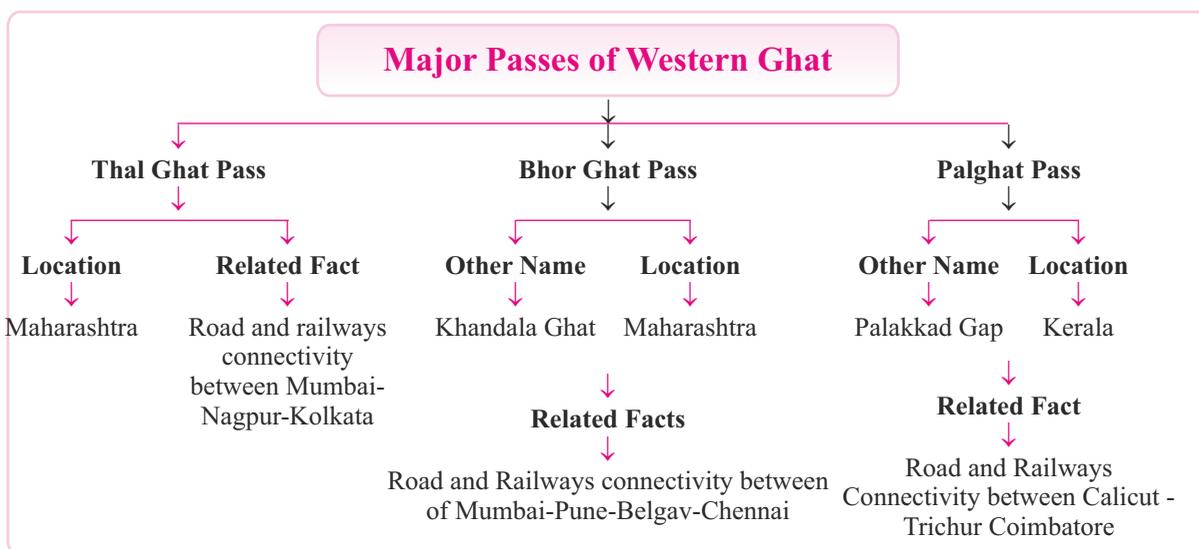
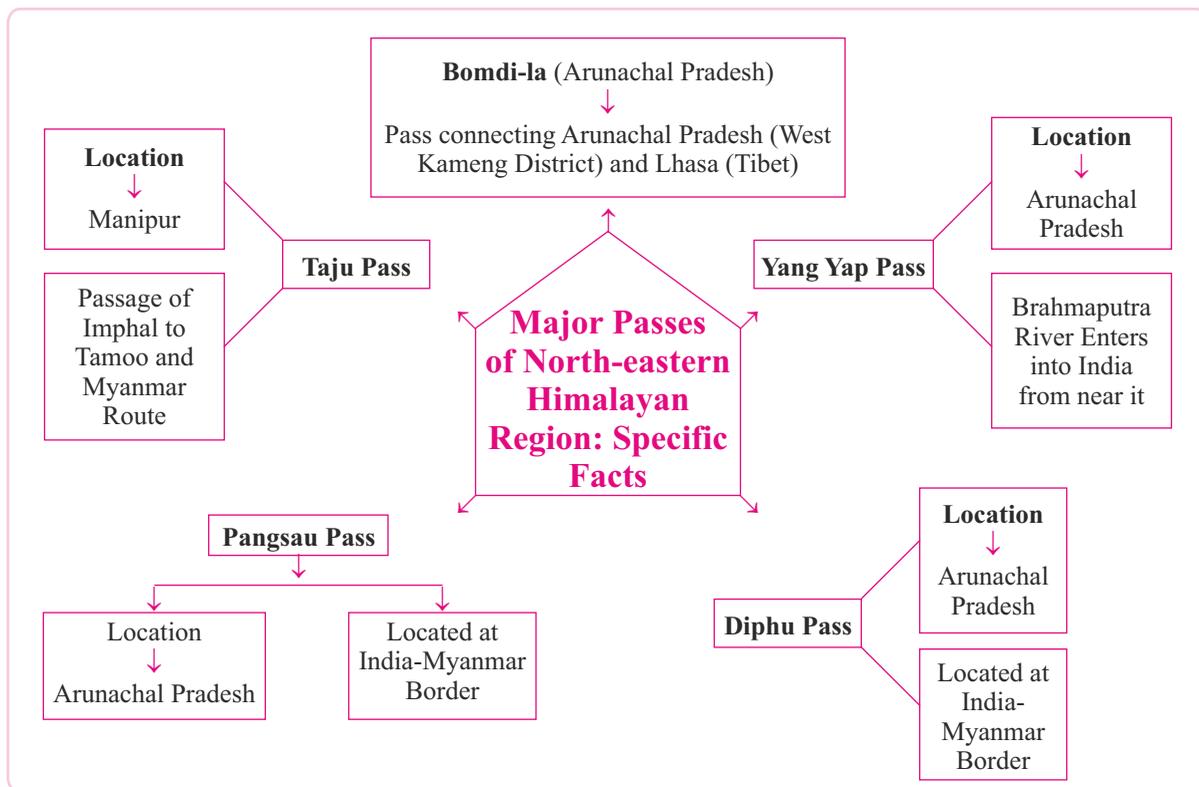
India : Major Passes

*map not to scale



Major Passes of India





- Exam Facts**
- Pass located in the Nilgiri and Annamalai Mountain Ranges - **Palghat Pass**
 - Pass which was closed during the Indo-China War(1962), re-opened on 6 July 2006 to increase trade between India and China - **Nathu-La Pass**
 - Pass which is related to Devtal Lake - **Mana Pass**
 - India's highest pass - **Yangi Diwan Pass**
 - Khardung-La and Bara-Lacha-La passes are located respectively - **In Ladakh and Himachal Pradesh**
 - Kingri-Wingri (Kungri-Bhingri), Nama and Muling-La passes are located in - **Uttarakhand**
 - Narmada, Damodar and Tapti rivers are example of - **Indian Rift Valley**
 - Tribe lives in Garhjat Hills of Odisha - **Gond Tribes**

Miscellaneous

Important Facts

- Famous Toda Tribes of South India lives on
- **Nilgiri Hill Region**
- Hills located on the border of the State of Kerala and Tamil Nadu - **Annamalai Hills**
- It is example of mountain located on the border of States of Tamil Nadu, Karnataka and Kerala - **Nilgiri Mountain Range**
- The Highest mountain peak of South India
- **Anamudi**
- Hill located in Giridih district of Jharkhand
- **Parasnath Hill**
- The Range protected between Narmada and Tapi Rivers
- **Satpura Range**
- It is also know as Blue Mountains
- **Nilgiri Hills**

Exam Facts

- UNESCO recognised it as a World Heritage site of National importance in year 1988
- **Nanda Devi National park**
- In 2016, UNESCO recognised it as a World Heritage Site under the mixed category
- **Kanchanjunga National Park**
- Udagamandam or Ooty hill is located at
- **The Nilgiri Mountain Range**
- First Indian woman who was successful to climb the Everest Summit in 1984
- **Bachendri Pal**
- A woman mountaineer who Climbed Mount Everest twice
- **Santosh Yadav**

Some other Major Passes of India



Exam Facts

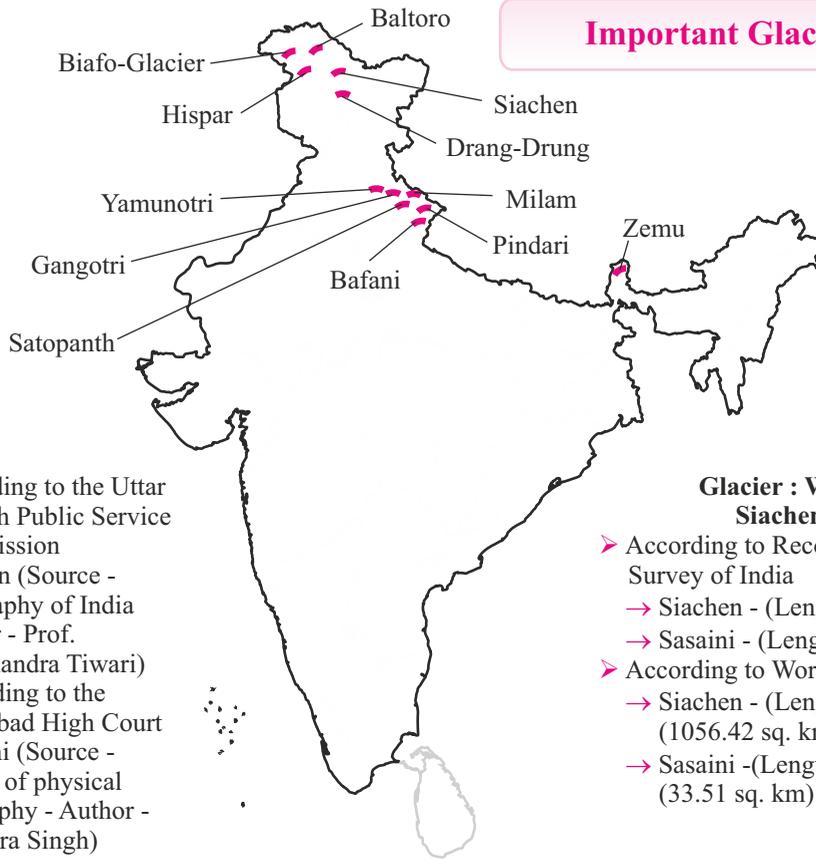
- The valleys located near Gangotri and Kedarnath are
- **Bhagirathi and Mandakini Valley respectively**
- The valley covered with other vegetation including Rhododendron bushes is
- **Yuthang Valley (Sikkim)**
- The valley located in palakkad (Palghat district) of Kerala is
- **Silent Valley**
- The tributary of the Bharatapuzha river which originates from abundant forests of the silent valley
- **Kunti River**
- The proposed hydroelectric project near Silent Valley National park is
- **Patharkadavu Hydroelectric project (Kerala)**
- The Remains of great glaciers are found in
- **the Pirpanjal and Dhauladhar ranges**
- The largest glaciers apart from the poles
- **Fed chenko Glacier (Pamir Region)**
- The largest glacier of Pir Panjal which is located between lahul and chandra valley of spiti region located in
- **Sona pani**

Major Glaciers of India (Trans-Himalaya)



Important Glaciers of India

*map not to scale

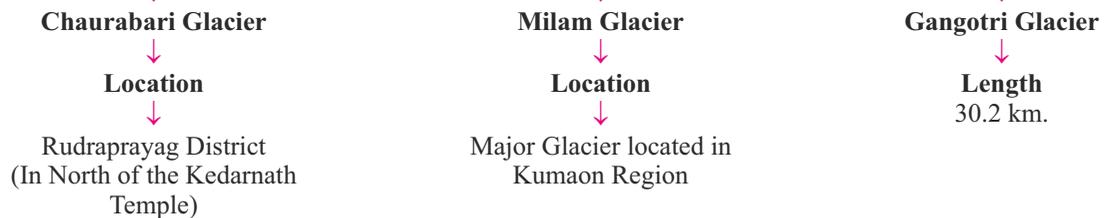


- According to the Uttar Pradesh Public Service Commission
- Siachen (Source - Geography of India Author - Prof. Ramchandra Tiwari)
- According to the Allahabad High Court Saisaini (Source - Nature of physical geography - Author - Savindra Singh)

Glacier : Which is larger Siachen or Sasaini

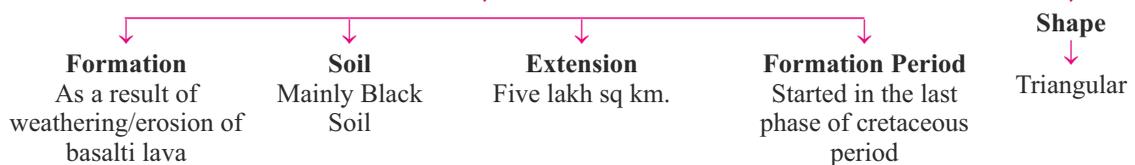
- According to Records of Geological Survey of India
 - Siachen - (Length - 45 miles)
 - Sasaini - (Length 11 miles)
- According to World Glacier Inventory
 - Siachen - (Length 76.64 km, Area (1056.42 sq. km))
 - Sasaini -(Length 17.84 km), Area (33.51 sq. km)

Major Glacier of Uttarakhand



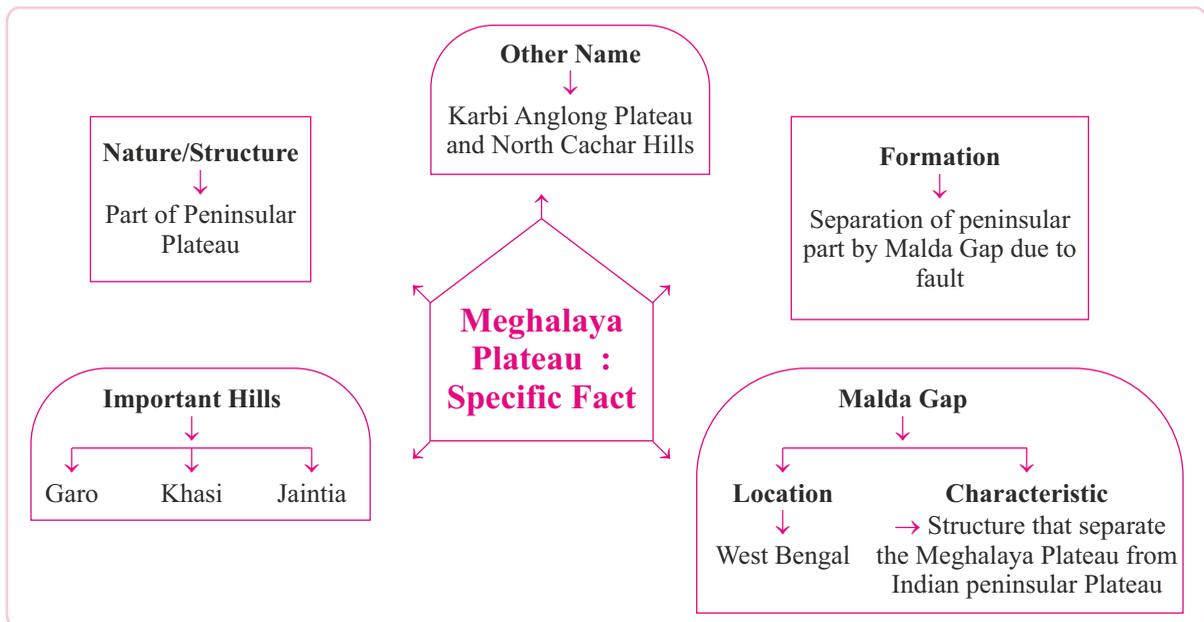
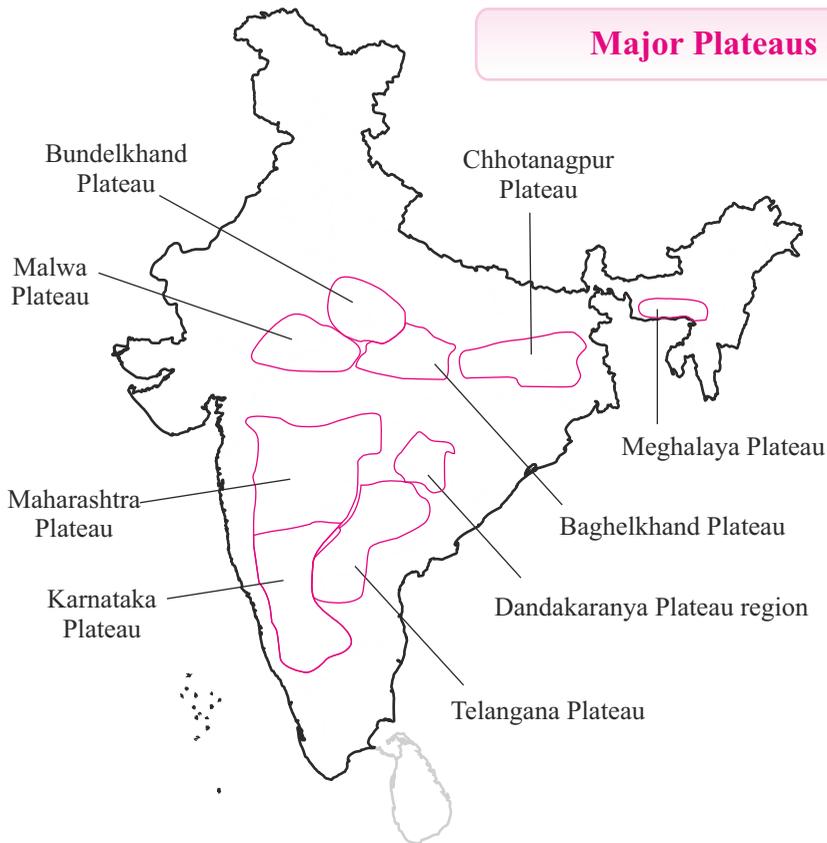
Plateau of India

Deccan Plateau



Major Plateaus of India

*map not to scale



Memorable Facts

- Dandakaranya Region is located in
- **Central part of India**
- It is a plateau situated between the Aravalli
and Vindhya ranges
- **Malwa Plateau**

- This trap was formed by a massive volcanic
eruption during the late cretaceous period
- **The Deccan Trap**
- The Himalayas and additional peninsular
mountains of India were formed in
- **Cenozoic Era**
- Shape of Chota Nagpur Plateau is an example of
- **Dissected Plateau**

Malwa Plateau

- **Location** → Between Aravali and Vindhya Ranges
- **Middle Highlands** → Located in the North of Narmada River (Name of most of its parts)
- **Length** → 530 km.
- **Width** → 390 km.
- **Boundry demarcation**
 - Northern Boundary - By Aravali Mountain
 - Southern Boundary - By Vindhya Range
 - Eastern Boundary - By Bundelkhand Plateau
- **Speciality** → It spread over an area of about 150,000 sq. km of peninsular region.

Chota Nagpur Plateau

- **Speciality**
 - Location of pat lands (high level laterite plateau) on central western part
 - Drained by Damodar River
- **Division**
- **Characteristic** → Sharp Scarps Slopes
- **Other Name** → Ruhr of India

Dandakaranya Region

- **Extension**
 - Odisha
 - Chhattisgarh
 - Andhra Pradesh
 - Telangana
 - Maharastra
- **Area** → About 92000 sq. km.

Coastal Regions

India Coast line

In which the total length of the coast adjoining the mainland (5422.6 km)

Longest coast line
↓
Gujarat

Shortest Coast line
↓
Puducherry (Goa, in states)

← 7516.6 km →

Total length of coast line

Indian Coastal line : Specific Facts

↓
Extension
9 State, 4 Union Territory

In which the total coast line length away from mainland (2094 km)

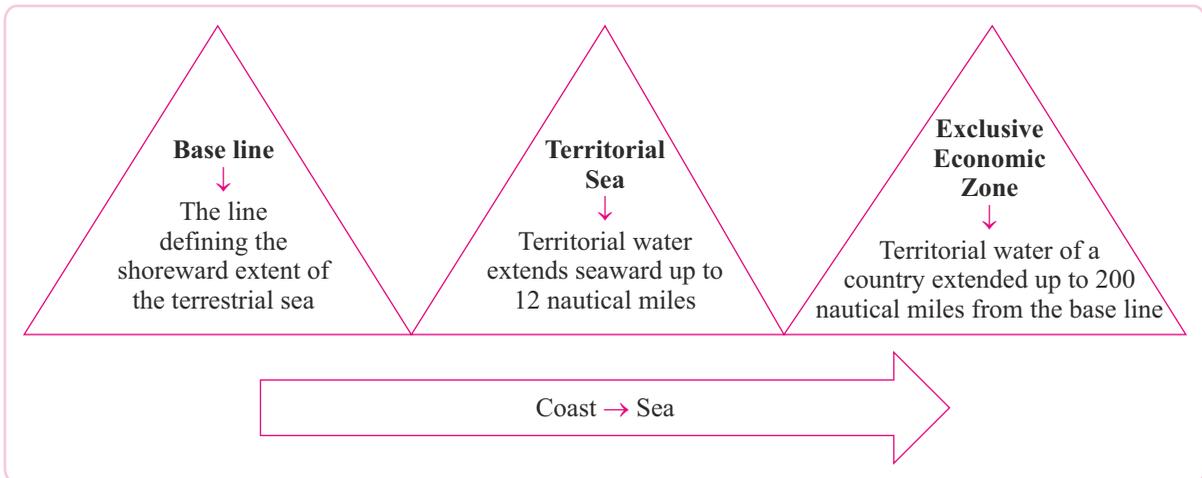
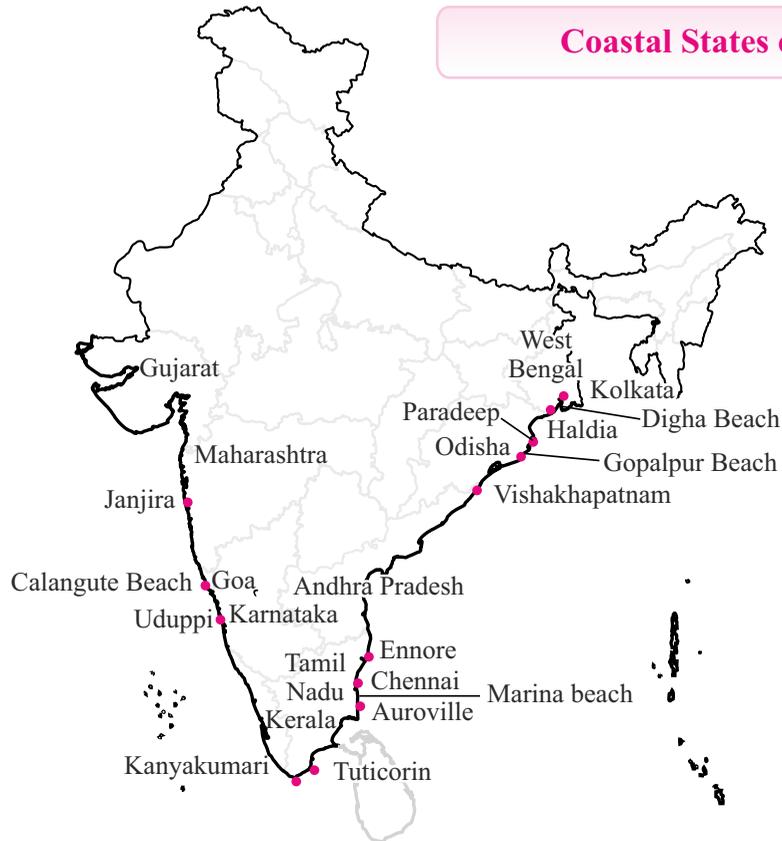
Coastal Boundary

- East → Bay of Bengal
- West → Arabian Sea
- South → India Ocean

Gujarat	Maharashtra	Goa	Karnataka	Kerala	Tamil Nadu	Andhra Pradesh	Odisha	West Bengal
4 Union Territories				Dadra & Nagar Haveli and Daman & Diu	Lakshadweep	Puducherry	Andaman & Nicobar Islands	

Coastal States of India

*map not to scale



Miscellaneous

- India has right to collect custom duty and economical activity - **In Contiguous Zone (up to 24 nautical miles from baseline)**
- The distance of territorial sea is measured from base line up to - **12 Nautical miles**
- In ancient Indian history, the Indian Ocean is denoted by - **Ratnakar**
- The most important role in coastal erosion is - **Waves**
- India's mean sea level is measured with reference to - **Mumbai High**
- The lake which was formed as a result of melting of Charabari Glacier is - **Gandhi Sarovar**
- The sea water between the terrestrial part and the base line is called - **Internal waters**

Coast of India

Geographical classification of the coastal plain of India into three parts

Gujarat or Kathiawar Coastal Plain

Extended in coastal part of Gujarat, Dadra & Nagar Haveli and Daman Div

Western Coastal Plain

East Coastal Plain

Western Coast of India

Introduction

Western Ghat Arabian Sea

A narrow plain between them

Division

In three parts

Northern part

Konkan coast
↓
(From Mumbai to Goa)

Central part

Karnataka or Kanara coast
↓
(Between Goa and Mangalore)

Southern part

Malabar coast
↓
(From Mangalore to Kanyakumari)

Eastern Coast of India

- **Formation**
 - Mahanadi
 - Godavari
 - Krishna
 - Kaveri} Fertile plains formed by deltas of rivers
- **Northern Circars Coast** → Plains between Mahanadi and Krishna rivers
- **Coromandel Coast** → Extended from False Divi point of Andhra Pradesh to Cape Comorin (Kanyakumari) of Tamil Nadu

Major Ports located on the Western coast of India

- Mumbai (Maharashtra)
- Kandla (Gujarat)
- Murmagoa (Goa)
- Jawahar Lal Nehru (Maharashtra)
- Janjira (Maharashtra)
- Udupi (Karnataka)
- Cochin (Kerala)
- New Mangalore (Karnataka)

Major Ports located on the eastern coast of India

- Visakhapatnam (Andhra Pradesh)
- Haldia (West Bengal)
- Paradeep (Odisha)
- Ennore and New Tuticorin (Tamil Nadu)

Island

Islands group of the Bay of Bengal

Andaman Islands

- **Highest Peak** → Saddle Peak (732 meters)
- **No. of Islands** → About 550
- **Formation** → As a result of extension of tertiary mountain range 'Arakan Yoma'
- **Features** ● Sand stone ● Lime stone ● Shale

➤ Barren Island

● Location

→ 135 km northeast of Portblair
(in Andaman sea)

- Only active volcano of South Asia and India

➤ Narcondam Island

- Dormant volcano located in the Andaman Sea

Nicobar Island Groups

- **Highest Peak** → Mount Thullier
- **No. of Islands** → About 18 G.C.

10° Channel

Speciality

Separates Andaman Islands and Nicobar Islands.

Location

↓
Nellore District in
Andhra Pradesh (near Pulicat Lake)



Srihari-Kota Island

Satellite Launch
Centre of India

↓
Satish Dhawan
space centre

Speciality

↓
Separates Pulicat
Lake From Bay of
Bengal

Important Straits/Channels

Name	Location
8° Channel	Between Minicoy (India) and Maldives
9° Channel	Between Minicoy (India) and Lakshadweep
10° Channel	Between Little Andaman and Car Nicobar
Duncan Passage	Between Little Andaman and South Andaman
Coco Channel	Between Coco Island (Myanmar) and North Andaman
Palk Strait	Between Tamil Nadu and Sri Lanka
Mannar Strait	Between Tamil Nadu and Sri Lanka

Exam Facts

- It is famous for world's largest and rarest gaint Robber crab
- **Bandur Marine Biosphere Reserve**
- It is situated between Coco Island (Myanmar) and North Andaman - **Coco Channel**
- Which is Indonesian island geographically closed to Great Nicobar - **Sumatra Island**

Islands of Arabian Sea

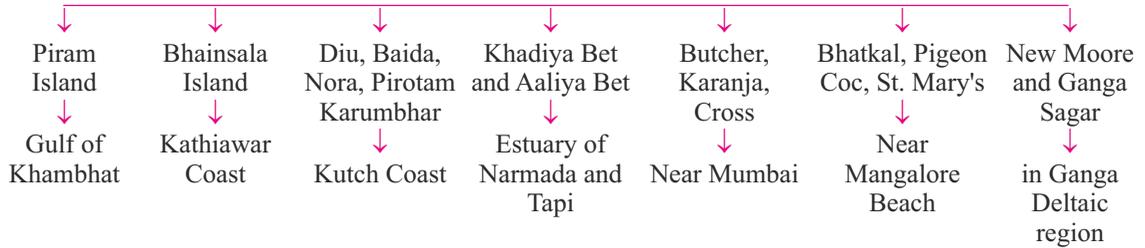
- **Location** → Near Malabar Coast of Kerala
- **Old Name** → Laccadive, Minicoy and Aminidivi
- **New Name** → Lakshadweep (Since 1973)
- **Extension Area** → A group of islands spread over a distance of 220 to 440 km off the kochi coast of Kerala in the Arabian Sea.
- **Area** → 32 sq. km.
- **Number of Islands** → 36
- **9° Channel** → Seperate Minicoy and Lakshadweep
- **Minicoy** → Second (2nd) largest Island of Lakshadweep
- **Kavaratti** → Capital of Lakshadweep (located on Kavaratti Island)
- **Andrott Island** → Largest Island of Lakshadweep

Lakshadweep (Union territory)

- **Elephanta Island** → Mumbai, located at a distance of 10 km from Gateway of India
- **Salsette Island**
 - Located on Western coast
 - Mumbai and Thane cities are located on this island

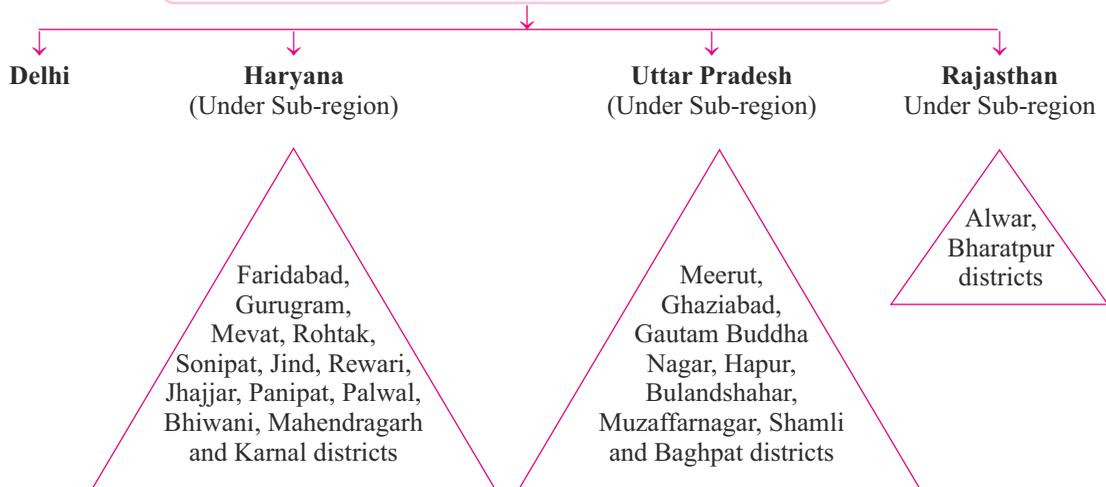
Location of offshore Islands

Islands located in the delta region of Gangas, eastern and Western coast of India and Gulf of Mannar



State/Union Territories of India

Regions included in National Capital Region



Five Largest states of India (In terms of Geographical Area)

(According to Registrar General office, Ministry of Home affairs, Government of India)

Rajasthan
(342,239 sq. km)

Madhya Pradesh
(308,252 sq. km)

Maharashtra
(307,713 sq. km)

Uttar Pradesh
(240,928 sq. km)

Gujarat
(196,244 sq. km)

Five Largest state of India (As per census 2011)

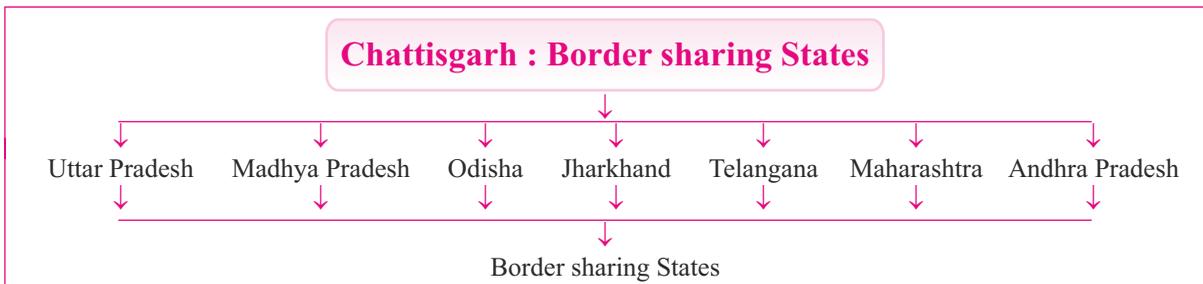
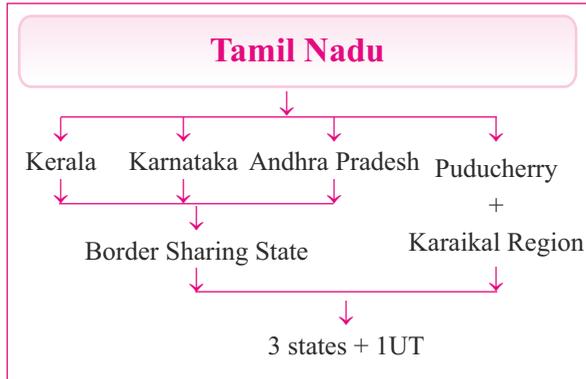
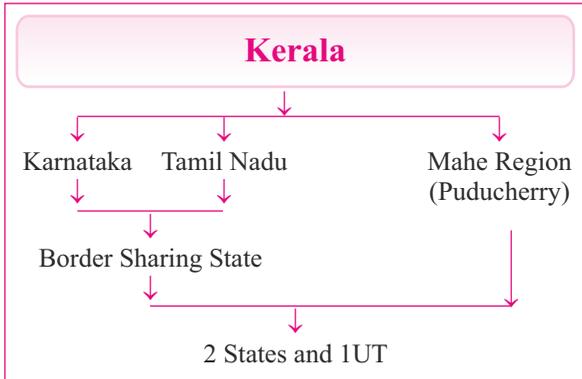
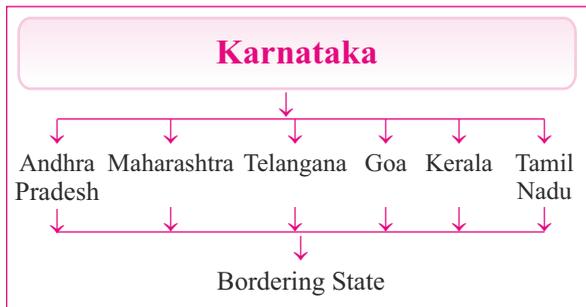
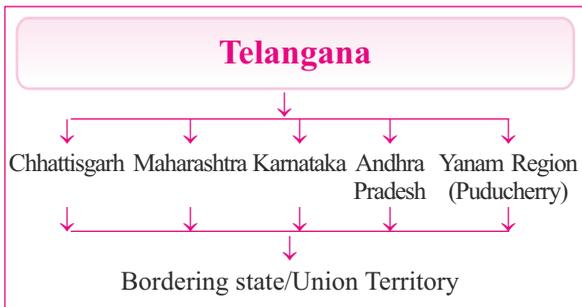
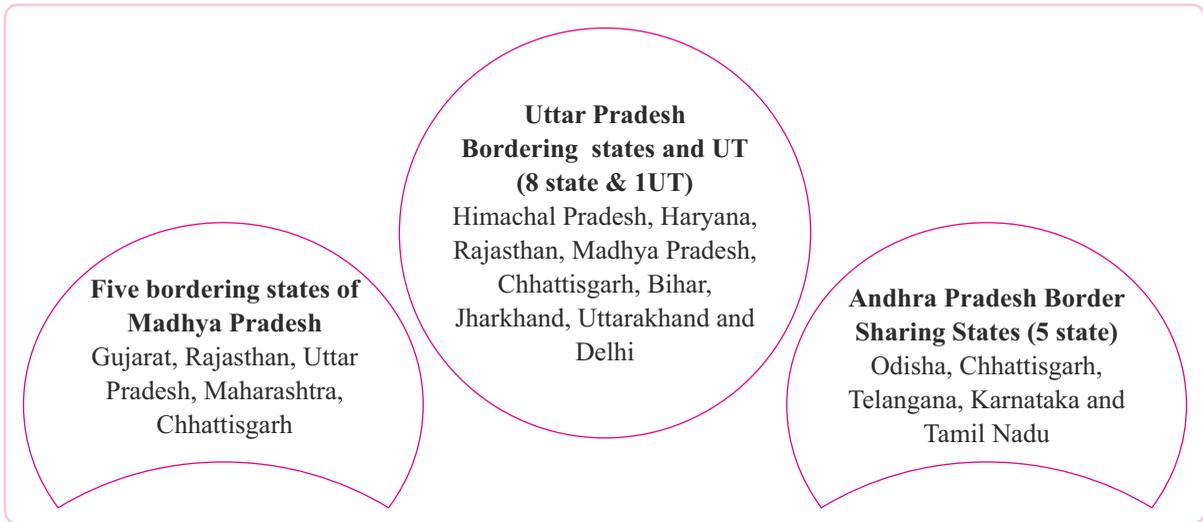
Uttar Pradesh

Maharashtra

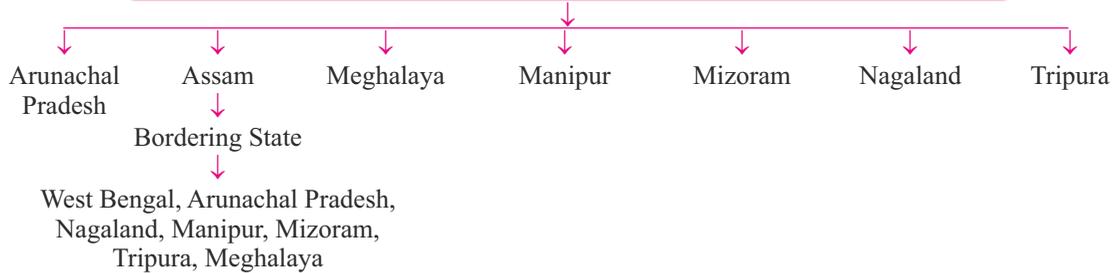
Bihar

West Bengal

Andhra Pradesh



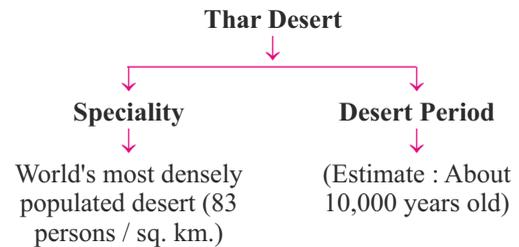
Seven sisters states of India : North-East States of India



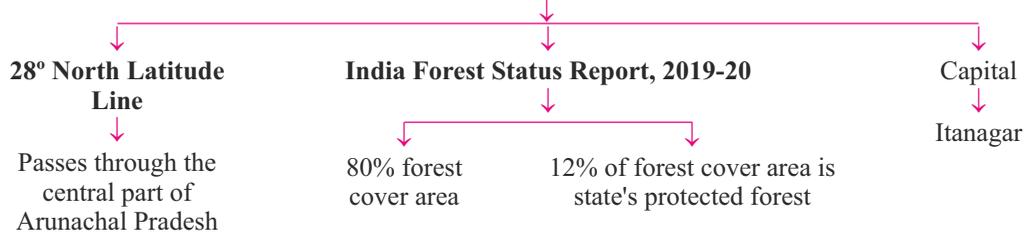
Manipur : Specific Facts

- **Speciality** → Land locked state of Northeast
- **Area** ● 22,327 sq. km (0.7% of total land mass of India)
- **Topography** → 92% Hilly and mountainous land
- **Phumdis** ● Series of floating islands, exclusive to the Loktak lake
 - Natural Habitat of endangered Sangai deer
- **Capital** → Imphal

Rajasthan : Specific Facts



Arunachal Pradesh : Specific Facts



Status (Census 2011) → In terms of Population → Eighth largest state of India
 → In terms of Area → Sixth largest state of India

Silicon State
 ↑
 Other Name

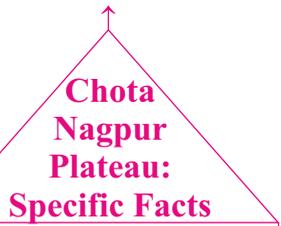
IT Power House of India
 ↓
 Information Technology (IT) Hub

Karnataka: Specific Facts

Capital → Bengaluru
Bengaluru City → Famous as Silicon Valley

Malenadu
 ↓
 Hilly and Dense Forest area of Karnataka

Maximum Extension in Jharkhand



Topography

- High mountain peak
- Hills etc

Speciality

'Pat' lands



Andhra Pradesh :

Other Name

Kohinoor of India (Mined from the World Famous Kohinoor diamond mine of Andhra Pradesh)

Rain Shadow area starts from Maharashtra

Location
North - eastern region of the state Maharashtra

Latur
A district of Maharashtra whose headquarter is 'Latur'



Massive Earthquake
In Latur district
on 30 Sep. 1993

Two Division

Nagpur Amravati

(Area Under this)

- Nagpur Amravati Chandrapur Akola Wardha Buldhana Yavatmal Bhandara Gondiya Klashim Gadchiroli

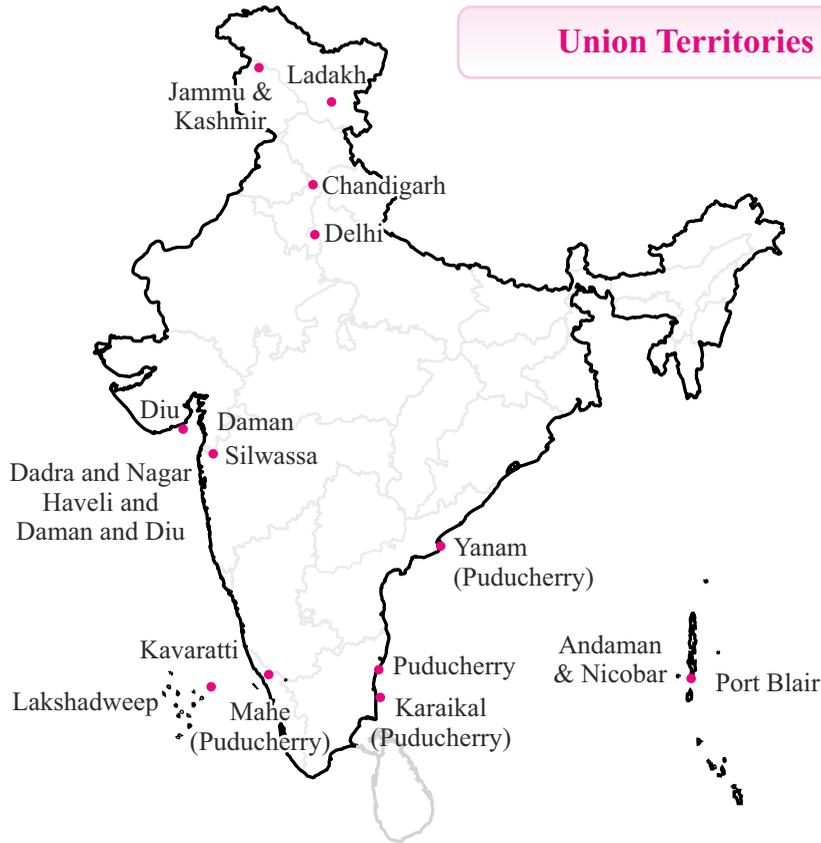
Important Facts

- Bhopal city (23°25' North Latitude) is located in - **South of Tropic of cancer**
- It is composed of soil and other organic matter and rotting vegetation bound by hanging silt - **Phumdis**
- Jhumri Talaiya is located in - **Koderma district (Jharkhand)**
- Third state according to population and in area wise twelfth state is - **Bihar**

- States touching Sonbhadra district are - **Chhattisgarh, Madhya Pradesh, Bihar, Jharkhand**
- The Capital of Telangana, 29th state of India, (currently 28th) - **Hyderabad**
- It is famous for its association with Denmark located on the coast of Tamil Nadu - **Tarangam Bari**
- It is located on the border of Tamil Nadu and Puducherry - **Auroville**

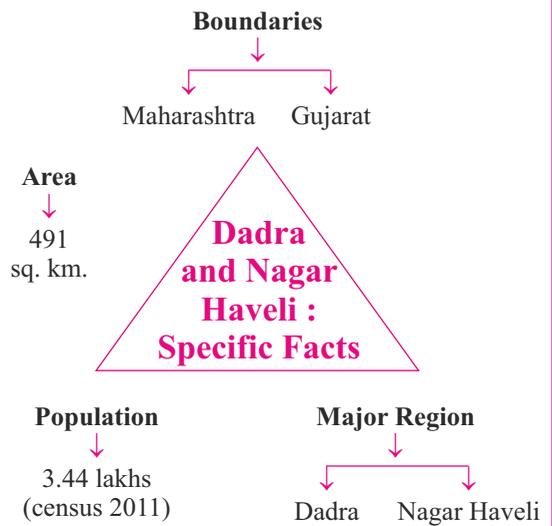
Union Territories of India

*map not to scale



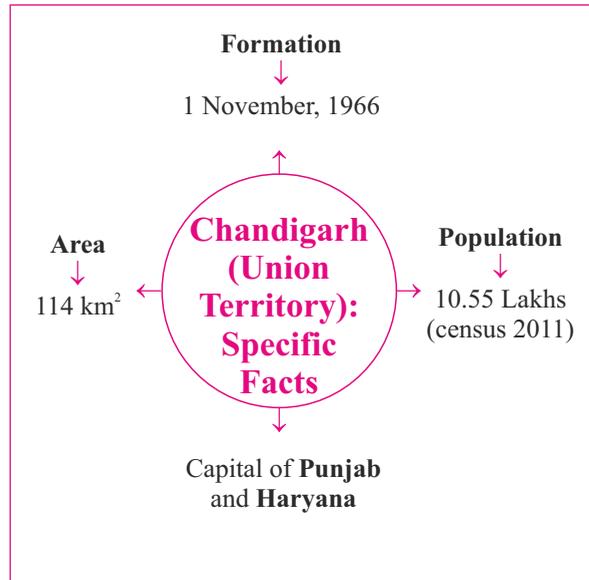
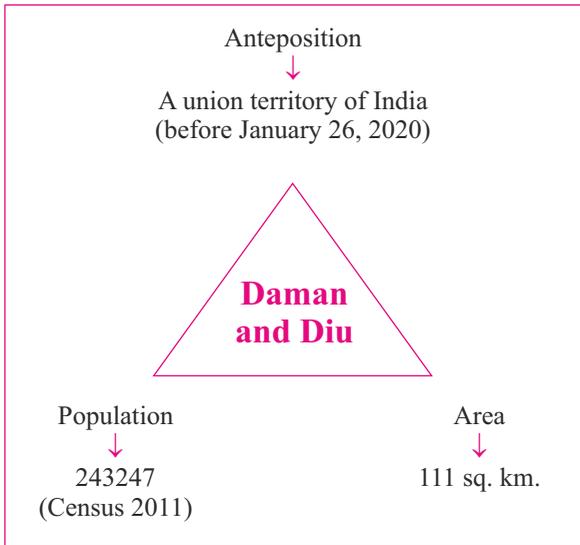
Andaman And Nicobar Islands

- **Location**
 - Latitudinal Extension
 - from 6° N Latitude to 14° N Latitude
 - Longitudinal Extension
 - From 92° East longitude to 94° East longitude
- **10° North of Latitude line**
 - In North direction
 - Andaman Islands
 - In South direction
 - Nicobar Islands
- **Area** → 8,249 square km.
- **Populations** → 380,581 (census 2011)
- **Capital** → Port Blair
- **Tribes** →
 - Great Andamanese
 - Onge
 - Jarawa
 - Sentinelese



Important Facts

- Name of coast of Tamil Nadu and Andhra Pradesh - **Coromandal**
- Digha, Gopalpur and Marina costal highway are located respectively in - **West Bengal, Odisha and Tamil Nadu**
- Another name of Cape Comorin is - **Kanya Kumari**



Note

- There are 28 states and 8 union territory in India since 2020. Dadra and Nagar Haveli and Daman and Diu were merged into one territory of 'Dadra and Nagar Haveli and Daman and Diu' effective from 26 January, 2020

Lakshadweep

- **Speciality** → Smallest union territory of India
- **Population** → 64,473
- **Area** → 32 sq km
- **Total islands** → 36
- **Capital** → Kavaratti

Delhi (Union Territory)

- **Present Status** → Capital city of India
- **Area** → 1483 sq. km.
- **Population** → 1.68 crore (census 2011)

↓

Largest union territory in terms of population

Puducherry

- **Division** → Divided into four districts
 - Karikal and Puducherry
 - Yanam
 - Mahe
- **Area** → 490 km²
- **Population** → 12.48 Lakh (Census 2011)
- **Capital** → Puducherry

Tribes of India

Exam Facts

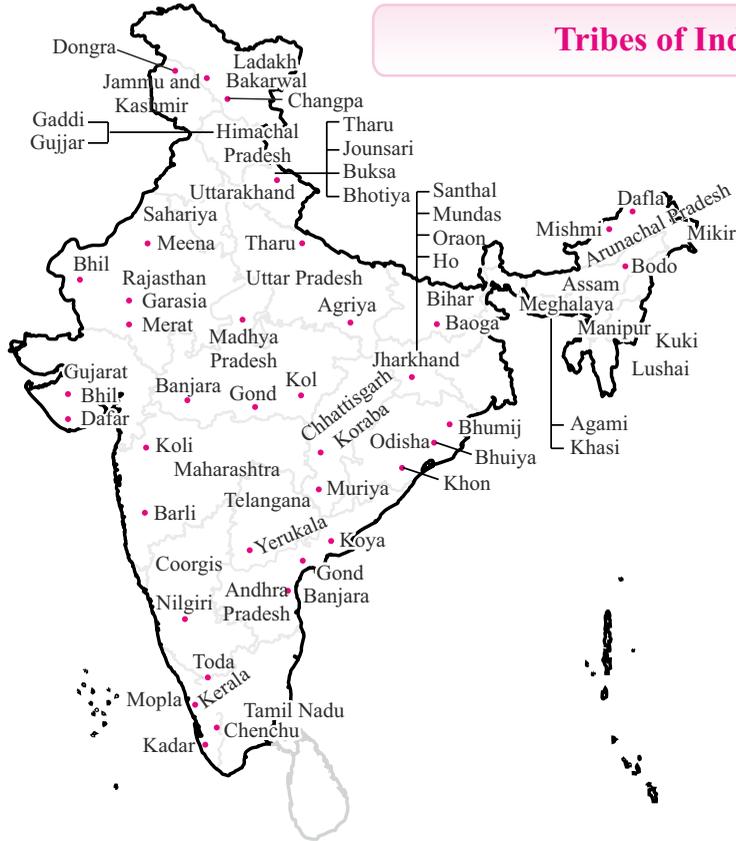
- The largest union territory of India in terms of land area is **- Ladakh**
- Daman and Diu are located **- near Valsad and Somnath district of Gujarat respectively**
- No. of union territories in India **- 8**
- Dadra and Nagar Haveli and Daman and Diu were ruled by **- Portuguese**

Other Related Facts

- As per census 2011, tribal communities were not present in **- Punjab, Haryana, Chandigarh, Delhi and Puducherry**
- Second Largest tribal group of India in terms of population is **- Gond Tribal Group (Census : 2011)**
- As per the census of 2011, the largest tribal group of India **- Bhil**

Tribes of India

*map not to scale



Tribes

→ Population Percentage

- 8.6% (As per 2011 census) of total population of India

→ Largest Population → in Madhya Pradesh, Maharashtra, Odisha

→ India's Largest Tribal Group

- Bhil (As per census, 2011)

Tharu

➤ Extension Area

- Belongs to Nainital of Uttarakhand, Gorakhpur of Uttar Pradesh and Terai Region of Bihar

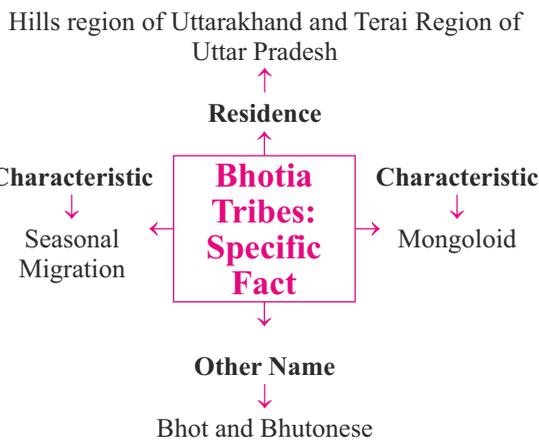
➤ Religion → Hindu

➤ Mourning Festival → Diwali

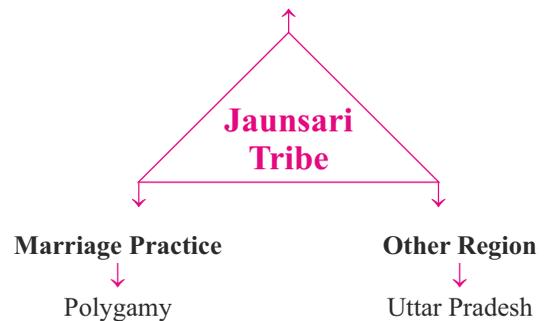
➤ Custom → Joint Family

➤ Descendants → Kirat Vanshi

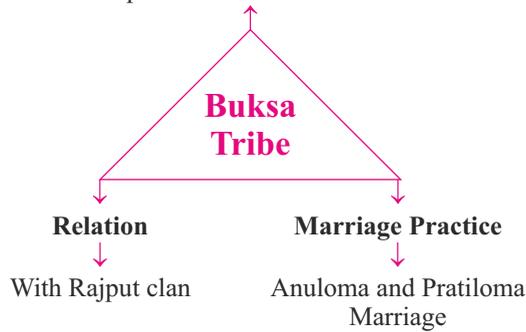
Major Tribes of India



Characteristic : A farming tribe living permanently in the state of Uttarakhand



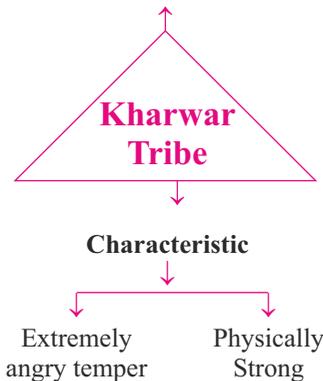
Permanent Residence : Nainital, Pauri and Garhwal Districts of Uttarakhand and in some places of Uttar Pradesh



Raji Tribes

- **Permanent Residence**
 - Uttarakhand (mainly) and
 - Uttar Pradesh
- **Local Name** → Banrawats
- **Religion** → Banrawats
- **Farming** → Slash and Burn agriculture

Residence : Uttar Pradesh (Ghaziपुर, Ballia, Sonbhadra, Varanasi)



Gaddi Tribe

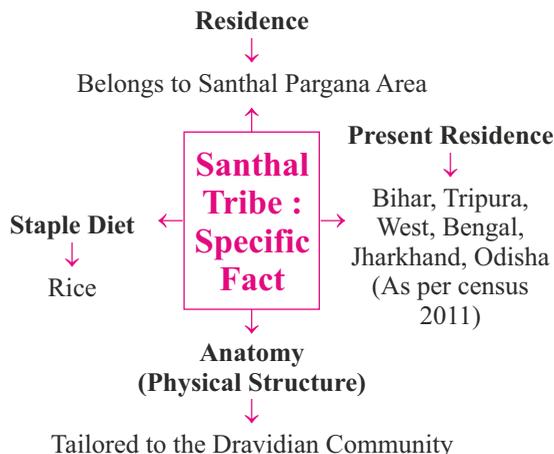
- **Residence** → Dhauladhar Range of Western Himalaya (Himachal Pradesh - Kangara, Chamba district etc.)
- **Population** → More than 1.5 Lakhs (census 2011)
- **Characteristic** → Descendants of Garhwal Rulers (Rajasthan)

Gond Tribe

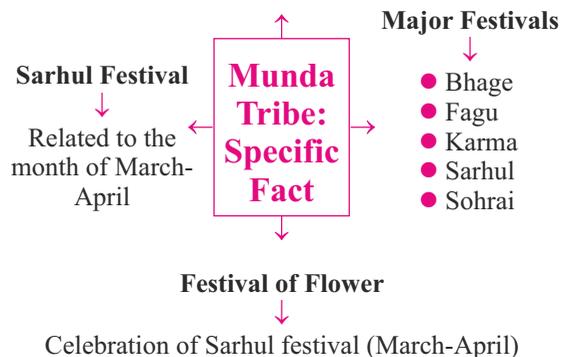
- **Naming** → By virtue of Being a native of Gondwana
- **Current Area** → Madhya Pradesh, Chhattisgarh, Odisha, Andhra Pradesh, Uttar Pradesh, Bihar, West Bengal, Jharkhand, Maharashtra, Karnataka, Telangana, Gujarat etc.
- **Occupation** ● Hunting ● Fishing
- **Agriculture** → Shifting Agriculture
- **Dress** ● Wearing small size clothes ● Trend of wearing jewelry among women
- **Custom** → Animal Sacrifice (Important Practice)

Bhil Tribe

- **Residence**
 - Gujarat
 - Madhya Pradesh
 - Chattisgarh
 - Tripura
 - Rajasthan
 - Andhra Pradesh
 - Telangana
 - Maharashtra
 - Karnataka
- **Culture** → Special significance of Ghoomar Dance
- **Origin of Word 'Bhil'** → From the Biluvar of tamil language (meaning - bowstring)



Residence : Jharkhand, West Bengal, Chhattisgarh, Madhya Pradesh, Tripura, Odisha and Bihar



Exam Fact

- Tribe resides in Sikkim, West Bengal and Tripura - **Bhotia**
- Largest tribal group of state of Uttarakhand - **Tharu**
- Gaddi, Ladakhi, Gujjar, Bakarwal, Laholi Bari etc. major tribes are found in - **Dhauladhar Range**
- Largest tribal group of Uttar Pradesh - **Gond**
- Tribe belongs to proto-austroloid species - **Santhal**

Korba Tribe

Residence : Mostly in the states of Chhattisgarh and Jharkhand
Diet : Tuber Fruit

Kol Tribe

Residence : Bihar, Chhattisgarh, Odisha, Jharkhand, Madhya Pradesh, Maharashtra
Occupation : Agriculture

Manganiyar Tribe

- **Residence** → Desert region of Rajasthan
- **Religion** → Islam
- **Tradition** → Known for musical/folk legacy
- **Other Region** → Sindh Province of Pakistan

Khasi Tribe

Residence : Meghalaya, Assam and Mizoram
Agriculture : Jhuming Practice

Toda Tribe

- **Residence** → Nilgiri Hills
- **Other Name** → Todi or Tuda
- **Recognition** → Descendants of Aryans
- **Occupation** → Pastoral
- **Marrige Customs** → Polyandry

Jarwa

Residence : Southern and Middle Andaman Islands
Note : It is the most primitive tribe of India

Onges Tribe

Residence : Western part of little Andaman Islands
Relation : with Negrito species

Shompen Tribe

Residence : Andaman and Nicobar Islands (mainly Great Nicobar)
Species : Mongoloid

Sentinel Tribe

Residence : Andaman and Nicobar Islands (North Sentinel Island)

Great Andamanese Tribes

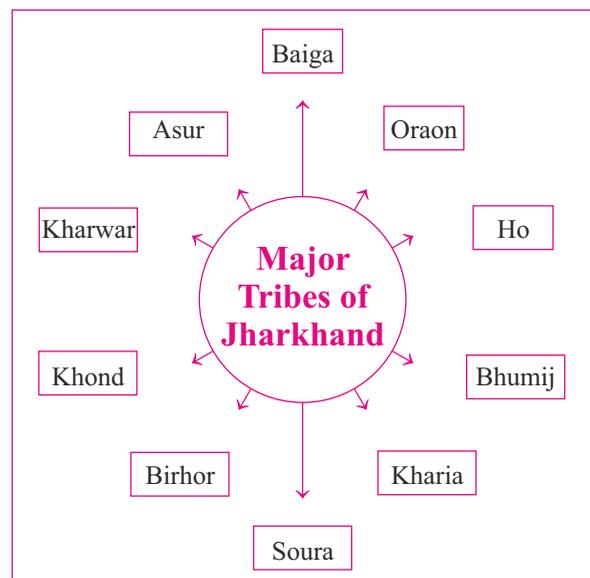
Residence : Andaman Islands

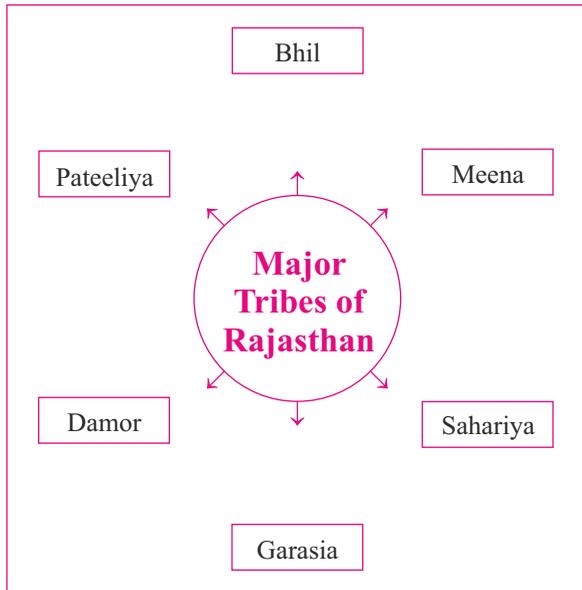
Naga Tribes

Residence : Nagaland, Manipur, Arunachal Pradesh
Agriculture : Jhum Cultivation
Note : Naga tribes mostly live in naked condition

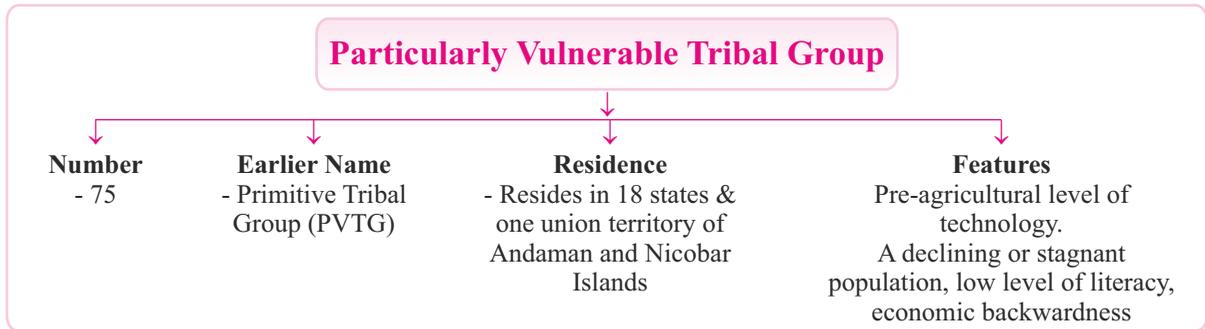
Changya Tribe

Residence : Zaskar area of Union Territory of Ladakh.
Species : Semi-Nomadic Species of Tibetan ethnic group.

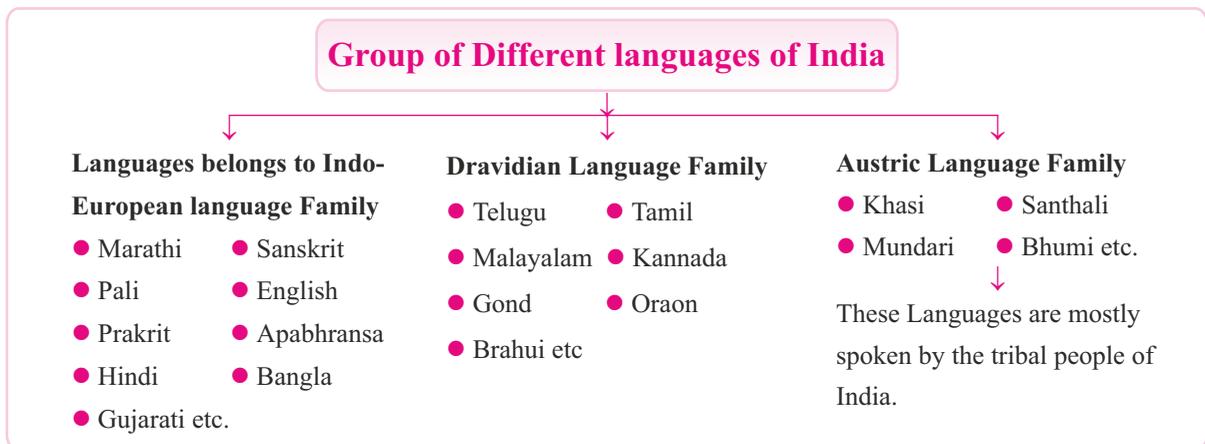




- ### Important Facts
- The residential area have been declared prohibited for human activities of
- **Jarawa Tribe**
 - Onge, Sentinelese, Great Andamanese, Jarawa and Shompen are
- **Vulnerable tribal group (Andaman and Nicobar Islands)**
 - The only human ape found in India
- **Hoolock Gibbon**
 - The tribe found jointly in Sikkim, Nepal, Bhutan and Tibet are
- **Limbu or Yakthung**
 - The tribe in which marriage is called Bapala (Bupla)
- **Santhal**



- ### Important Fact
- | | |
|--|--|
| <ul style="list-style-type: none"> ➤ Social organization 'Ghumkaria' belongs to
- Oraon Tribe ➤ The basis for the determination of scheduled tribe in India is - Primitive traits, distinctive culture, geographical isolation, shyness of contact and backwardness. ➤ Halam and Notia Tribes belongs to the state
- Tripura | <ul style="list-style-type: none"> ➤ The tribe who calls 'kitchen' as 'Lalbangla'
- Bhunja ➤ 'Bamboo' is traditionally the mainstay of
- Kumar Tribe ➤ Bilma dance is related to
- Baiga Tribe ➤ Which Schedule tribe uses tattooing?
- Ojha Tribe |
|--|--|



Exam Facts

- Maximum spoken language of India - **Hindi**
- Maximum spoken language after Hindi in India - **Bangla (Bengali)**
- Largest linguistic group of India - **Indo-Aryan**
- This language got classical language status on 20 Feb, 2014 - **Odiya**
- Sixth most spoken language in the world - **Bangla (Bengali)**

Drainage System

Himalayan Rivers

Note

- Himalayan Rivers are great example of antecedent drainage. These rivers have carried on erosion since the event of Himalayan rise. Therefore, Formation of Gorge or Mahakhad etc. are done by them. These types of rivers are Sutlej, Indus, Ganga, Brahmaputra etc.

Ganga River

- **Length** → 2525 km (longest river of India)
- **Origin** → Near Gomukh of Gangotri Glacier
- **Other Name** ● Padma (in Bangladesh)
● Meghna (in Bangladesh)
- **Drainage** → Antecedent
- **Mouth** → The Bay of Bengal

Important Facts

- Ganga is combined form of - **Bhagirathi and Alakananda rivers**
- Ganga enters into the plain - **In Haridwar**
- Ganga-Brahmaputra Delta is Formed - **Between Hugli River and Meghna River**

Alakananda River

- **Drainage** → Chamoli, Tehri and Pauri Garhwal district
- **River Side City** → Badrinath
- **Devprayag** → Confluence of Bhagirathi river and Alakananda River

Mandakini river

- **Origin** → Chorabari Tal
- **Confluence** → With Kaliganga river (At Sonprayag)
- **Drainage** → Between Kedarnath and Rudraprayag
- **Rudraprayag** → Confluence of Alaknanda and Mandakini Rivers.

Alaknanda River

- Origin** : From the glacier of Satopanth Peak at Alkapuri
- Karnaprayag** - Confluence of Alaknanda and Pindar rivers

Major Himalayan rivers tributaries of Ganges

Yamuna

- **Origin** → Yamunotri Glacier
- **Confluence** → with Ganga (Prayagraj)
- **Major tributaries** → Chambal, Betwa, Ken

Sarda River

- **Origin** → Kalapani in the Himalayas
- **Other Names**
 - 'Gauri Ganga' in Nepal
 - 'Kali river' at Indo-Nepal Border
 - 'Sharda River' in Uttar Pradesh
- **Confluence** → with Ghaghra River (Barabanki district U.P.)

Ramganga River

- Origin** : Dudhatoli Range (Pauri Garhwal, Uttarakhand)
- Confluence** - with Ganga River

Other Major Rivers

Son River

- **Origin** → Amarkantak Plateau
- **Tributary of** → Ganga (Right Bank Tributary)
- **Confluence** → with Ganga (Near Patna)
- **Flow** → Towards the north (forming a chain of waterfalls)

Damodar River

- **Origin** → Chotanagpur Plateau (Jharkhand)
- **Confluence** → with Hugli river
- **Feature** → Flash Floods
- **Other Name** → Sorrow of Bengal

Chambal River

- **Origin** → Near Mhow (Madhya Pradesh)
- **Confluence** → with Yamuna (near Etawah)
- **Tributaries** → Khari etc.



Gomti River

- Origin** : Gomat Taal (Fulkar Lake), Pilibhit (U.P)
- Tributaries** - Sai river
- Confluence** - With Ganga River (Gazipur, U.P)

Kosi River

- Origin** : Nepal Himalaya
- Confluence** - Ganga River (in Bihar)

Gandak River

- Origin** : Nepal Himalaya
- Confluence** - Ganga River (Sonpur, near Patna)

Exam Facts

- Sunderban Delta is formed by the rivers - **Ganga and Brahmaputra**
- It is known as sorrow of Bihar - **Kosi river**
- Water source of Triveni canal - **Gandak River**
- It forms a gorge near Rajasthan (Kota) - **Chambal River**
- Tributary of East Dhauliganga - **Kali River**
- Originates from Raisen district of Madhya Pradesh - **Betwa River**
- Sub-division of Bengal delta - **Moriband Delta**
- No. of districts located on the bank of river Ganga in the state of Bihar - **12**

Brahmaputra Drainage System

Lohit River

- Origin** : Zoyal Chu ranges
- Drainage Area** - Arunachal Pradesh

Subansiri River

- Origin** : Himalayan Region
- Drainage Area** - Assam, Arunachal Pradesh and Tibet (China)

Brahmaputra river System

- **Origin** → Angsi Glacier
- **Drainage** → Parallel to the east of Himalayas
- **Other names**
 - Tsangpo (in Tibet)
 - Dihang - Arunachal Pradesh (India)
 - Brahmaputra - Assam (India)
 - Jamuna - Bangladesh
- Tributaries** → Tista, Kameng, Nlanas, Subangiri, Dhansari, Dihang, Dibang, Sankosh, Pagadiha, Bhardi and Lohit

Barak River

- Origin** : Manipur Hills
- Drainage** - Manipur, Mizoram, Assam and Bangladesh

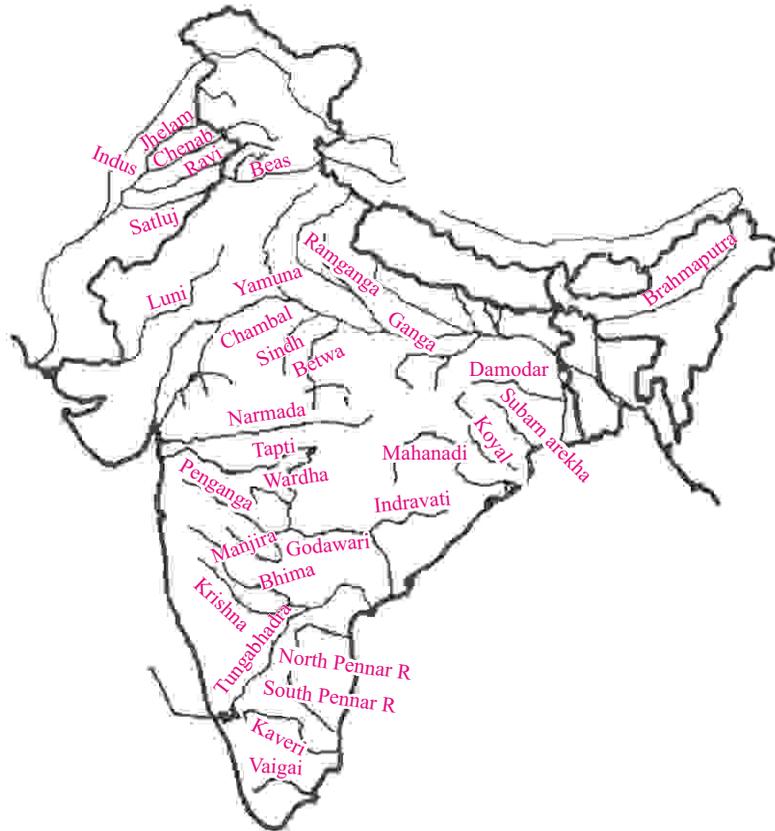


Important Facts

- It is Known as 'Yarlung Tsangpo' river in India - **Brahmaputra River**
- River originates from Khang Chung Chho glacier lake in Sikkim as Chombo Chho River - **Tista River**
- It forms intertwined water way in Assam Valley - **Brahmaputra River**
- Originates from Tibet, Flows through narrow and parallel mountain ranges in its upper reaches - **Brahmaputra, Irrawaddy and Mekong Rivers**
- It takes a 'u turn' before entering India - **Brahmaputra River (due to the axis of geologically young Himalayas)**
- It is known as 'Sorrow of Bengal' - **Damodar River**

Rivers of India

*map not to scale



Peninsular Rivers

Rivers, drains into Arabian Sea

Formation of Estuary

Narmada, Tapi, Mahi rivers etc.

Rivers flows into Bay of Bengal

Formation of Delta

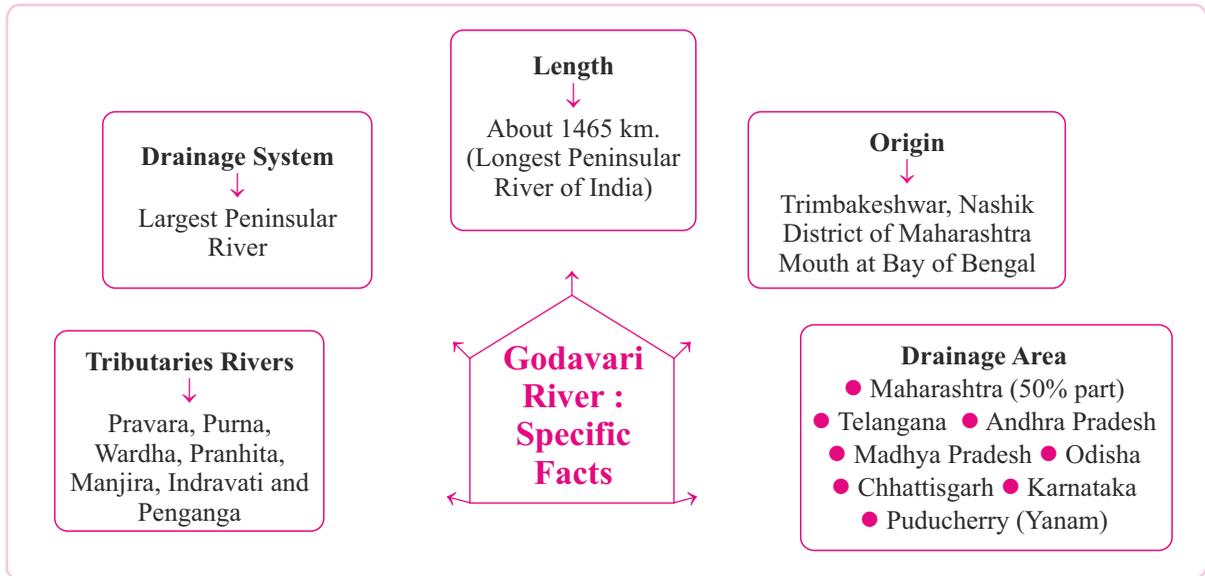
Mahanadi, Godavari, Krishna, Kaveri Rivers etc.

Narmada River

- **Origin** → Amarkantak Peak (Maikal Mountain)
- **Flow/Drift** → Through rift valley (towards west direction)
- **Length** → 1312 km.
- **Water Catchment Area** → 98,796 km²
- **Speciality** → It forms estuary (Arabian Sea)
- **Water Falls** → Dhuandhar Waterfall (near Jabalpur in Madhya Pradesh)

Tapti River

- **Origin**
Near Multai in Betul district (Satpura Hills, Madhya Pradesh)
- **Length** → apx. 724 km.
- **Drainage Area** → Madhya Pradesh, Maharashtra, Gujarat (apx. 65745 km²)
- **Speciality** → Formation of Estuary



Important Facts

- The main water divide of peninsular India is - **Western Ghats**
- Largest river of peninsular India that falls into Arabian Sea - **Narmada River**
- Narmada river valley is situated between - **The Vindhya (North) and Satpura (South) hill ranges**
- It is also known as 'Dakshin Ganga' and 'Old Ganga' due to its large size and extent - **Godavari River**
- It provides electricity to Mysuru, Bangalore and Kolar Gold fields - **Shiva Samudram waterfall (The Cauvery River)**

The Cauvery River

- **Origin** → Brahmagiri Hills of Kogadu districts in Karnataka
- **Length** → 800 km.
- **Drainage Area** → 81,155 sq. km
- **Mouth** → near Tiruchirapalli (into the Bay of Bengal)
- **Specific Facts** → formation of Srirangam Shivasamudram and Srirangapatna, in its way.
- **Tributaries** → Amravati, Bhavani, Hemavati and Kabini
- **Water fall** → Shiva-Samudram (Largest waterfall of India in terms of volume)
- **Drainage Region** → Kerala, Karnataka, Tamil Nadu and Puducherry

Krishna River

- **Origin**
 - Near Mahabaleshwar (Maharashtra) in the Western Ghat
- **Length**
 - apx. 1400 km
- **Tributaries**
 - Tungabhadra, Koyna, Malaprabha, Panchganga, Doodhganga, Ghatprabha, Musi, and Bhima
- **Mouth**
 - In the Bay of Bengal
- **Drainage Area**
 - Maharashtra, Karnataka, Telangana and Andhra Pradesh
- **Water Dispute**
 - Between Andhra Pradesh, Karnataka and Maharashtra since 1957

Mahanadi: Specific Facts

- Origin** → Sihawa Hills, Dhamtari District (Chhattisgarh)
- Tributaries**
 - Seonath
 - Hasdeo
 - Ib
 - Tel
- Delta Formation** → Near Paradwip, in the Bay of Bengal
- Drainage** → Chhattisgarh, Odisha
- Length** → apx. 851 km

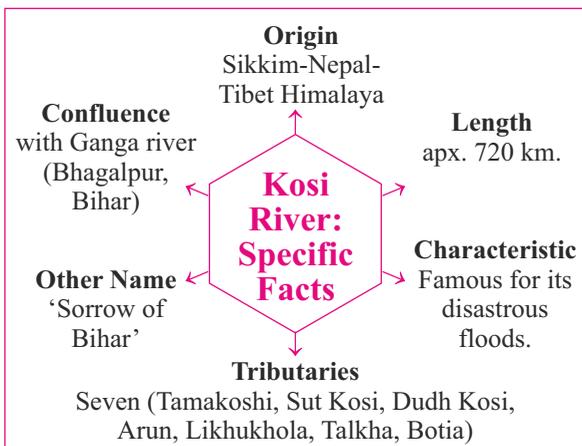
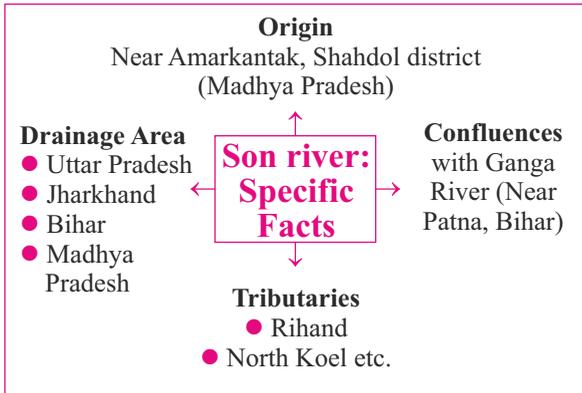
Exam Facts

- This river forms world's largest estuary
- **St. Lawrence River**
- Drainage system of south - Indian rivers
- **Dendritic drainage system**
- Eastern flowing rivers of Kerala
- **Pambar, Bhavani and Kabani**
- River valley that is famous for deep ravines belongs to
- **Chambal River**
- Second largest river basin of India
- **Godavari River**

Other River

Sutlej River

- ➔ **Origin** → Manasarovar - Rakas Lakes in western Tibet
- ➔ **Enters India at** → At Himachal Pradesh near Shipki-La Pass
- ➔ **Confluence with** → Indus River (Mithankot, in Pakistan)
- ➔ **Length** → apx. 1500 km.



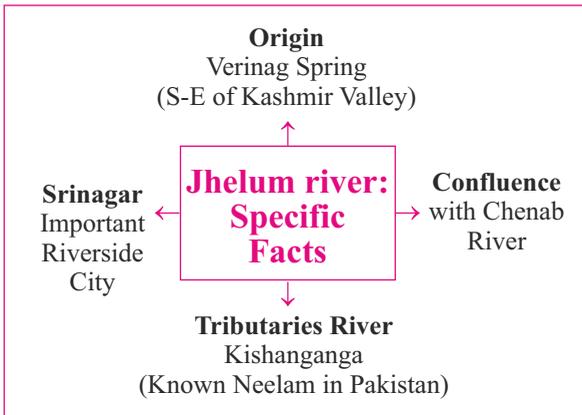
Damodar River

- **Origin** → Chota Nagpur Plateau
- **Drainage** → in rift valley
- **Tributaries**
 - Barakar, Jamunia, Barakee etc.
- **Length** → 592 km
- **Other name** → Ruhr of India
- **Related Canal/Belonging Canal**
 - Edon Canal (1938)
- **Coastal Area**
 - Rajrappa Shakti Peeth (Confluence of Damodar and Bhairavi River)
- **Confluence with** → Hugli River

Sutlej River

Hagri River

- **Origin**
 - In Western ghat
- **Drainage Area**
 - Karnataka and Andhra Pradesh
- **Confluence with**
 - Tungbhadra River



Luni River

- **Origin Source**
 - South-West Ajmer (Aravali Hills)
- **Length**
 - 511 km
- **Speciality**
 - Ends in the marshy area of the Rann of Kutch

Shyok River :

Origin

From Rimo glacier

Other Name -

The River of death
(In Karakoram area)

Confluence -

with Indus River

Tributary - Nubra River

Zaskar River

Origin

High latitude plateau area of Sarchu.
(Border of Himachal Pradesh and Ladakh)

Constructed landform - Deep George (in
Zaskar Range)

Confluence - With Indus River

(Near Nimo)

Length -

150 km (approx)

Spiti River

Origin -

from Kunzum Pass

Drainage - apx. 60 mile

Confluence -

with Sutluj river, Near Namgia
village, Kinnaur district
(Himachal Pradesh)

Kali River

Origin -

From Diggi village of Uttar Kannada
district, situated in hilly area of western
Ghats (Karnataka)

Estuary -

In Arabian Sea

Length -

about 184 km.

Sankosh River

→ Origin

- In Northern Bhutan

→ Boundary

- Between West-Bengal and Assam

→ Confluence → with Brahmaputra River

(Near the border of Assam and Bangladesh)

Mithi River

Origin → Vihar Lake (Mumbai)

Length → 18 km

Estuary → Arabian Sea
(Near Mahim Bay)

Mahi River

→ Origin

- In Madhya Pradesh

→ Drainage Area

- Madhya Pradesh, Rajasthan and
Gujarat State

→ **Estuary** → In the Bay of Khambhat

Kapili (Kopili) River

Origin → From Meghalaya Plateau

Confluence with → Brahmaputra

Coastal city → Kamrup City

Exam Facts

- Jhelum and Ravi River meets near Jhang in Pakistan with
- **Chenab River**
- It forms a biological desert between Giridih and Durgapur
- **Damodar River**
- Example of superimposed drainage
- **Chambal River**
- River which upper part has freshwater and lower part has brackish water stream
- **Luni River.**
- Water source of Triveni Canal - **Gandak River**
- 'Hijala fair of Dumka' of Santhal Pargana is organised
- **On the bank of Mayurakshi River**

Major Cities situated on the bank of River

Rivers have played an important role in the economic development of India. River have been the means of livelihood of human beings here, since ancient time. Many cities are situated on the bank of river in India

Bhagirathi River

↓
Riverside City
↓
Uttarkashi
(Uttarakhand)

At the confluence of Bhagirathi and Alakananda River
↓
Riverside city
↓
Devprayag

Ganga River

↓
Riverside Cities
↓
● Haridwar (Uttarakhand)
● Fatehpur (U.P.)
● Kanpur (U.P.)
● Varanasi (U.P.)
● Bhagalpur (Bihar)
● Patna (Bihar)

Confluence in Prayagraj (Previously known as Allahabad)

Yamuna River

↓
Riverside Cities
↓
● New Delhi
● Agra
● Mathura
● Etawah

Krishna River

↓
Riverside city
↓
Vijaywada
(Andhra Pradesh)

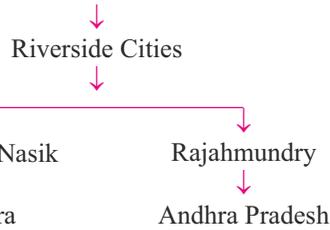
↓
Tributary Musi River
↓
Riverside city
↓
Hyderabad

Satluj River

↓
Riverside City
↓
Ludhiana
↓
Punjab

↓
Firozpur
↓
Punjab

Godavari River



River	Major City
Jhelam	Srinagar
Indus	Leh
Sutlej	Ludhiana
Sabarmati	Ahmadabad, Gandhinagar
Gomati	Lucknow
Tapti	Surat, Betul
Swarnarekha	Jamshedpur
Sarayu	Ayodhya
Rapti	Gorakhpur
Ramganga	Bareilly

Important Facts

- The major cities of Assam Guwahati and Dibrugarh are located on
- **The bank of Brahmaputra River**
- The ancient city of Madhya Pradesh, Ujjain is situated on
- **The eastern bank of Shipra River**
- Jagdalpur of Chattisgarh and Jabalpur of Madhya Pradesh is situated on the bank of
- **Indrawati River and Narmada River respectively**
- Cuttack city of Odisha is situated on
- **Bank of Mahanadi River**
- Pandarpur (Maharashtra) city is situated on bank of
- **Chandra Bhaga (Bhima) River**
- Tiruchirapalli city of Tamil Nadu is situated on
- **The bank of Kaveri river**
- The famous city Hampi of Karnataka is situated on - **The bank of Tungabhadra River**

Uttarakhand



Waterfall and Lakes

Waterfall

The word waterfall usually refers to a deliberate fall of water. The origin of waterfalls is both natural and artificial. Most of the water falls in India are found in South India

Karnataka

Waterfall	River
Jog	Sharavati
Kunchikal	Varahi
Shivasamudram	Kaveri

Exam Fact

- The largest waterfall in India in terms of width
- **Jogfall (according to the world waterfalls database)**
- It is largest water fall in India in terms of volume
- **Shivasamudram fall**
- The waterfall known as Niagara of India
- **Chitrakoot Falls**
- The waterfall situated on the Mandovi river on the border of Goa and Karnataka
- **Dudhsagar Fall**
- The waterfall is located on Narmada river in Jabalpur (at Bhedaghat of Madhya Pradesh)
- **Dhuandhar Fall**
- The waterfall located on the Machkund river in Koraput (Odisha)
- **Duduma fall**
- The waterfall located on the Ghatuprabha river in Belgaum, Karnataka
- **Gokak fal**

Waterfall	River	State
Chuliya	Chambal	Rajasthan
Bhalkund	Bina River	Madhya Pradesh
Lodh	Burha River	Jharkhand
Amritdhara	Hasdeo River	Chhattisgarh

[Click here to Join](#)

Miscellaneous

Kishau Dam

Construction - Tons river (Tributary of Yamuna River)
Beneficiary States - Himachal Pradesh, Uttarakhand

Rajghat Project

Other Name - Rani Laxmi Bai Dam Project
Construction - Betwa River
Location - Lalitpur (U.P.)

Babali Project

Construction - at Godavari River
Location - An intrastate disputed Dam project of Maharashtra and Telangana

Tilaiya Dam

Construction - at Barakar River
Location - Koderma District, Jharkhand

Tapovan
Vishnugad

Hydro
electric
Project

Related River

↓
Dhauliganga

Location

↓
In Uttarakhand
State

Important Facts

- The oldest hydroelectric station in India
- Sidrapong
- First Hydroelectric plant of India established in
- Darjeeling
- Mahakali treaty signed in 1996 between
- India and Nepal
- Dam which was not useful in irrigation
- Shivsamudram

Lakes of India

A Natural trough filled with water is known as Lake

Ajmer ← Location Speciality → Artificial Lake Construction in → 12th century

↑
Pushkar Lake

Artificial
Lake

← Rajsamand
Lake

Major Lakes
of Rajasthan :
Specific
Facts

Other Lakes
● Didwana
● Uday Sagar etc.

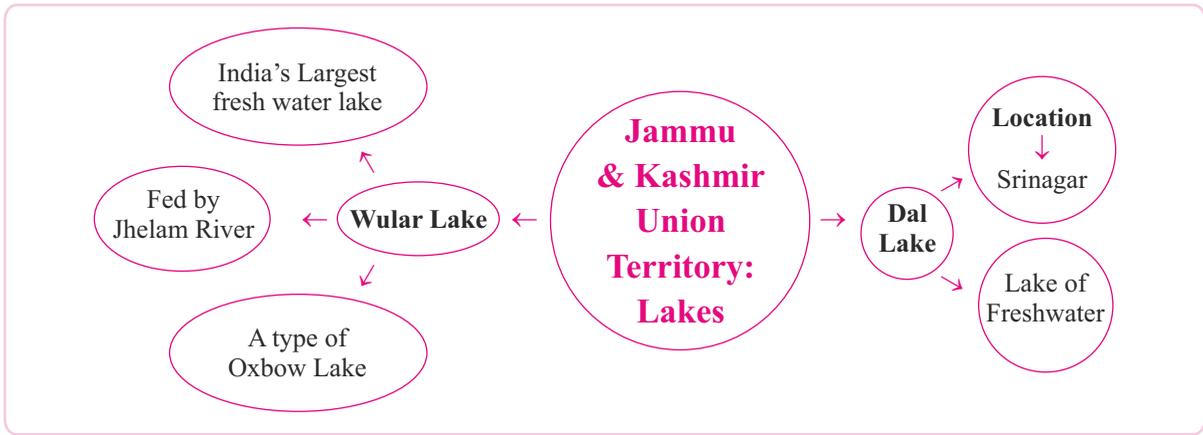
Location
↓
Udaipur

↓
Nakki Lake

↓
Highest lake
of Rajasthan

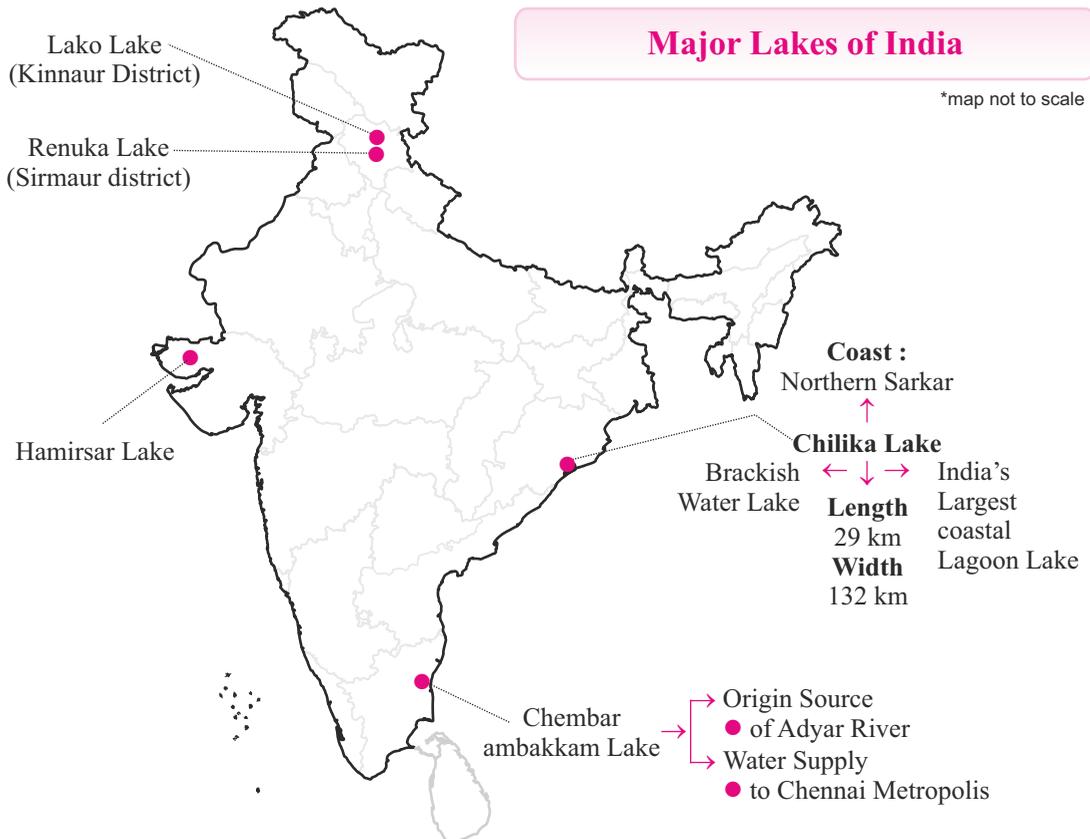
↓
Location
↓
Mount Abu

↓
Shape
↓
Bowl-shaped

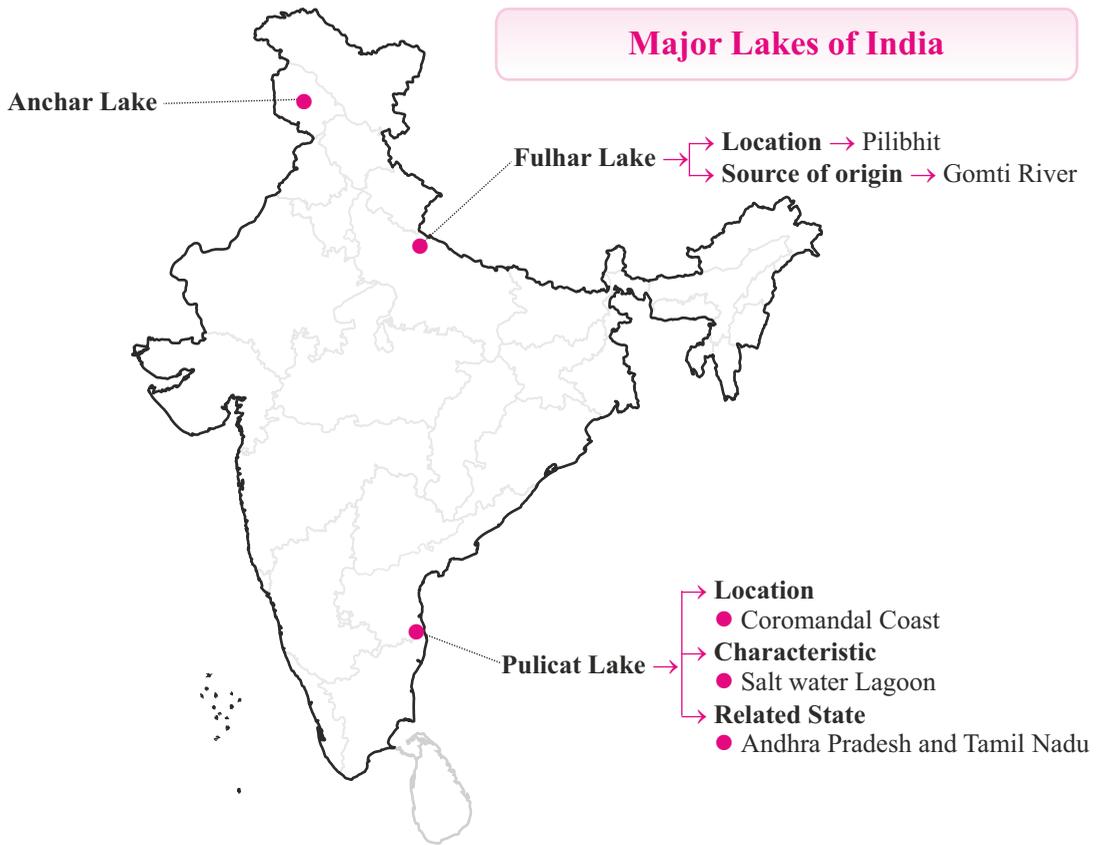


- Reminder**
- India's second largest brackish water lake
- **Pulicat Lake**
 - Freshwater lake located in the state of Andhra Pradesh
- **Kolleru Lake**
 - Lake related to international importance wetland in Kerala
- **Ashtamudi Lake**
 - Lake located in Hyderabad (Telangana)
- **Hussain Sagar and Osman Sagar (Artificial)**
 - Sriharikota Island separate it from the Bay of

- Reminder**
- Bengal
- **Pulicat Lake**
 - Lake situated in Haryana states
- **Surajkund Lake**
 - Example of snow covered lake situated in Lahaul-Spiti district of Himachal Pradesh
- **Ghepan Lake**
 - Example of Man-made (artificial) lake situated in Dindigul district of Tamil Nadu
- **Kodaikanal Lake**

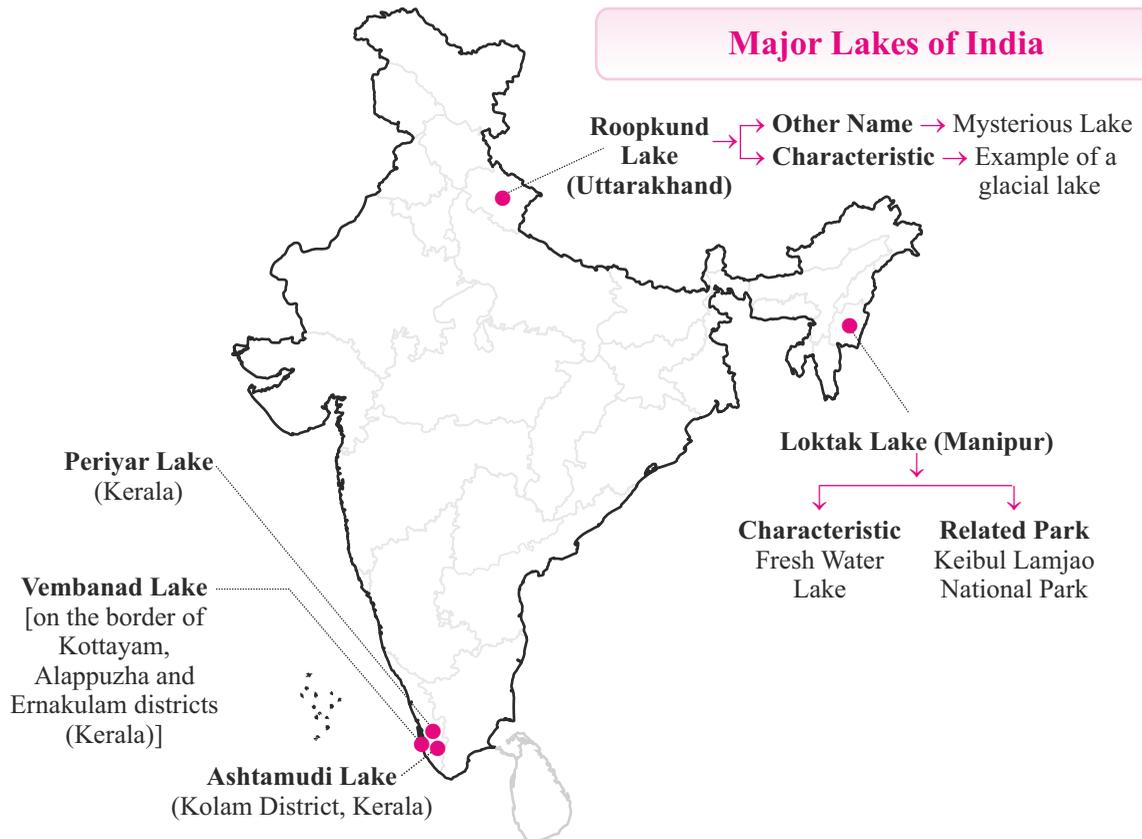


Major Lakes of India



*maps are not to scale

Major Lakes of India

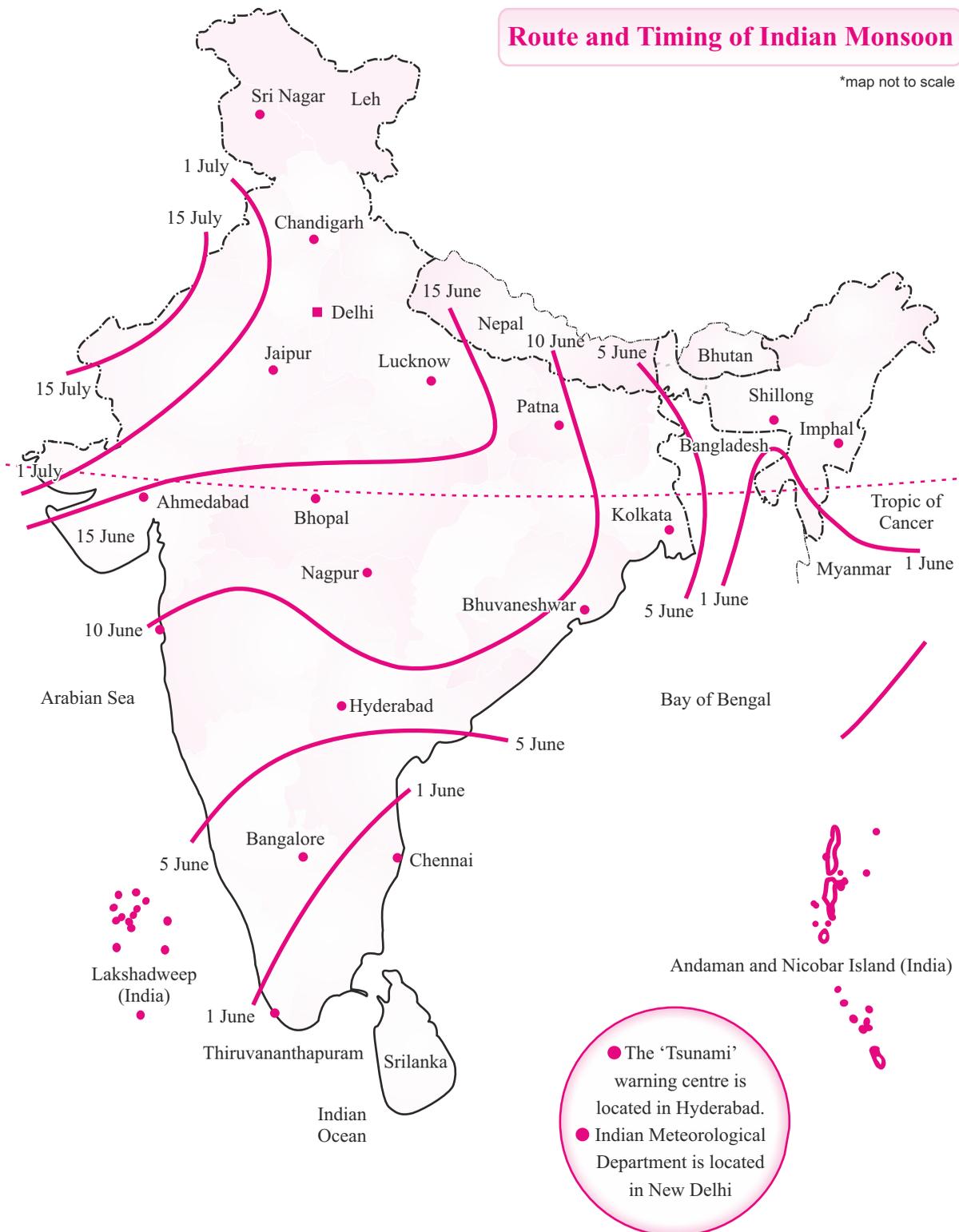


Climate

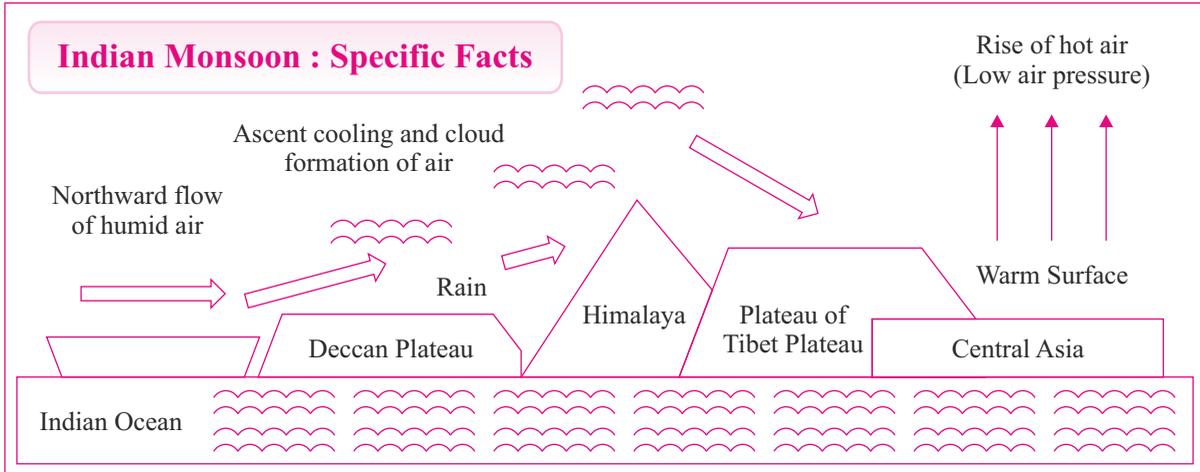
Monsoon

Route and Timing of Indian Monsoon

*map not to scale



Indian Monsoon : Specific Facts



The headquarters of the Indian Meteorological Department is situated
- **New Delhi**

A seasonal reversal in wind pattern occurs over region in
- **Monsoon Climate**

The origin of Monsoon word is from
- **'Mausim' word of Arabic language**

An example of a country with tropical monsoon climate is
- **India**

The regions of India that receive maximum rainfall from the southwest monsoon are
- **Western ghat, eastern Himalayas and Meghalaya**

The 'Tsunami warning centre' of India is located situated in
- **Hyderabad**

Important Facts

- India receives most of the rainfall from
- **the south-west monsoon**
- The Normal flow direction of summer monsoon is from southwest to northwest occurs
- **In India**
- The direction of monsoon is from northeast to south west oceans in
- **Winter season**
- It receives maximum rainfall from north east monsoon
- **Tamil Nadu**
- Reversal of monsoon in India starts
- **in the month of september**
- First arrival of monsoon in India in
- **in the Kerala state**
- The winter rainfall in the northern plain of India is due to
- **Western Disturbances**
- Indian Institute of Tropical Meteorology is situated at
- **Pune, Maharashtra**
- The highest daily temperature is measured in
- **The desert region of Rajasthan, India**

Exam Facts

- Major part of total rainfall in India is received from
- **South West monsoon**
- The temperature in north western part of India becomes very high in summer, due to which it develops
- **low pressure area**
- Indian ocean remains relatively colder in summer season over the north western part of India because
- **high air pressure remains there**
- When monsoon winds fails to bring rain for a period of two weeks or more, a dry period occurs during the rainy season, it is called as
- **Break of monsoon**
- The Inter-Tropical convergence zone (ITCZ) is a low pressure belt located near
- **The equator**

Exam Facts

- The normal flow direction of winds in most parts of the country during rainy season from
- **south west to north east**
- Due to presence of Himalayas, the winds blow in the north east and in Ganga plain during rainy season from
- **south east and east direction**
- Tamil Nadu receives 50-60% of the total rainfall
- **from the north-east monsoon**
- Not only India, but world's wettest place in world
- **Mawsynram (Meghalaya)**
- Place with least rainfall in India
- **Leh (Ladakh)**

Rain

Rainy Season in India

- ➔ **Highest rainfall** → Mid of June and September month
- ➔ **Characteristic** → Effect of south-west monsoon winds
- ➔ **Low Air Pressure** → Formed in north-west India
- ➔ **Special Fact** → In the form of heavy rain with thunder storms at the time of entry of south-west monsoon winds into the terrestrial part.
- ➔ **Branches of Monsoon Winds**
 - ➔ Branch of Bay of Bengal
 - ➔ Branch of the Arabian Sea

Highest Rainfall Region
- Western Ghats
- Eastern Himalaya, Meghalaya

India : Facts related to rain

According to Indian Meteorological department. On July 19, 2016, Mawsynram received the highest rainfall in a day : 549.2 mm recorded

Important Facts

- Reason of reversal of monsoon in India in the month of september
- **Southward shift of the ITCZ due to winter solstice of the Sun.**
- Average National Rainfall of India is
- **1127 mm**
- The maximum profitable water management system in India is
- **Rain water harvesting system**
- Jharkhand receives its rainfall
- **from south west monsoon**
- The desert development plan is implemented in India
- **around 40 districts**

The pre-monsoon rain that occurs in Karnataka and Kerala is called
- **Mango Rain**

In India, the average annual rainfall from western disturbances is about
- **3 Percent**

Thunderstorm rains occurs in Tamil Nadu, Andhra Pradesh etc. from October to November due to
- **North-east Monsoon**

Winter Rain

Winter Rain in India

- **Receive Rain** → More in North Western area : By the west Mediterranean disturbances
- **Major Rainfall Area** → North-Western India (Punjab, Haryana, Delhi and Western Uttar Pradesh)
- **High Air Pressure** → North-West India (Due to the position of Sun in southern hemisphere)
- **Wind Flow**
 - From North-West India
 - towards the east
 - In the eastern coast of India
 - Rain due to trade winds

Natural Disasters

Note

- Natural changes that effect human beings are called natural disasters. The main examples of natural disasters are volcanic eruptions, earthquakes, droughts, floods, cyclones, soil erosion, mud flows etc.

Important Facts

- Cause of temperate cyclone in India is- **Subtropical Westerly jet winds**
 - Rains in winter in northern plains of India is **- from western disturbances**
 - Areas of autumn rainfall in India are **- North-western and south eastern coastal area.**
 - The condition of high atmospheric pressure and low temperature in winter are called **-Anti cyclonic conditions**
- The situation of isostasy has not occurred in **- Himalayan Region**
 - Indian plate is in constant motion towards **- the north direction**
 - The land area of India is divided in terms of earthquake pronesess into **-4 Zone**
 - Koyna Region of Maharashtra is likely to be affected more in the future by **- earthquake**

Seismic Zones of India

Seismic Zone	Speciality
II	Low Intensity Zone
III	Moderate Intensity Zone
IV	Severe Intensity Zone
V	very severe Intensity Zone

Zone V

- **Nature**
 - Extremely high damage risk zone
- **Zone factor**
 - 0.36 (under IS code)
- **Related area**
 - Union territory of Jammu & Kashmir
 - Ladakh (Union territory)
 - Himachal Pradesh
 - Uttarakhand (some part)
 - Bihar (some part)
 - Runn of Kutch
 - Northeast region and Andaman and Nicobar Islands
- **Land Area**
 - 10.9 percent of total geographical land area of country

Zone IV

Nature → Severe Intensity Area

Zone Factor → 0.24 (under IS code)

Related Area → Delhi, Gangetic plains, rest Himalayas, part of Gujarat, Maharashtra (Koyna region) Sikkim

Land Area → 17.3 percent of the total land area of country.

Zone III

Zone Factor



0.16
under IS code

Related Area



Lakshadweep, Western ghats, Fault zone of peninsular India, southern part of Ganga planins including Lucknow.

Land Area



30.4 percent of total land area of the country

Zone factor

- 0.10 under IS code

Zoning

- Consolidated area of Zone I and Zone II

Nature

- Least earthquake affected Mekhela

Zone II : Specific Fact

Land Area

- 41.4 percent of total Land area of country

Related Area

- Most part of peninsular plateau

Karnataka Plateau

- Under peninsular plateau i.e Zone II

Tsunami

➤ **Origin of Word**

- From Japan ● TSU → means 'Harbour'
Nami → means 'wave'

➤ **Cause of origin of most of Tsunami**

- earthquake in the sea, due to landslide or volcanic eruption

➤ **Cause of origin of most Tsunami is**

- Earthquakes on the ocean floor

➤ **Example**

- The coromandal coast in India was most affected by Tsunami on December 26, 2004 (Indian Ocean)

Cyclonic Storm

- **Cyclone** → System of winds that circulate about a centre of low atmospheric pressure
- **Direction**
 - In Northern Hemisphere
 - Anticlockwise direction
 - In southern Hemisphere
 - Clockwise direction
- **Region related to India**
 - Arabian Sea
 - less number of cyclones
 - Bay of Bengal
 - more number of cyclones

Landslide

- **Definition** → It is a rapid movement of rock, soil and vegetation down the slope under the influence of gravity.
- **Cause** → Increase in human activities like building roads, dams etc., increase in the frequency of earthquakes.
- **Consequences** → Increase in the frequency of landslides in Himalaya region.

Indian Meteorological Department

Founded → 1875

Headquarters → New Delhi (1944)

Special

- An agency under the Ministry of Earth Sciences

Former Headquarter

- First Kolkata, Shimla in 1905, Pune in 1928

Important Facts

- 'Tsunami Warning Center' operationalized (established) **- In Hyderabad**
- The state which affected by all three natural disasters i.e cyclone flood and drought **- Odisha**
- Central Water Commission established it to calculate floods **- Flood Forecasting organization**
- Country's first disaster management training institute is being established in **- Latur (Maharashtra)**
- The highest flood prone state of India **- Bihar**
- The highest flood affected area of Uttar Pradesh is **- Eastern Region**

Soil

Black Soil

Black soil (Regur) : Specific Facts

- **Other Name** ● Black Cotton soil
 - Regur
- **Formation** → Due to weathering and erosion of basalt lava
- **Extension Area** → Most of the Deccan Plateau (Maharashtra, Madhya Pradesh, Gujarat, Telangana, Andhra Pradesh and Karnataka)
- **Extension** → 5.46 Lakh sq. km (on the geographical area of the country)
- **Speciality**
 - Rich in of Iron, Lime, Calcium, Potash, Aluminium and Magnesium Carbonate
 - Deficiency of Nitrogen, phosphorous and organic matter
- **Black Colour** → Due to the presence of titaniferous magnetite.

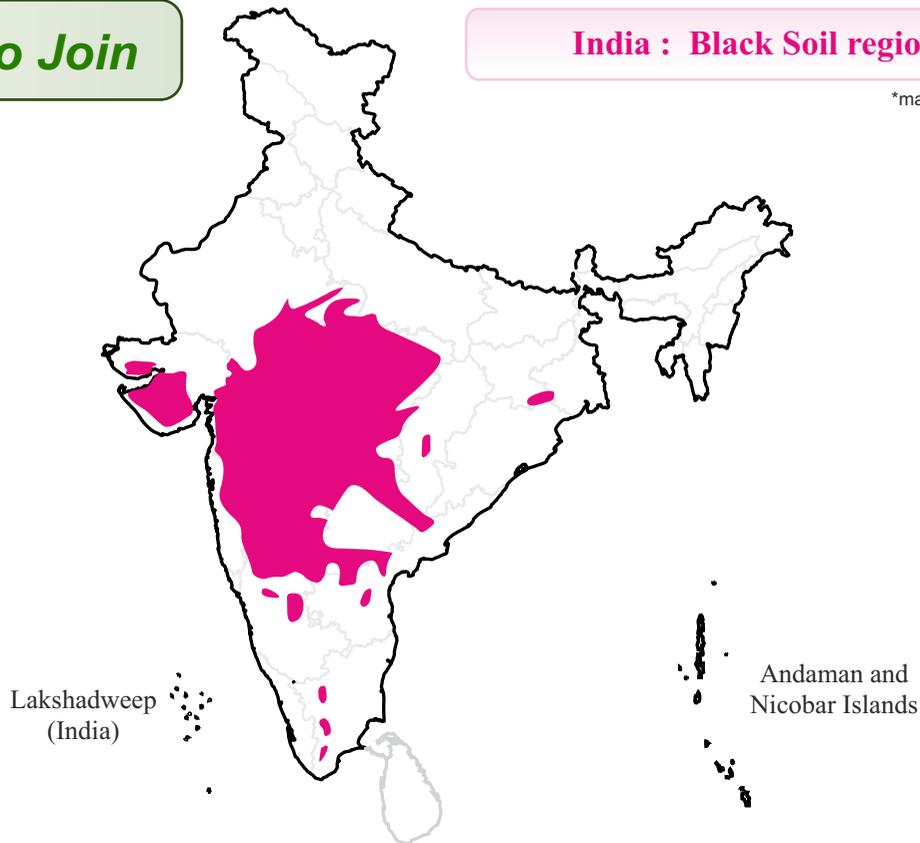
Exam Facts

- Most suitable soil for cotton cultivation **- Black Soil**
- Black soil is found in Jharkhand in **- In Rajmahal Hilly Region**
- Lava soils are found in **- Malwa Plateau**
- Self-ploughing soil is also called as **- Black Soil**
- Regur soil is found most in **- Maharashtra**
- Soil with high moisture holding capacity **- Black Soil**
- According to Krebs, Regur soil essentially is a **- Mature Soil**
- Good yield of tapioca and cashew **- in laterite soil**
- Red colour of laterite soil is due to **- Iron oxide**

[Click here to Join](#)

India : Black Soil region

*map not to scale



Laterite Soil

Laterite Soil : Specific Facts

- **Laterite word first used by** → By Buchanan (1810)
- **Meaning** → Latin word 'Later' → means - Bricks
- **Characteristic** - Intense leaching
- **Formation** → As a result of rapid leaching (cause - Tropical heavy rain)
- **Fertility** → Low level (Example of dehydrated soil of wet regions)
- **Minerals**
 - Rich in Iron oxide and potash
 - Deficiency of Nitrogen, Phosphoric acid, Lime and organic matter
- **Extension** → 2.48 Lakh sq. km (of total geographical area of country)

Laterite Soil Extension Area

Kerala, Eastern Tamil Nadu, Odisha, Chota Nagpur Plateau, Meghalaya, Western Ghats

Alluvial Soil

New Alluvial or Khadar :

Water holding capacity : More
Nature : Always fertile
Extension : River flood Plain area

Old Alluvial or Bangar :

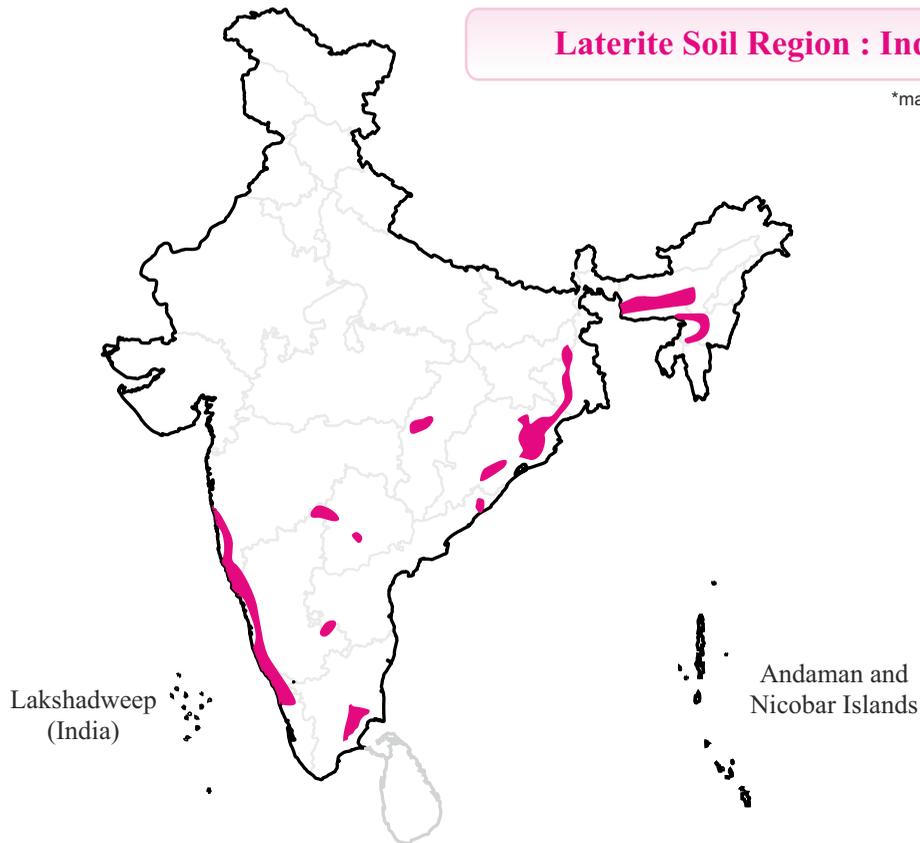
Nature : Less fertile (Regular requirement of fertilizer)
Salinity and Alkalinity : High (Highest sand deposition)
Colour : Dark Yellow

Bhabar

Extension → Foothills area of Shivalik
Minerals ● Abundance → Nitrogen → organic matter
● Deficiency → Phosphate

Laterite Soil Region : India

*map not to scale



Alluvial Soil

Alluvial Soils : Specific Facts

- **Definition** → soil deposit by rivers
- **Area** → about 15 lakhs sq. km (about 40% part of total area of country)
- **Extension Areas**
 - Plains from Assam to Punjab
 - Narmada, Tapi, Mahanadi, Godavari, Krishna and Kaveri Valleys.
- **Formation** → By sediments brought by Himalayan and peninsular rivers and silt released by the divergent ocean.
- **Colour** → Between light grey to ash grey
- **Density** → Between drift sand to rich loam
- **Minerals**
 - **Abundance**
 - Potash
 - Phosphoric Acid
 - Lime
 - Organic Matter
 - **Deficiency**
 - Nitrogen
 - Phosphorous

Alluvial Soils : Specific Facts

→ Major Crops

- Rice
- Sugar cane
- Cotton
- Oil Seed
- Wheat
- Jute
- Maize
- Fruits, Vegetables etc.

→ Division

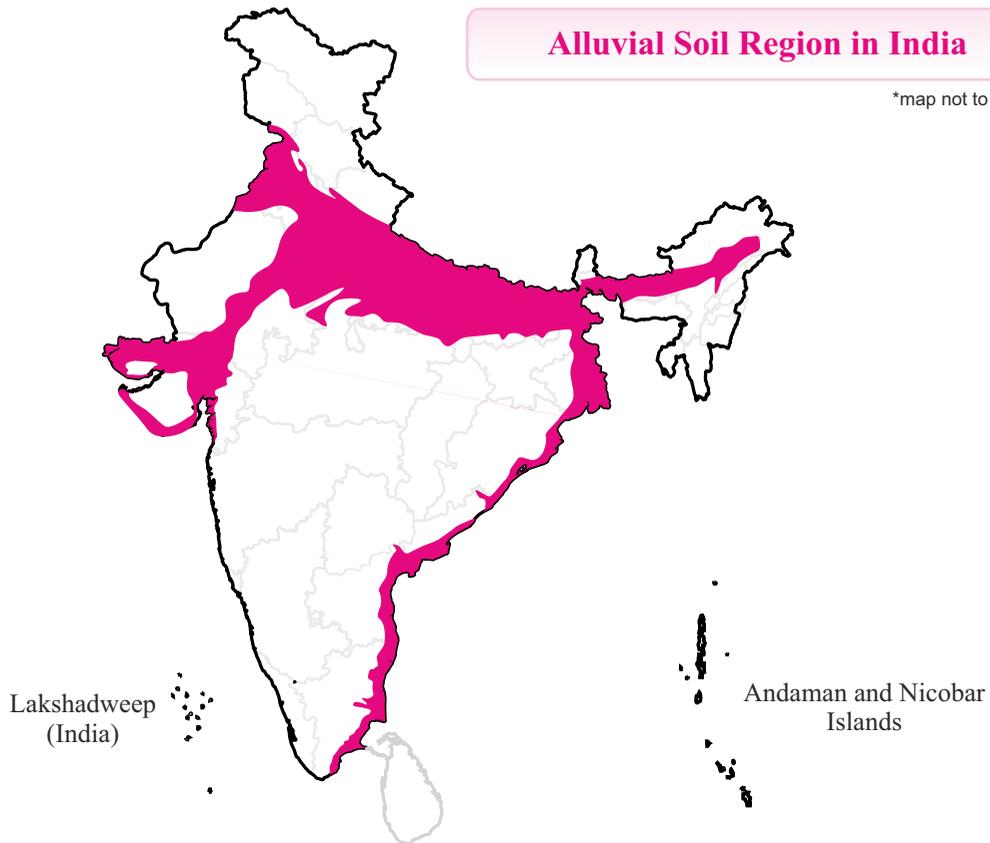
- New alluvial or Khadar
- Old alluvial or Bangar
- Bhabar

Exam Facts

- It has lowest water holding capacity
- **Sandy alluvial Soil**
- The largest soil group that is found in India
- **Alluvial soil**
- The old alluvial soil of Ganges plain is called
- **Bangar**
- Most fertile soil in India
- **Alluvial soil**

Alluvial Soil Region in India

*map not to scale



Soil : Miscellaneous

Red Soils

- **Extension** → 3.5 lakh sq. km (about 10.6% of total area of India)
- **Formations** → Due to weathering of ancient crystalline and metamorphic rocks
- **Minerals** → Abundance Silica, Iron
- **Deficiency** → Lime, Magnesium, Potash, Humus etc.
- **Colour** → Red (Due to diffusion of iron)
- **Extension** → Western Tamil Nadu, Karnataka, Southern Maharashtra, Telangana, Chhattisgarh, Odisha, Chota Nagpur Plateau.

Desert Soil

- **Development**
 - In dry, semi-dry climate condition
- **Extension** → Rajasthan, Saurashtra (Gujarat), Kutch, (Gujarat), Southern Punjab
- **Minerals**
 - The soil lacks nitrogen and organic minerals

Particle Percentage in Loam Soil

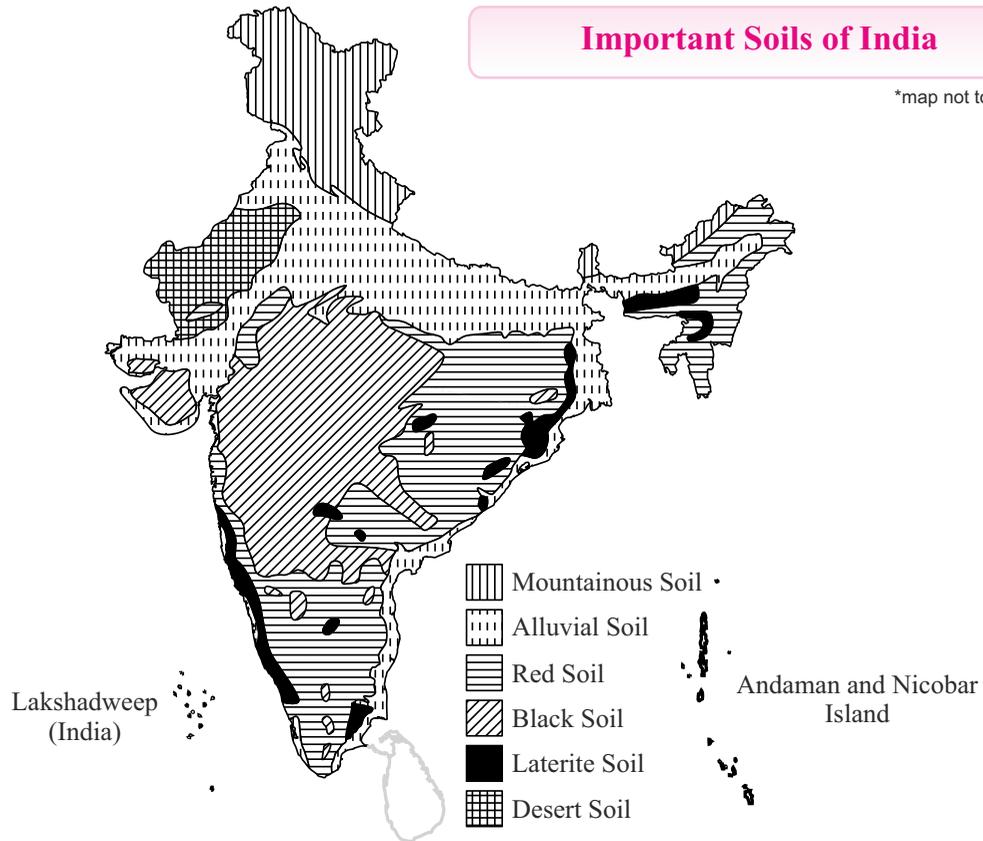
- 40% Sand
- 20% Clay
- 40% Silt

Important Facts

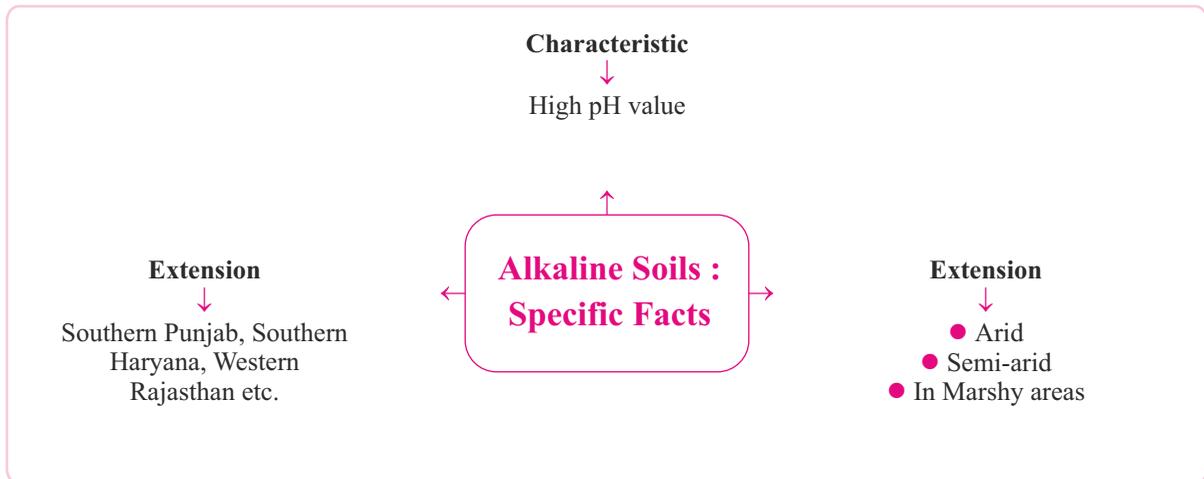
- It is found in hilly slopes and valleys of Himalayan region at an altitude of 3000 m
 - **Mountain Soil**
- Pulses make the soil rich in nitrogen
 - **by nitrogen fixation**
- Soil of western Rajasthan has the highest amount of
 - **Calcium**
- Karewa clay which is useful for the production of Jafron (a local type of Saffron) is found in
 - **Kashmir (in Himalayas)**

Important Soils of India

*map not to scale



Acidic and Alkaline Soil



Acidic Soil

- **Nature** → More hydrogen ion (H^+) concentrations
- **Evolution** → Due to Influence of land form, acidic parent material and moist climate
- **Classification**
 - Laterite soil
 - Terai soils
 - Peaty soils etc.

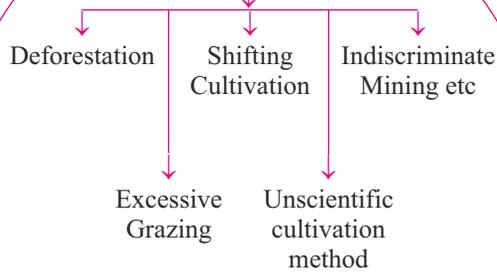
Important Facts

- pH value of soil for growing normal crops should be **- between 6.5 - 7.0**
- It used to make acidic soil cultivable **- Lime**
- Soil suitable for tea gardens is **- Acidic soil**

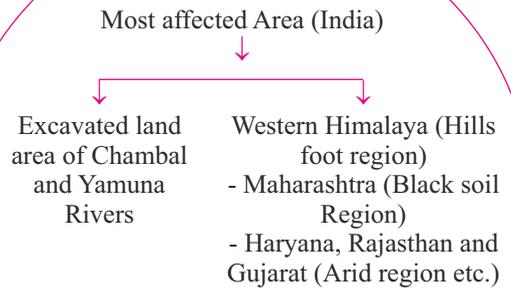
Soil Erosion & Improvement

Soil erosion is gradual erosion and shifting of top layer of soil by natural agents like water, wind etc.

Major Factors of Soil Erosion



Soil Erosion



Raindrop/Splash erosion :
Separation of soil particles by raindrops hitting the upper layer of the soil

Gully Erosion
↓
Enlargement of drains of rill Erosion

Sequence of soil erosion

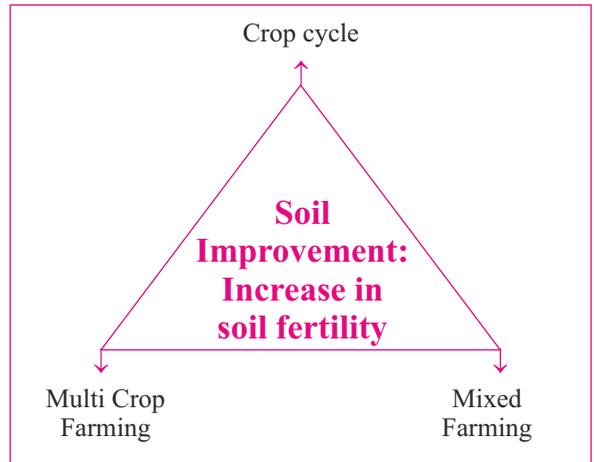
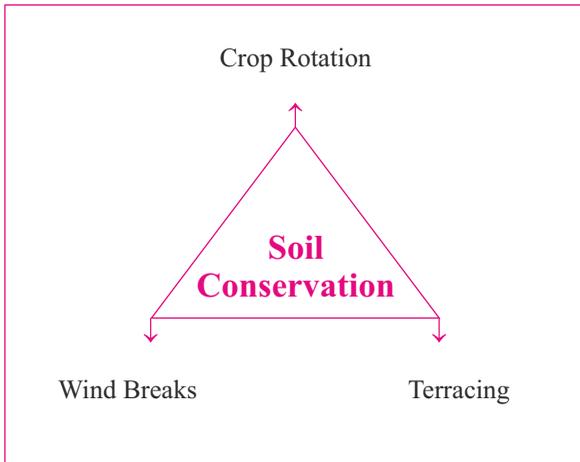
Sheet Erosion
↓
Flow of soil with water

Rill Erosion
↓
Formation of small and less deep drains in the soil

Exam Facts

- The formation of trenches in the Chambal valley region in India is due to - **Gully Erosion**
- Soil Erosion problem in India is related to - **Deforestation**
- Soil erosion can be stopped by - **Afforestation, ban on excessive grazing and shifting cultivation and fencing etc.**

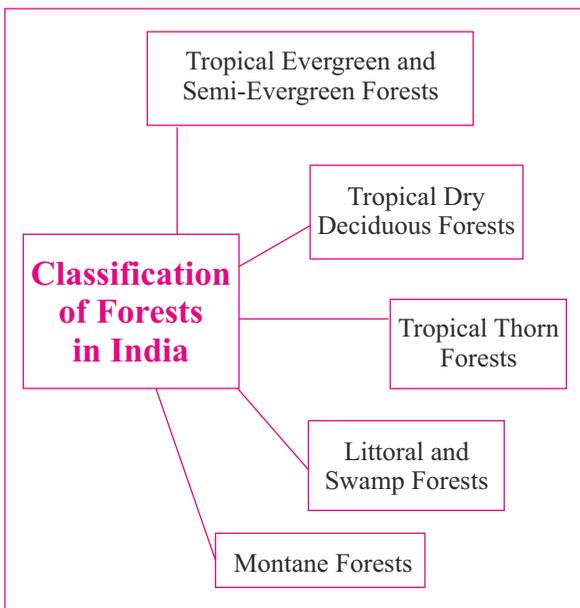
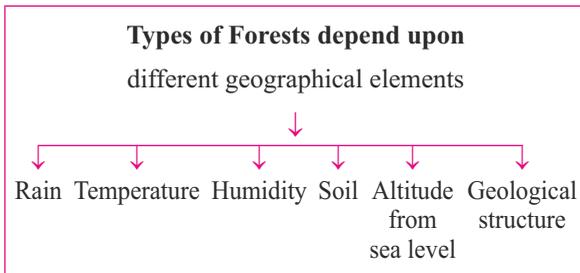
- It is used to change the alkalinity and remove salinity of soil - **Gypsum (Calcium Sulfate)**
- It is cause of excess formation of saline soil - **Excess of sodium and magnesium in the soil**
- State, that is most affected by salinity is - **Gujarat**



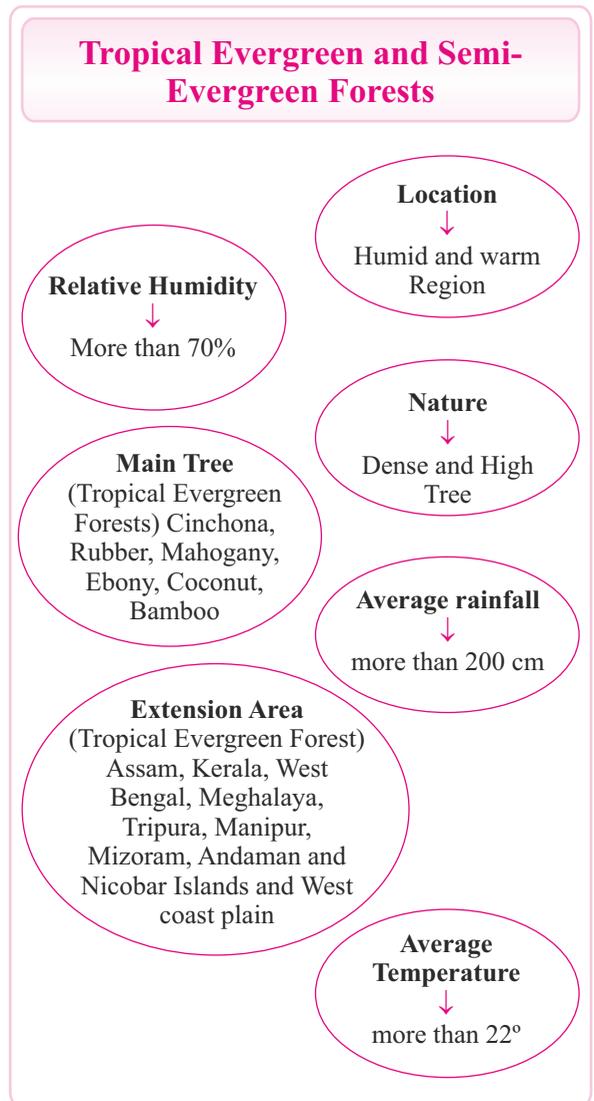
Natural Vegetation

Note

➤ Natural vegetation includes those plant community that grows without direct or indirect help of human being and adapt their, shape, structure and their need according to natural environment there are different types of flora found in India.

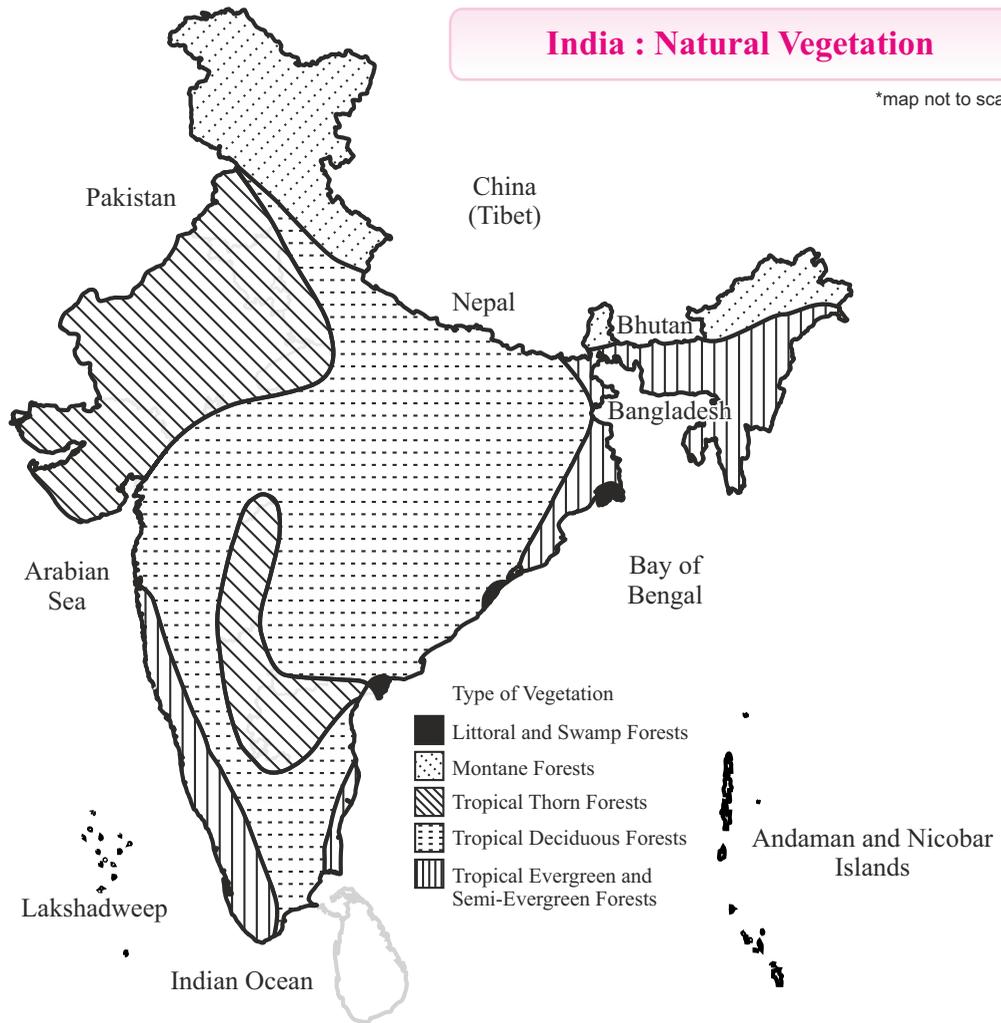


India: Natural Vegetation



India : Natural Vegetation

*map not to scale



Tropical Deciduous or Monsoon forest

Classification on the basis of availability of water

Tropical Wet Deciduous Forests
(Rainfall 100-200 cm.)

Tropical Dry-Deciduous Forest
(Rainfall 70 to 100 cm.)

Area

Example

- North eastern states of India
 - Giripad region of Himalaya
 - Eastern slope of Western Ghats, Odisha etc.
- Sal, Teak, Mahua, Sandalwood etc.

Area

Example

- Highly rainfall area of peninsular plateau of India, Plains of Uttar Pradesh and Bihar
- Axle wood, Tendu, Palash, Peepal, Neem, Sal etc.

Tropical Thorn Forests

Characteristic - Forest areas with less than 75 cm.

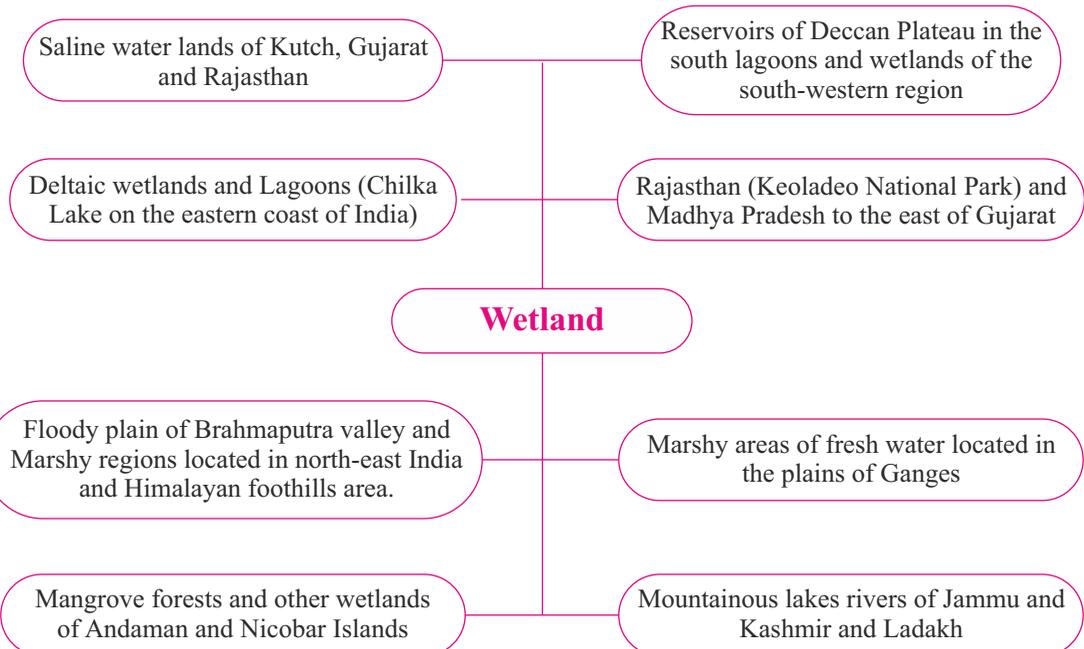
Extension Area - Mainly (North-Western part) Semi-arid area of South-West Punjab, Haryana, Rajasthan, Gujarat, Chhattisgarh, Madhya Pradesh and Uttar Pradesh

Major Tress - Acacia, Date (Palm), Euphorbia, Hawthorn etc.

Littoral and Swamp Forests

Development : In wetland region

Note : The Development of littoral and swamp forests in India mainly occurs in wetland areas, deltaic areas and coastal areas.



Mostly trees and shrubs (submersion of plant roots under water)

Development - In coastal areas, saline marshes, estuaries, mud plains

Mangrove Forest

Sundari Tree in the Ganges - Brahmaputra Delta

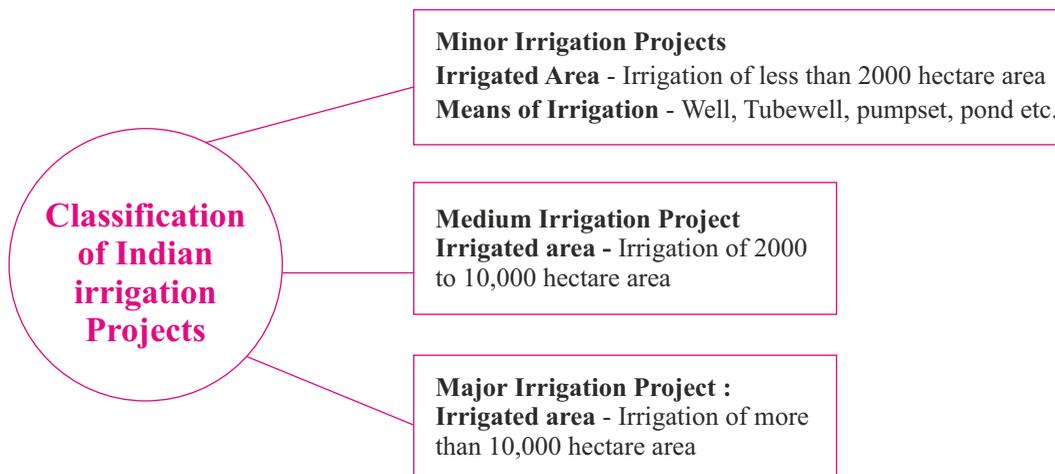
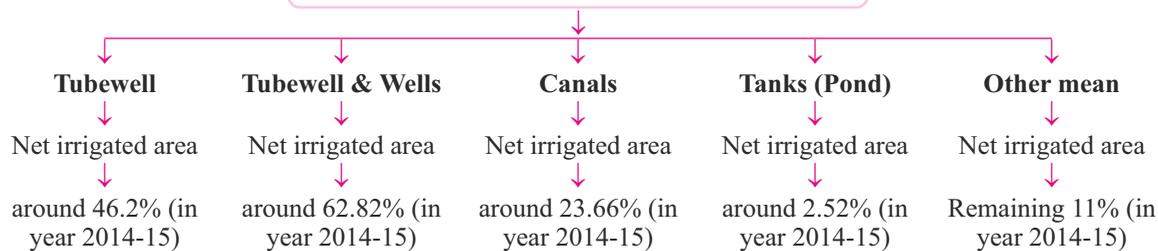
Extension Area - In deltaic area of Mahanadi, Krishna, Kaveri, Godawari

Important Facts

- The Birch tree is found in - **The Himalayas**
- Deodar trees grown mainly in the western part of the Himalayan range at an altitude of **- more than 1500 m**
- The wood used for manufacturing Kattha - **Wood of Khair**
- It is known as 'flame of the forest' - **Butea Monosperma (Dhak or Palash)**
- It has been declared as state flower of Uttar Pradesh - **Flower of Palash**
- An example of a multipurpose tree used in social forestry is - **Khejri tree (other name - King of Desert)**
- The Forest produce 'Lisa used in making Gandh viroja and turpentine oil is obtained from - **Pine tree**
- Among Jackfruit, Fig, Orchid, and Fern, which does not have flower - **Fern**
- PM laid foundation stone on North Koel river of - **Mandal Dam Project**

Irrigation and Canals

Means of Irrigation in India



Note : 38% of need of irrigation of the country is fulfilled by the Major Irrigation projects.

Top three states in terms of irrigation (Net irrigated area) in the country (2015-16)

First Place - Uttar Pradesh

Second Place - Madhya Pradesh

Third Place - Rajasthan

One of the world's oldest and most developed canal



Ganga Canal

Origin
From the Sutlej River
(Near Husaini Wala,
Firozpur)

Construction
in Year 1927 (by
Maharaja Shri Gang
Sing of Bikaner)

Length - 207.561 km. (main canal)



Eastern Yamuna Canal

Irrigation Supply
Hindon, Yamuna's
Doab, Saharanpur,
Muzaffarnagar,
Meerut, Ghaziabad

Origin
Left bank of
Yamuna River
(near Taje Wala)

Construction → 1840 - 1854 AD

Origin

Right bank of Ganga river
(Bhimgoda, Haridwar)

Father of Project

Sir P.T. Cautley



Upper Ganga Canal

Water Supply

Length
● 290 km (main canal)
● 6496 km (total length of canal system)

Haridwar
(Uttarakhand)

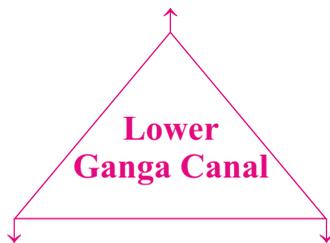
● Saharanpur
● Meerut
● Etah

● Muzaffarnagar
● Bulandshahar
● Ghaziabad
● Mathura

● Aligarh
● Firozabad
● Mainpuri
● Agra

Emergence

Narora
(Bulandshahar)



Lower Ganga Canal

Operational Year
↓
1879 AD

Length
Main Canal
length
- 100 km

Gandak Project

Location - At Gandak River (Near Triveni Ghat)

Hariyali Scheme:

Launch - On 27 January, 2003 (By Prime minister Atal Bihari Vajpayee Ji)

Objective - To empower Panchayati Raj Institutions financially and administratively in the implementation of watershed development program in the country.

Pradhanmantri Krishi Sinchayee Yojana (PMKSY)

Approval → 1 July, 2015

Objective ● Reducing the dependency of agriculture on monsoon
● Providing irrigation facility to every field

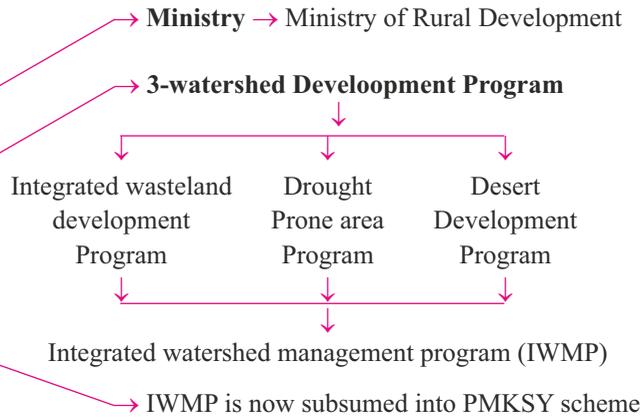
Sharda Canal

- **Origin** → From Sharda River (By construction of barrage, near Banwasa)
- **Length** → 44.3 km (main canal)
- **Length of Canal System** → 9961.3 km.
- **Water Supply** → Pilibit, Bareilly, Shahjahanpur, Hardoi, Sultanpur, Ghazipur, Prayagraj etc.

Indira Gandhi Canal Project

- **Foundation Stone** → March, 1958
- **Foundation Stone laid by** → Home Minister Govind Vallabh Pant
- **Origin of Canal** → In Punjab (From Harike Dam at the confluence of Sutlej and Beas River)
- **Length** → 649 km
- Note** : It is the world's largest Canal project

Watershed Development Program



Uttar Pradesh

According to the year 2017-18, area irrigated by irrigation means (UP At A Glance : 2020)

Tubewells	Canal	Well	Tanks and Lakes	Other means
74.9 %	15.2 %	8.7 %	0.5 %	0.7 %

Note : Uttar Pradesh has maximum irrigation through tube wells.

Important Facts

- Main source of irrigation in Ganganagar, Bikaner, Jodhpur and Jaisalmer districts of western Rajasthan
 - **Indira Gandhi Canal**
- It is built on Cherukunnam Puzha Rivers in Palakkad district of Kerala
 - **Mangalam Irrigation Project**
- Main source of irrigation in Peninsular India
 - **Pond**
- He is considered the forerunner of irrigation system in South India
 - **Sir Arthur Cotton**
- Saran irrigation canal drains
 - **From Gandak River**
- Water storage capacity of Farakka canal
 - **40,000 cusecs**
- Origin of Indira Gandhi Canal is
 - **Harike Barrage**
- It receives water from Sutlej, Ravi and Beas River
 - **Indira Gandhi Canal**
- Canal, which is located on Coromandel coast
 - **Buckingham Canal**
- Hariyali Yojana is related to
 - **Water harvesting for the development of Barren land**

Multi-Purpose River-Valley Project

Narmada Valley Project

Sardar Sarovar Dam Project

- **Construction** → On the Narmada River (Navagam, Gujarat)
- **Power Generation Capacity** → 1450 MW
- **Water Supply** → The water of Narmada River to Sardar Sarovar Dam
 - 65.18% to Madhya Pradesh
 - 32.14% to Gujarat (of Narmada river water from Sardar Sarovar Dam)
- **Power Supply**
 - to Madhya Pradesh (highest 57%)
 - to Maharashtra (27%)
- **Beneficiary State**
 - Gujarat
 - Rajasthan
 - Maharashtra
 - Madhya Pradesh

Bhakra Nangal Dam

Bhakra - Nangal Dam

- **Construction** → On Sutlej River
 - **Command Region** → Himachal Pradesh, Punjab, Haryana and Rajasthan
 - **Water Reservoir** → Govind Sagar
 - **Joint Venture of**
 - Haryana
 - Punjab
 - Rajasthan
 - **Dam**
 - Bhakra
 - Nangal
- } on Sutlej River

Established - In 1985 (In Dhule district of Maharashtra) By social scientist Medha Patkar



Objective
To protest Sardar Sarovar Project

Other Name
In 1989 'Narmada Bachao Aandolan' (As a result of merger of several local organization)

Dam at River Kaveri

Location - At Kaveri River (in Karnataka)



Related to Vrindavan Garden

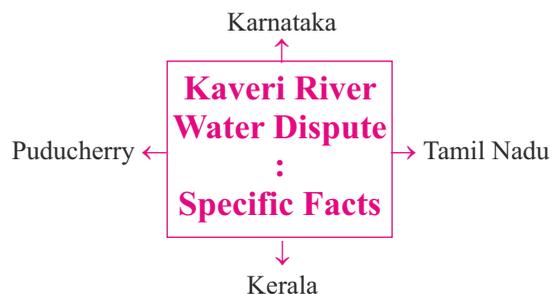
DPR or profile
↓
of this dam prepared by M. Visvesvaraya

Indira Sagar Dam

- **Location** : Narmada River (Khandwa District, Madhya Pradesh)
- **Power Generation** → Target of 1000 MW
- **Water Supply** → Target of irrigation of 1.23 Lakh hectare

Narmada River related projects

- Omkareshwar project
- Bargi etc.



Hirakund Dam

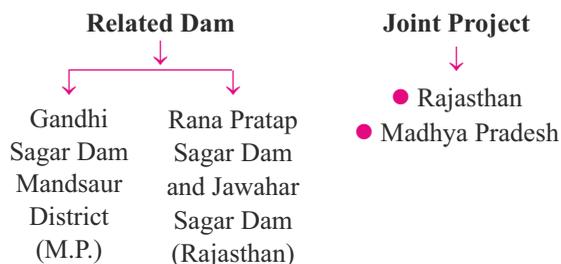
Hirakund Dam

- **Construction** → Started in 1948 (Completed in 1957)
 - **Location** → On river Mahanadi (in the Odisha state)
 - **Total length** → 25.8 km.
 - **Irrigated area** → 10 lakh hectares of land
- Note :** World longest dam - Hirakund Dam

Chambal Valley Project

Location - At Chambal River

Chambal Project



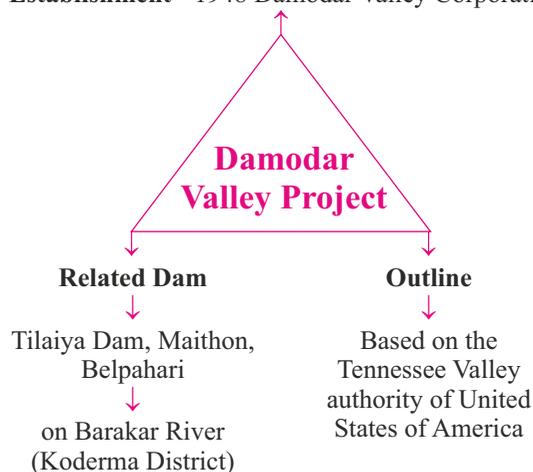
Tehri Dam Project

Tehri Dam Project

- **Location**
 - On Bhagirathi (Ganga) river (at the confluence of Bhagirathi and Bhilangana river)
 - Near Tehri District in Uttarakhand
- **Construction** → Started in 1978 (Approved by planning commission 1972)
- **Status in India** → Highest Dam of India (260.5 m)
- **Main Reason for protest**
 - located in earthquake - prone area
 - Damage of environment
 - Migration of local people

Damodar Valley Project

Establishment - 1948 Damodar Valley Corporation

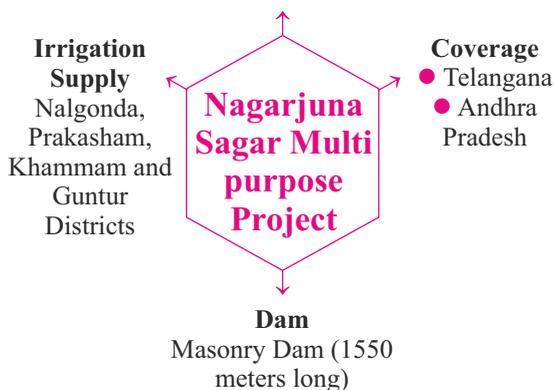


Important Facts

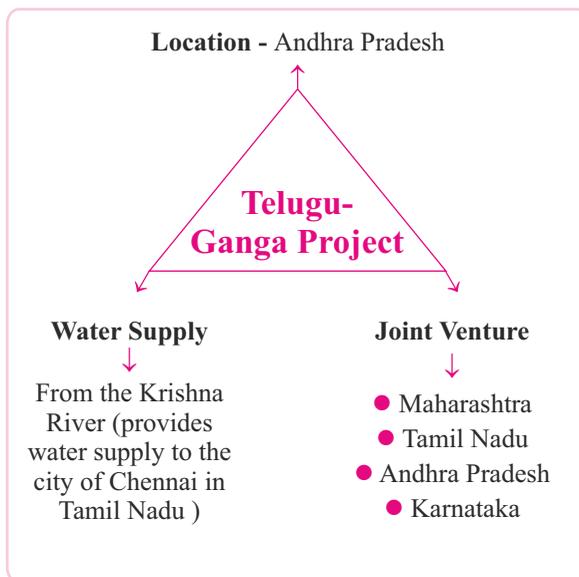
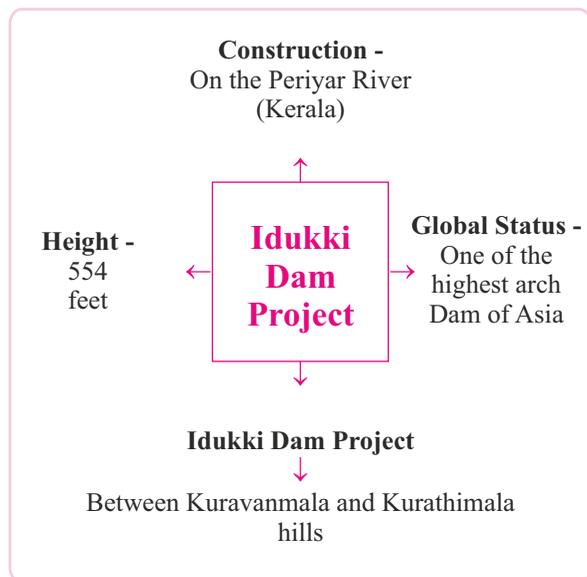
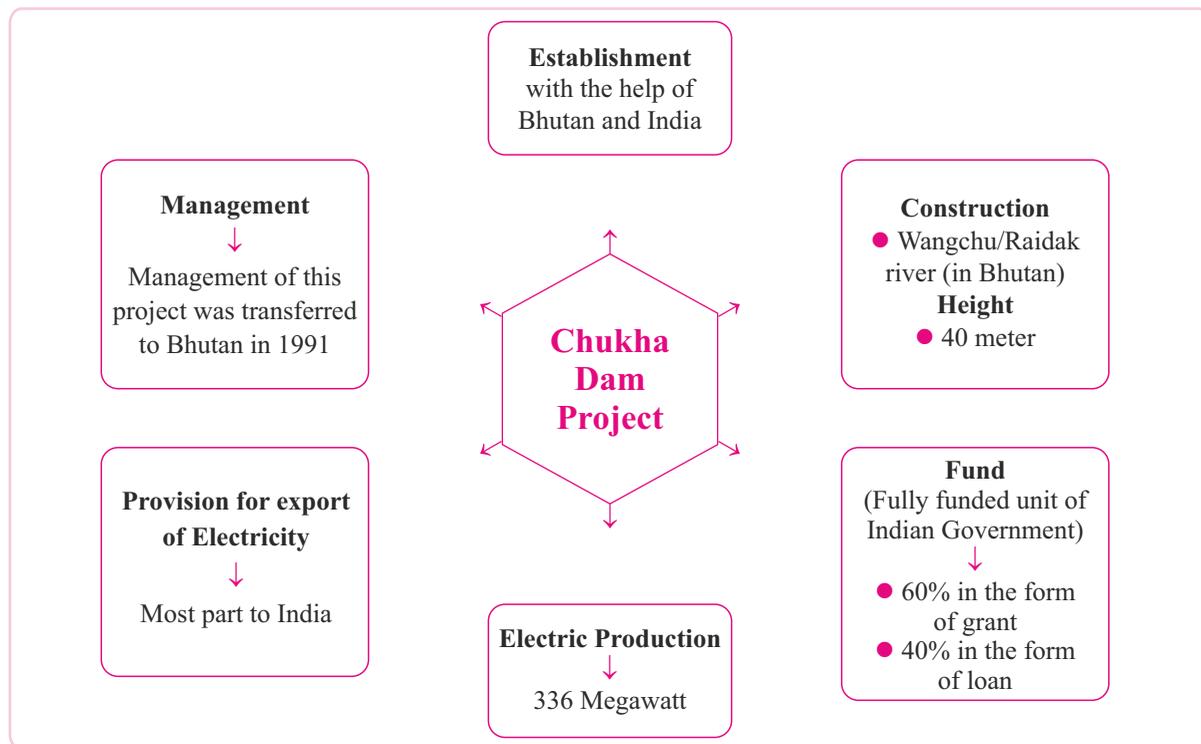
- It is constructed between Nalgonda district of Telangana and Guntur District of Andhra Pradesh
- **Nagarjuna Sagar multi - purpose project**
- The reservoir built on the chambal river
- **Rana Pratap Sagar**
- It is known as “Sorrow of Bengal” due to excessive pollution and frequent floods
- **Damodar River**
- Maithon, Belpahari and Tilaya dams are constructed on
- **Barakar River**
- Konar dam is constructed on
- **Konar River**

Nagarjuna Sagar Dam

Completion Year → 1969
Location → Krishna River



Miscellaneous Projects



Mayurakshi Project

- Construction → At Mayurakshi River
- **Benefitted states**
 - West Bengal
 - Jharkhand
- **Related Dam** → Canada Dam and Masanjor Dam in Jharkhand (on Mayurakshi River)
- **Electric Production Capacity** → 4000 Kilowatt

Construction at-
Kalpong River

Kalpong
Hydro Electric
Power
Project

First Hydro
electric power
project of

Andaman and
Nicobar Island

Rihand Dam Project

→ Other Name

- Govind Vallabh Pant Sagar Project

→ Construction on → Rihand river

→ Location

- Pipri in Sonbhadra District of U.P.

→ Dam ● 934 m. → length

- 91.46 m. → Height

→ Rihand
Dam

→ Hydroelectric production capacity

- 300 Megawatt (in Obra)

→ Lake

- Govind Vallabh Pant Sagar (Artificial Lake) Built in the background of Rihand Dam (Area 130 sq. km.)

→ Irrigated Area → 2.5 lakh hec. land

Construction across - Tapi River

Location - Ukai, Surat district of Gujarat

Irrigation Area
1.5
Lakh hec.
land

Ukai
Dam:
Specific
Facts

Dam
Length
→ 4927 m.
Height
→ 80.772 m.

Electric Production Capacity

300 Megawatt

Kalagarh Dam

Construction across - Ramganga River

Height - 128 m.

Length - 715 m.

Tawa Project

Construction across - Tawa River

Location - Hoshangabad, Madhya Pradesh

Height - 59 m.

Length - 1815 m.

Tulbul Navigable Project

➤ Construction across - Jhelam river

➤ Location → Jammu & Kashmir

➤ Other Name

- Tulbul Navigable Project (In India)

- Wullar Barrage (In Pakistan)

➤ Disputed Project → Between India and Pakistan

Pong Dam

→ Construction across → Beas River

→ Location → South Western part of Himachal Pradesh

→ Height → 133 metre

→ Other Name → 'Beas Dam'

→ Related Lake → 'Maharana Pratap Sagar Lake' (Pong Reservoir)

→ Uses ● Irrigation

- Hydroelectricity Production

Important Facts

➤ Built on Kaveri river in Tamil Nadu
- Mettur Project

➤ Largest Project of Uttar Pradesh

- Rihand Dam Project

➤ Built on Kothari River in Bilwara district of Rajasthan

- Meja Dam

➤ Built on the Chenab river in Doda district of Jammu and Kashmir

- Baglihar Hydroelectric Project

➤ Built on Chenab river in Kishtwar district of Jammu and Kashmir

- Dulhasti Project

(A hydro power station)

India : Political



- Saddle Peak (732 m) is the highest peak of Andaman and Nicobar Islands.
- Only 38 islands are inhabited in the Andaman and Nicobar Islands.

Eastern Coastal Plain (Wider)

1. Coastal Plains of Odisha and Andhra Pradesh (North Coast to Godavari Delta) : Utkal Coast / Kalinga Coast/North Sarkar Coast.
2. From Andhra Pradesh to the Coastal plain of Tamil Nadu (extended from Krishna Godavari Delta to Kanyakumari) : Coromandel Coast

Western Coastal Plain (less wide)

- Coastal plain from Gujarat to Goa : Konkan Coast
- Region from Goa to Mangalore (Karnataka) : Kannada Coast
- Coastal Plain from Mangalore to Kanya Kumari : Malabar Coast

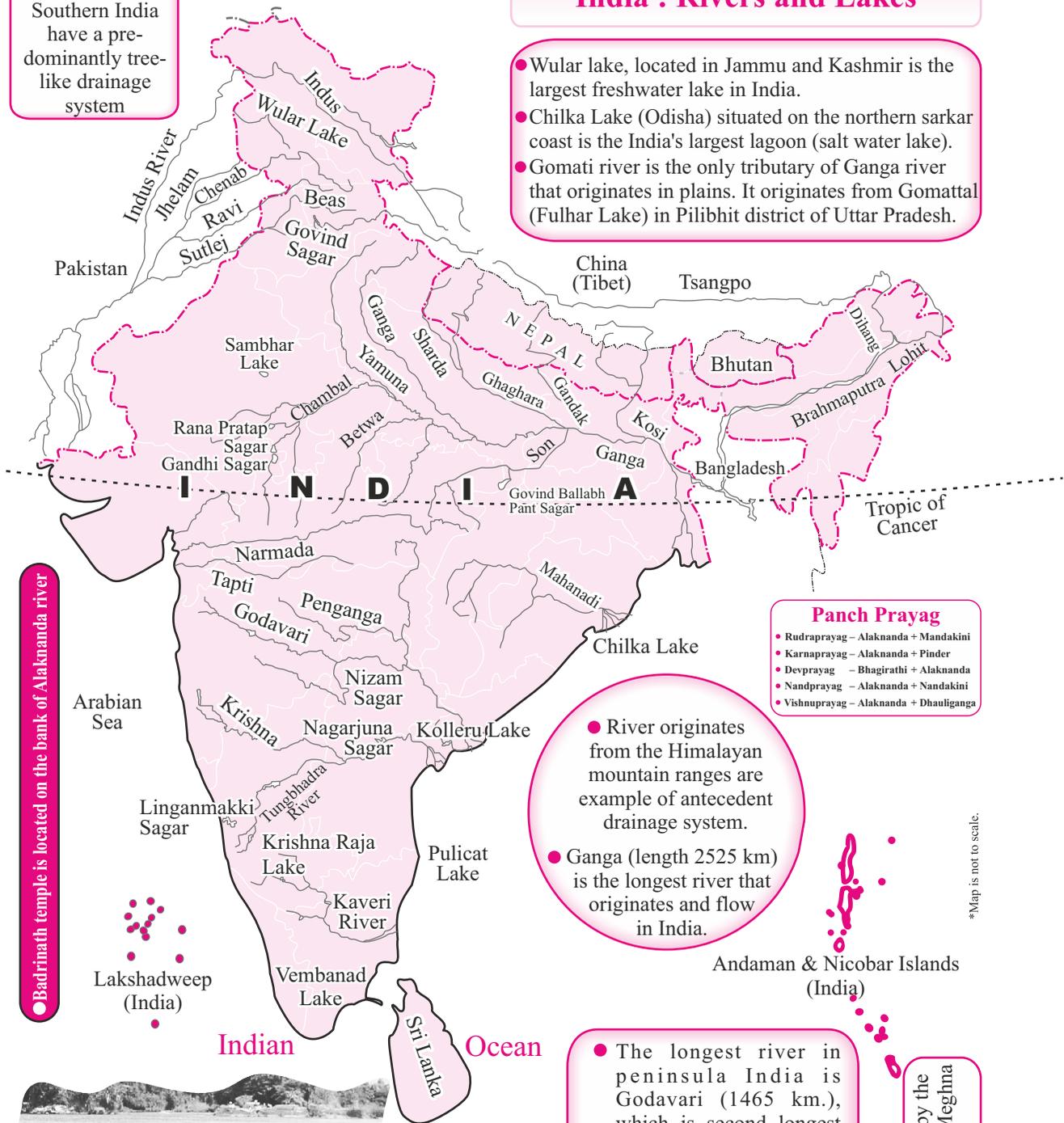
1. Tropic of Cancer is also called as 23°30' North Latitude. It divides India into almost two equal parts.
2. Tropic of Cancer passes through eight states of India—Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram.

*Map is not to scale.

India : Rivers and Lakes

The rivers of Southern India have a pre-dominantly tree-like drainage system

- Wular lake, located in Jammu and Kashmir is the largest freshwater lake in India.
- Chilka Lake (Odisha) situated on the northern sarkar coast is the India's largest lagoon (salt water lake).
- Gomati river is the only tributary of Ganga river that originates in plains. It originates from Gomattal (Fulhar Lake) in Pilibhit district of Uttar Pradesh.

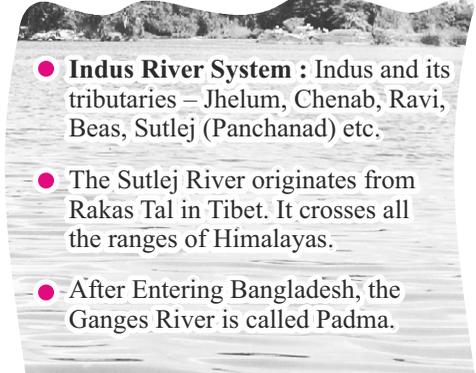


● Badrinath temple is located on the bank of Alaknanda river

- Panch Prayag**
- Rudraprayag – Alaknanda + Mandakini
 - Karnaprayag – Alaknanda + Pinder
 - Devprayag – Bhagirathi + Alaknanda
 - Nandprayag – Alaknanda + Nandakini
 - Vishnuprayag – Alaknanda + Dhauliganga

- River originates from the Himalayan mountain ranges are example of antecedent drainage system.
- Ganga (length 2525 km) is the longest river that originates and flow in India.

*Map is not to scale.



- **Indus River System** : Indus and its tributaries – Jhelum, Chenab, Ravi, Beas, Sutlej (Panchanad) etc.
- The Sutlej River originates from Rakas Tal in Tibet. It crosses all the ranges of Himalayas.
- After Entering Bangladesh, the Ganges River is called Padma.

- The longest river in peninsula India is Godavari (1465 km.), which is second longest river in India (Ganga is longest river of India).
 - In peninsula India, the correct sequence of the river flowing in the east direction from North to South is as follows: Subarnarekha, Mahanadi, Godavari, Krishna, Pennar, Kaveri and Vaigai.
- Sundarban Delta is formed by the Ganges, Brahmaputra and Meghna Rivers.

Pictorial Presentation...

GS

Drishti

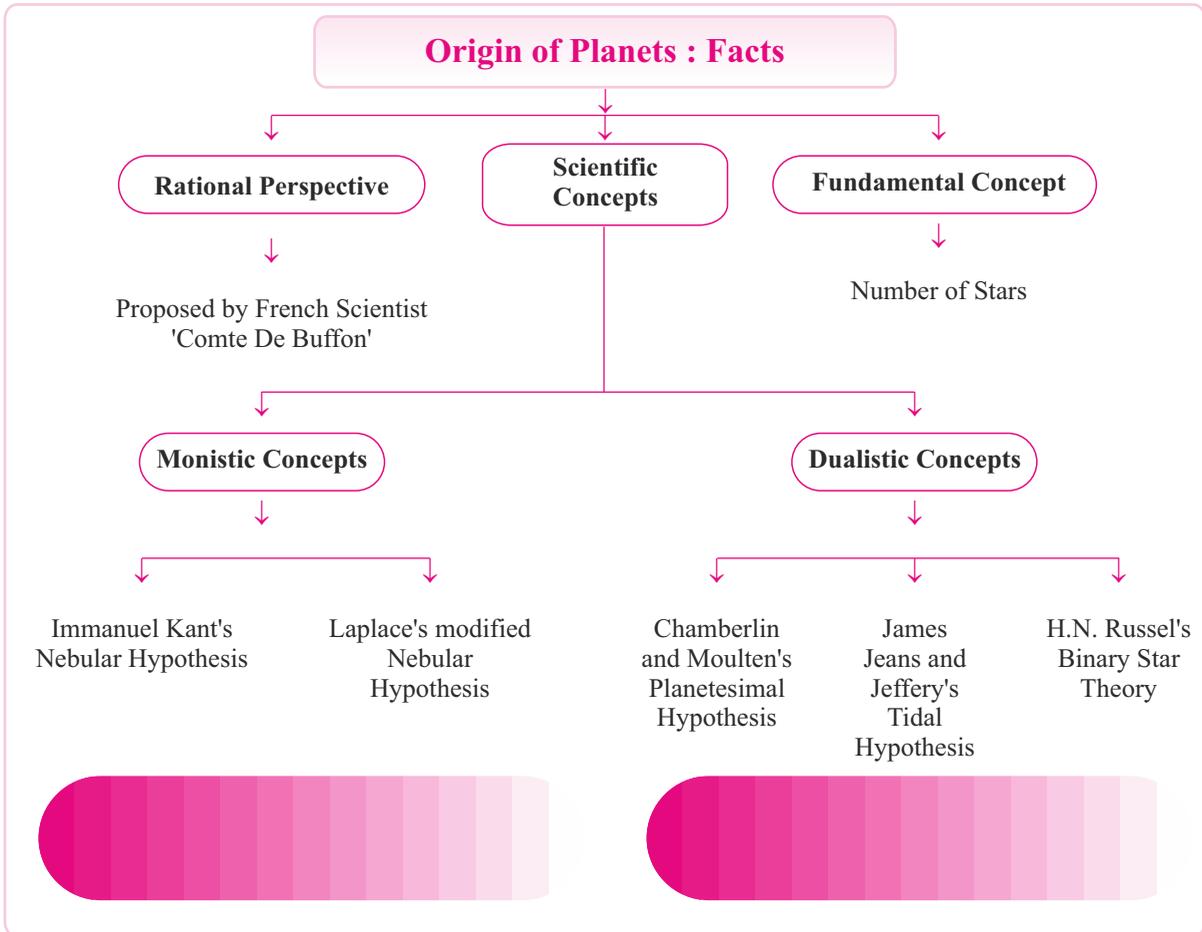
**World
Geography**

Index

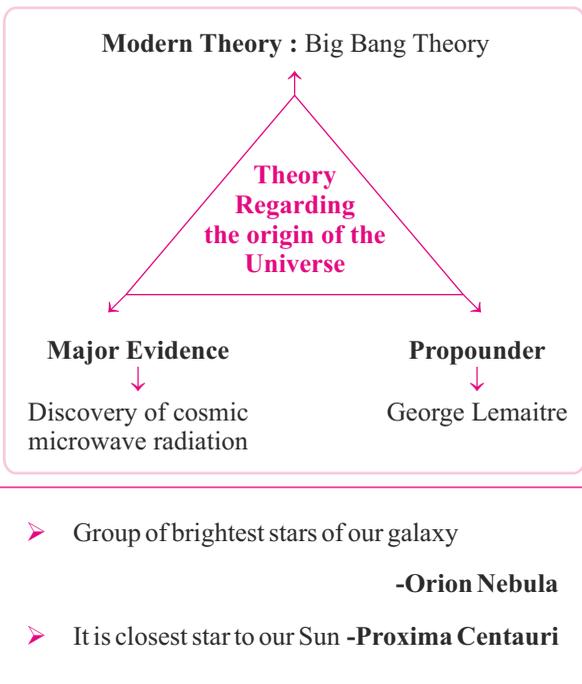
● World Geography 72-128

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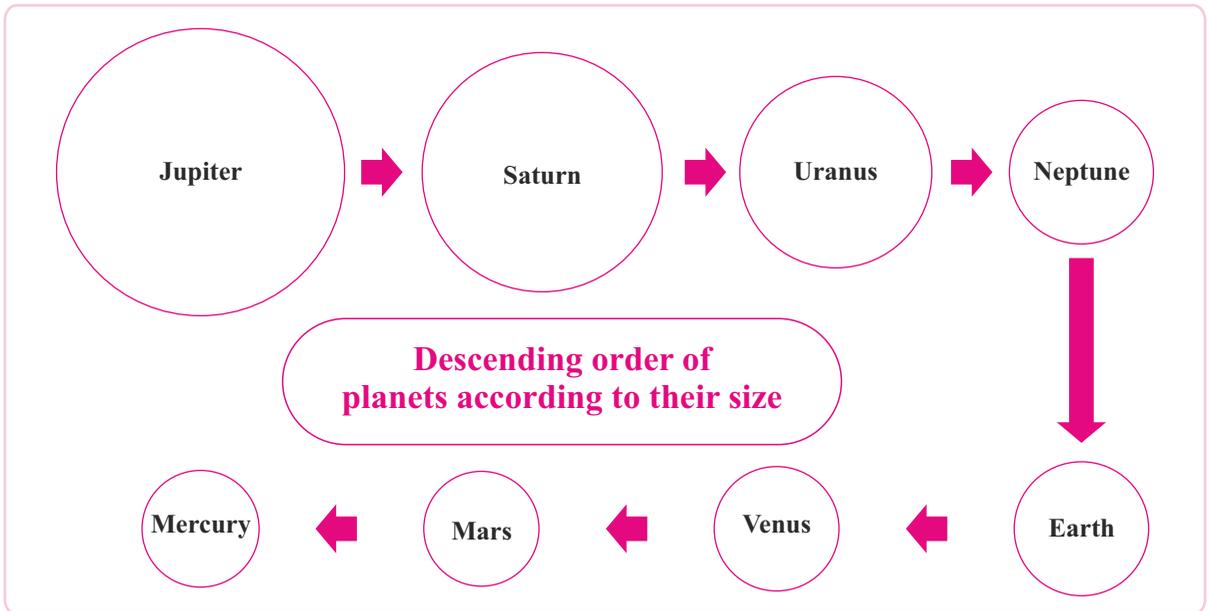
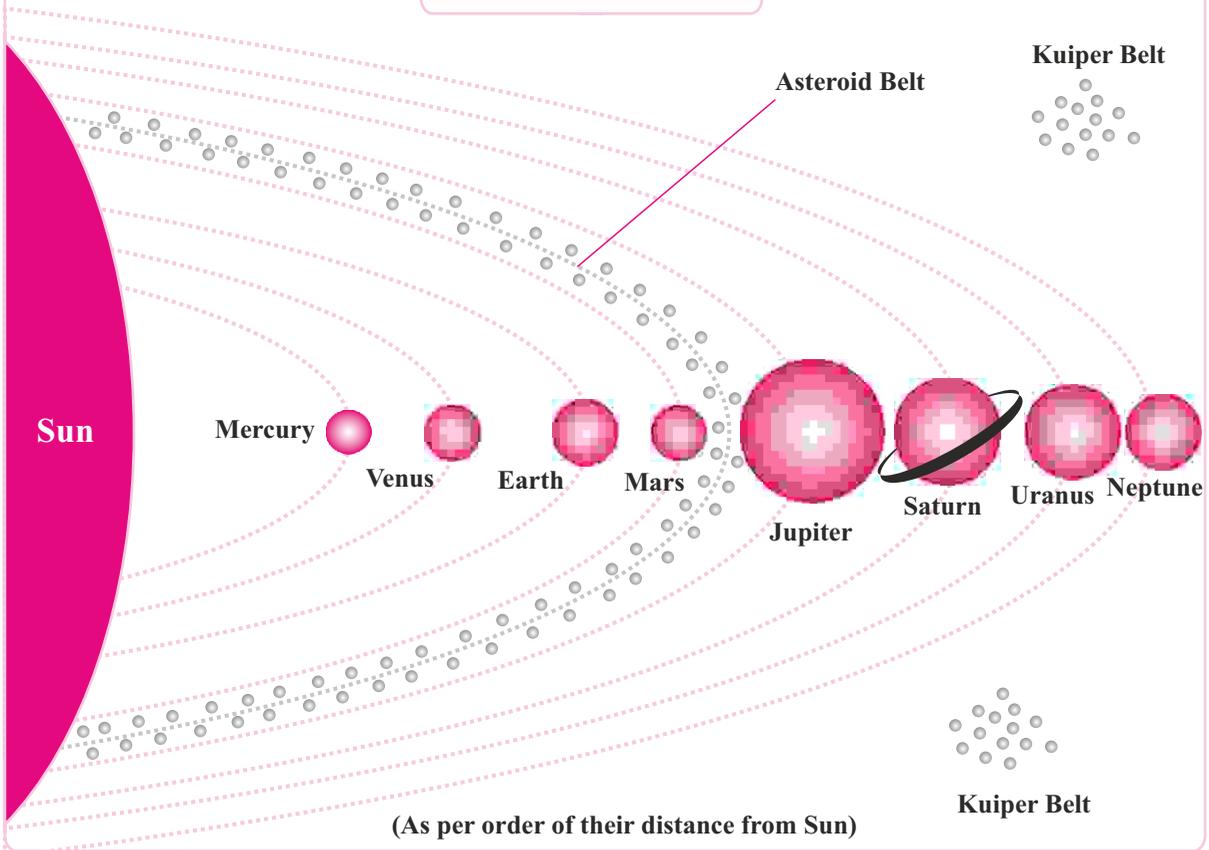
World Geography

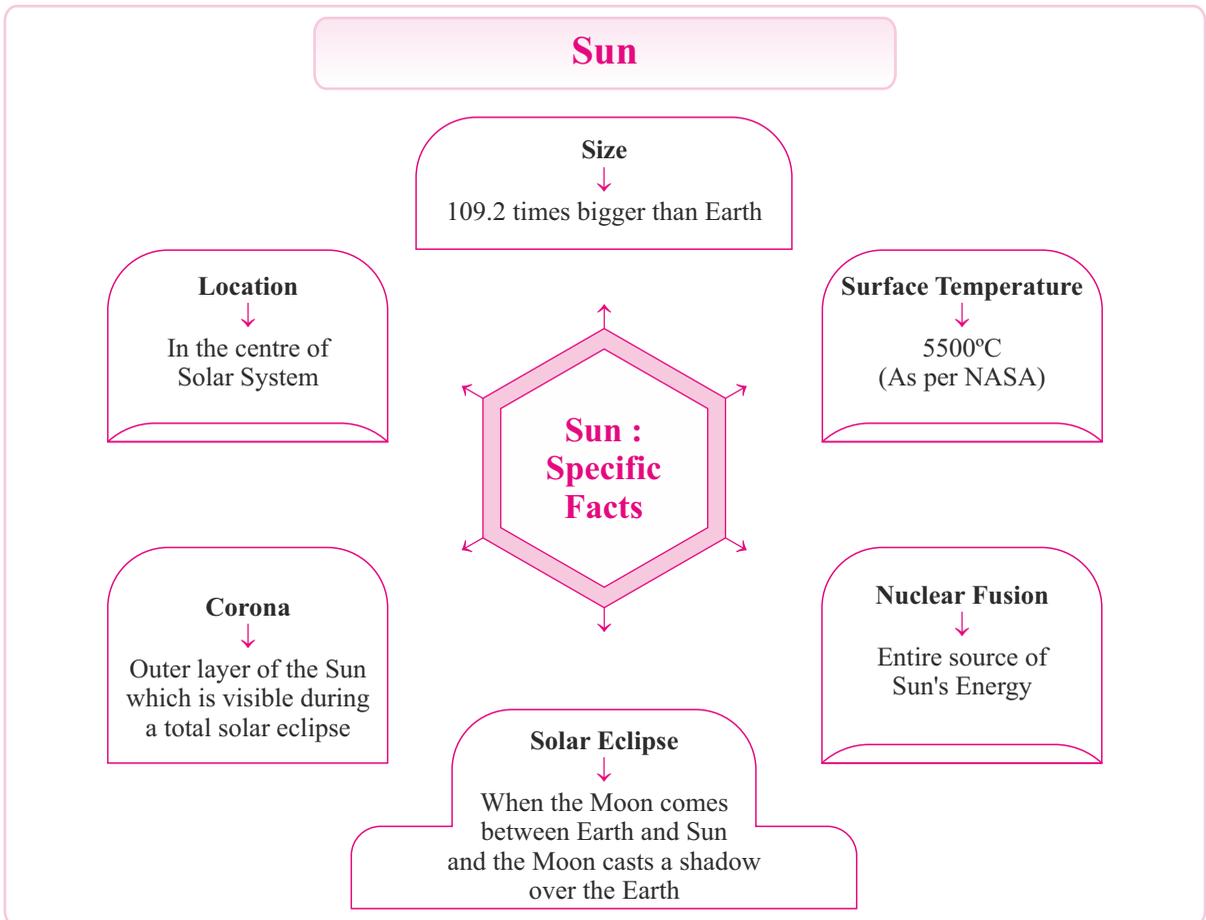
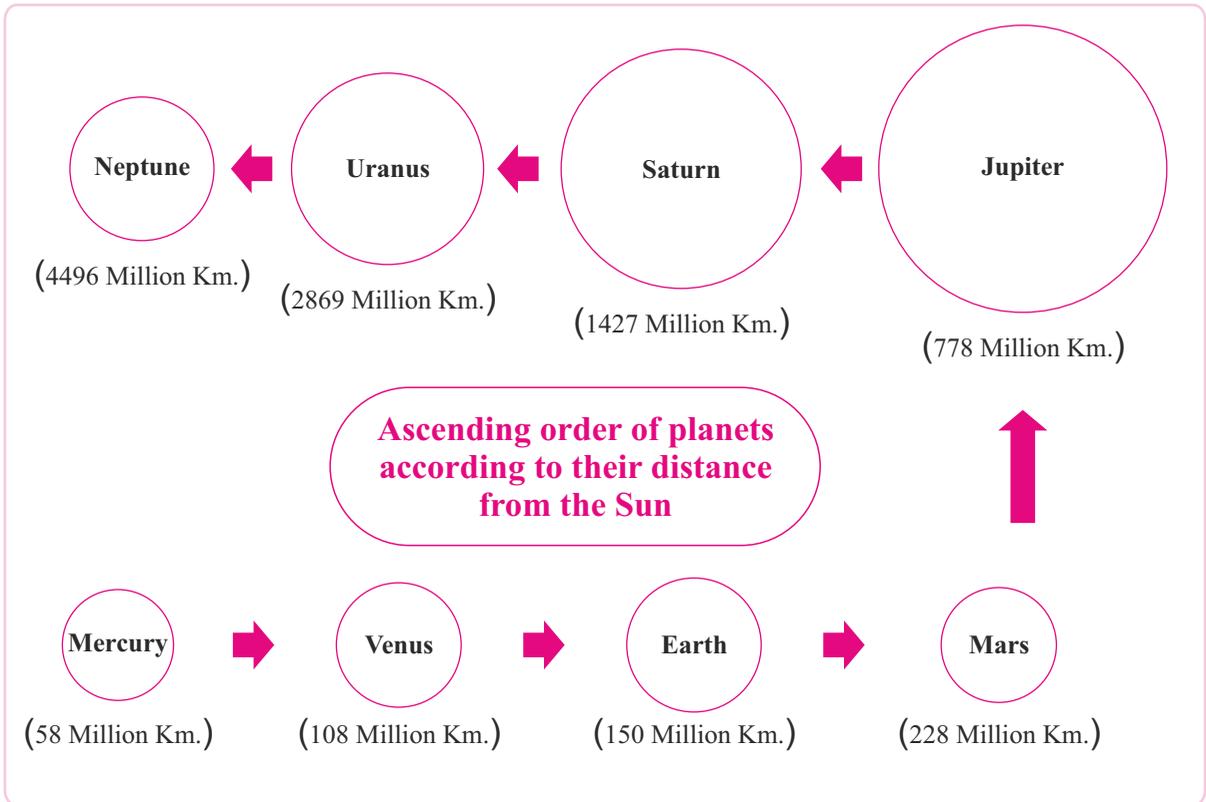


- Exam Facts**
- The limit beyond that stars suffer internal collapse is called **-Chandrasekhar Limit**
 - The "Black Hole Theory" was propounded by **-S. Chandrasekhar**
 - Name of Galaxy in which our solar system is located **-Milky Way or Mandakini**
 - Modern theory regarding the origin of the universe **-Big Bang Theory**
 - Constellation, from where the signal of polaris star is received **-The Saptirishis**
 - Group of infinite galaxies **-Universe**
 - Due to its infinite gravity, it has ability to absorb all the remnants of star **-Black Hole**



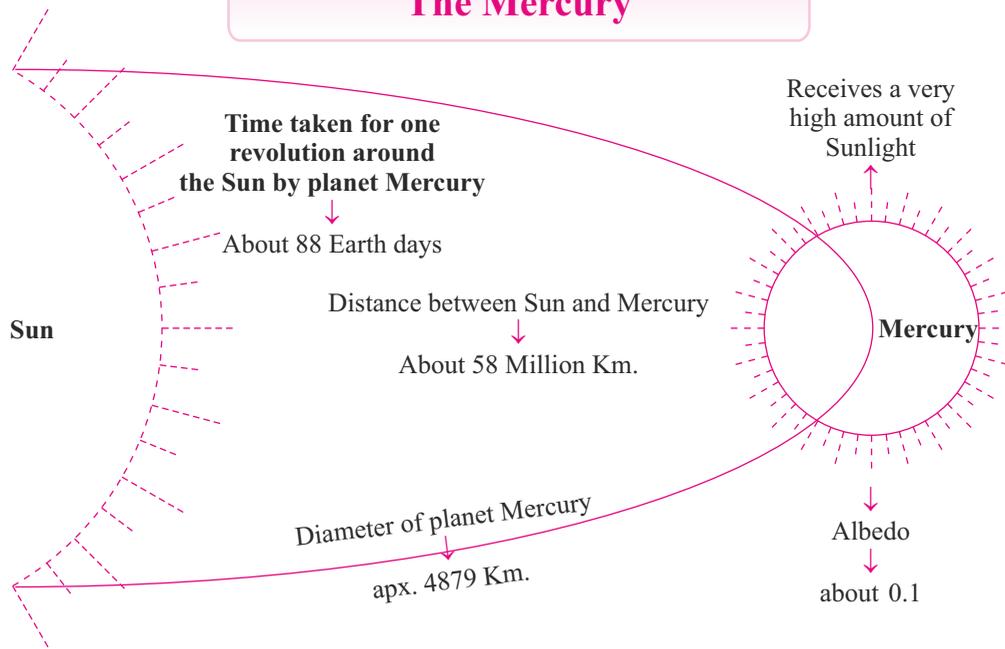
The Solar System





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The Mercury



Smallest planet of
↓
Solar System

Mariner 10
↓
It was the first spacecraft sent to the planet mercury

Diurnal range of temperature
↓
Very high
apx. Average
610°C

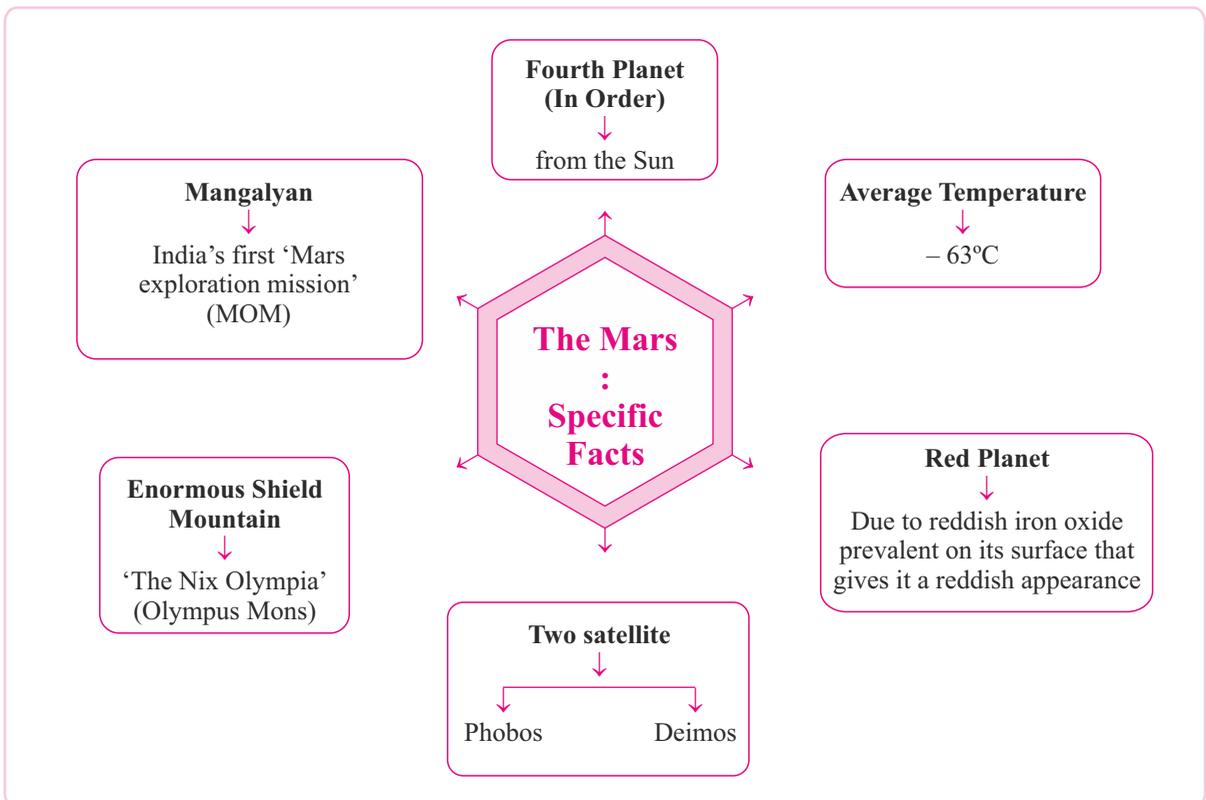
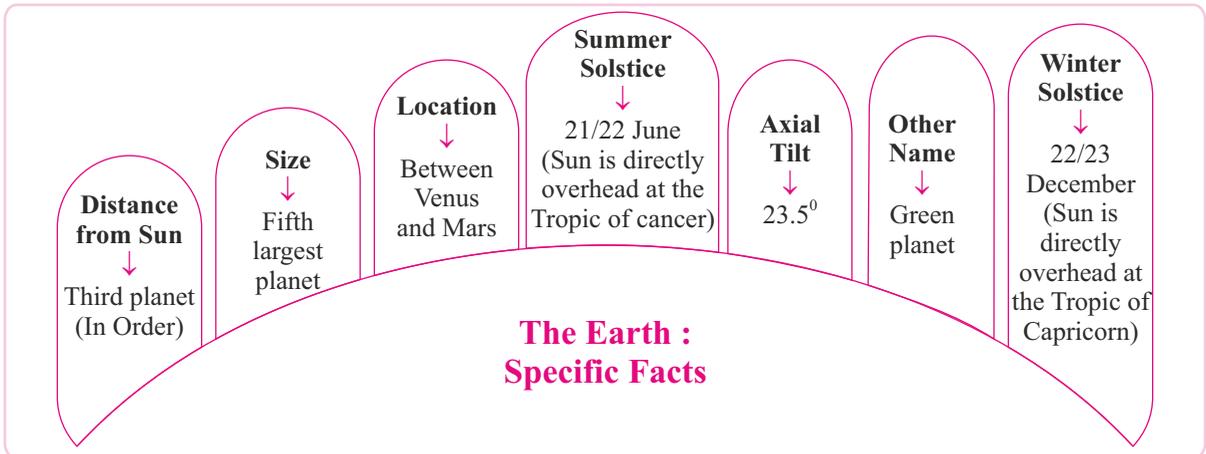
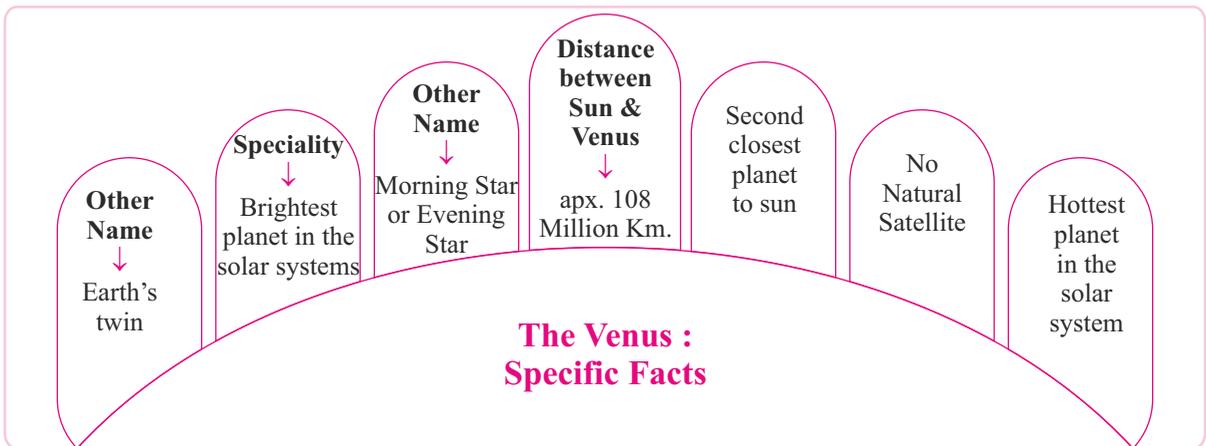
Mercury : Specific Facts

Average Temperature
↓
167°C

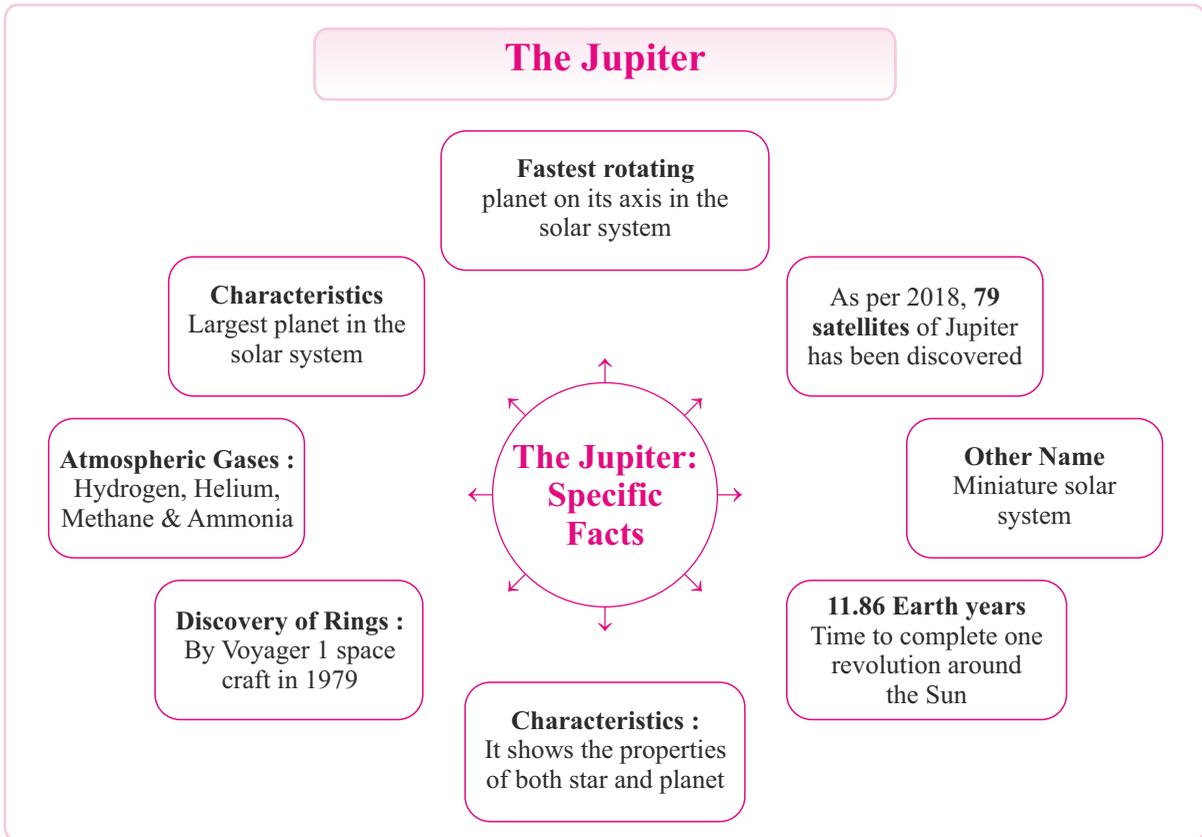
No Natural satellite

Important Facts

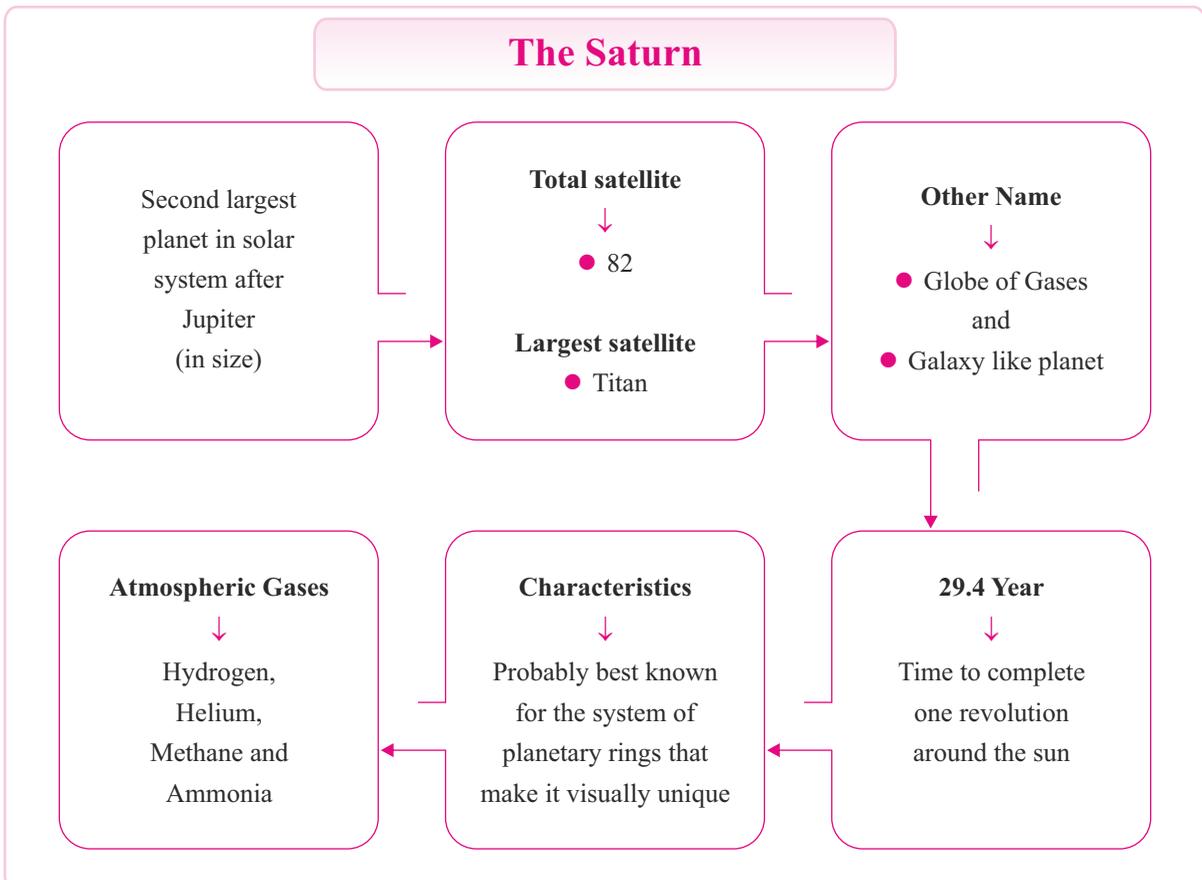
- The time interval between one vernal equinox to another vernal equinox is **-Tropical year**
- Planet which revolve around Sun with an average speed of 29.8 km/s. **-Earth**
- It was successfully launched on 5th November 2013 by ISRO **-Mangalyan**
- Annual event which is held on 22 April to demonstrate support for environmental protection around the earth **-Earth Day**
- Coldest planet in the solar system **-Uranus**
- Planet with highest density among all the eight planet in the solar system **-Earth**



The Jupiter

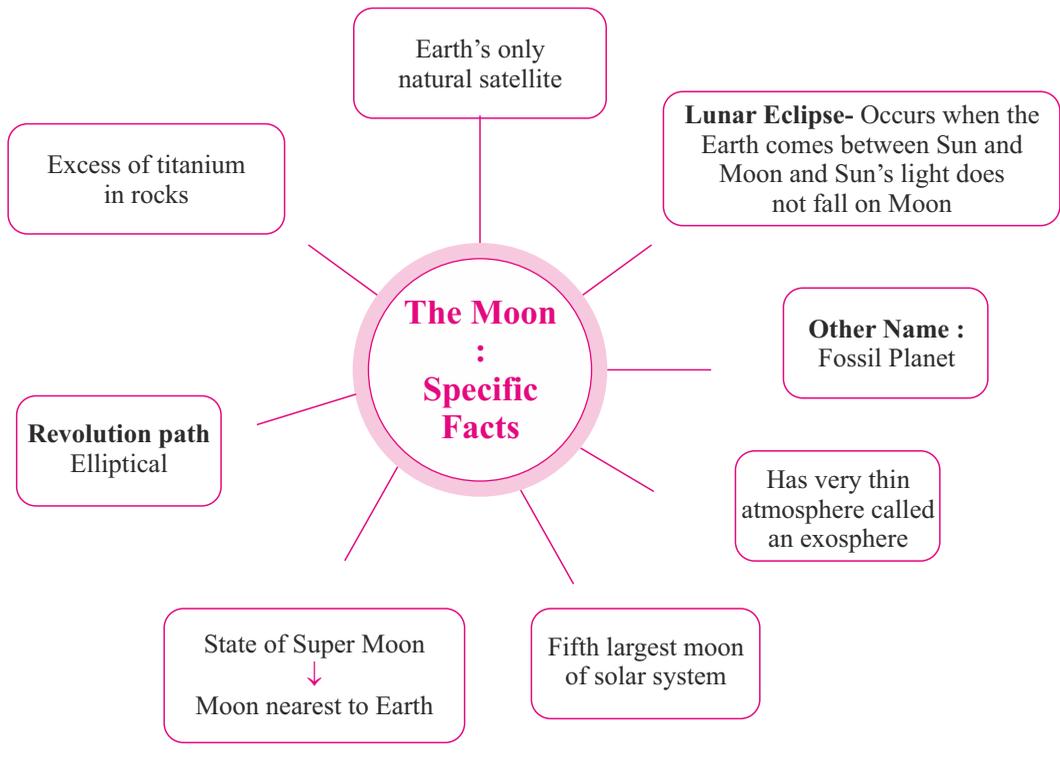


The Saturn



The Moon

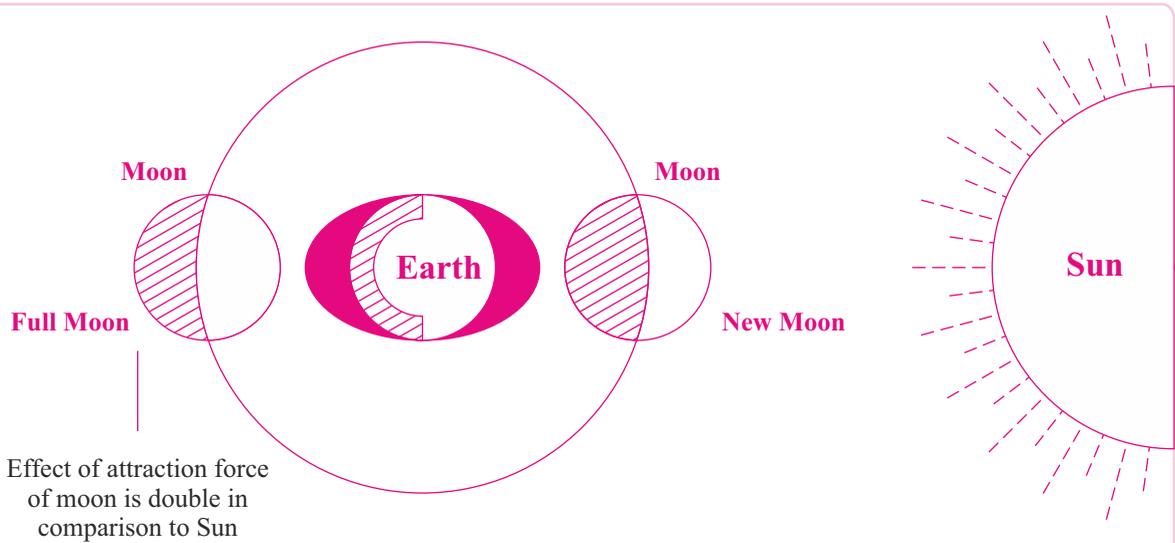
Natural Satellite : Any celestial body in space that orbits around a larger body.

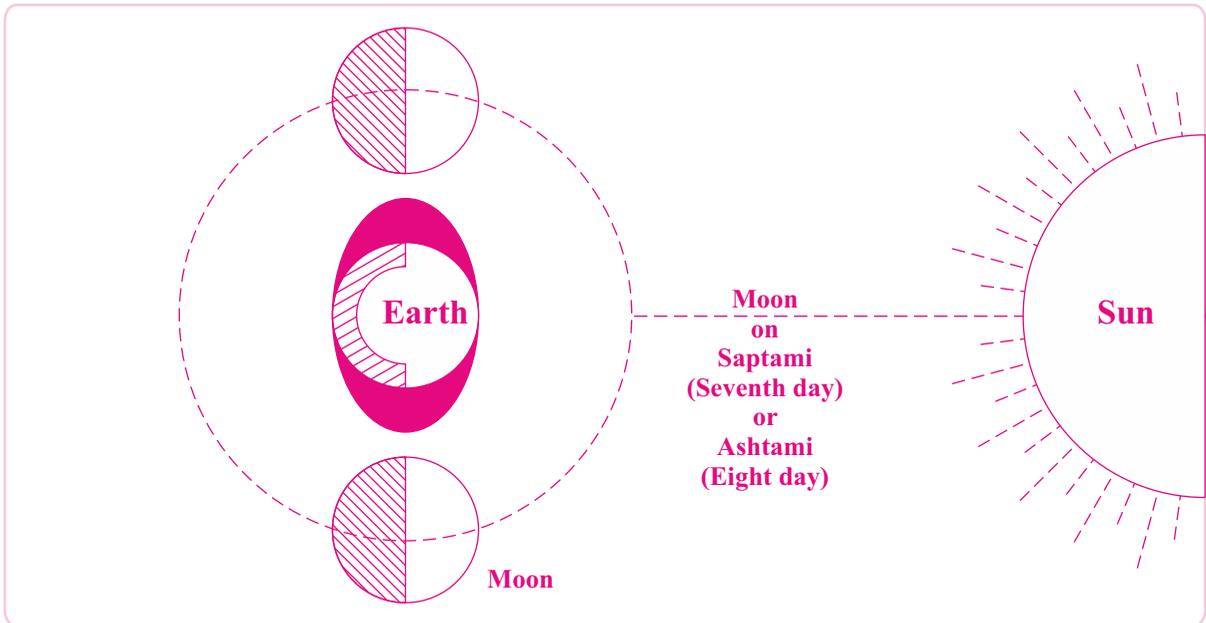


About 20% higher than normal Tide

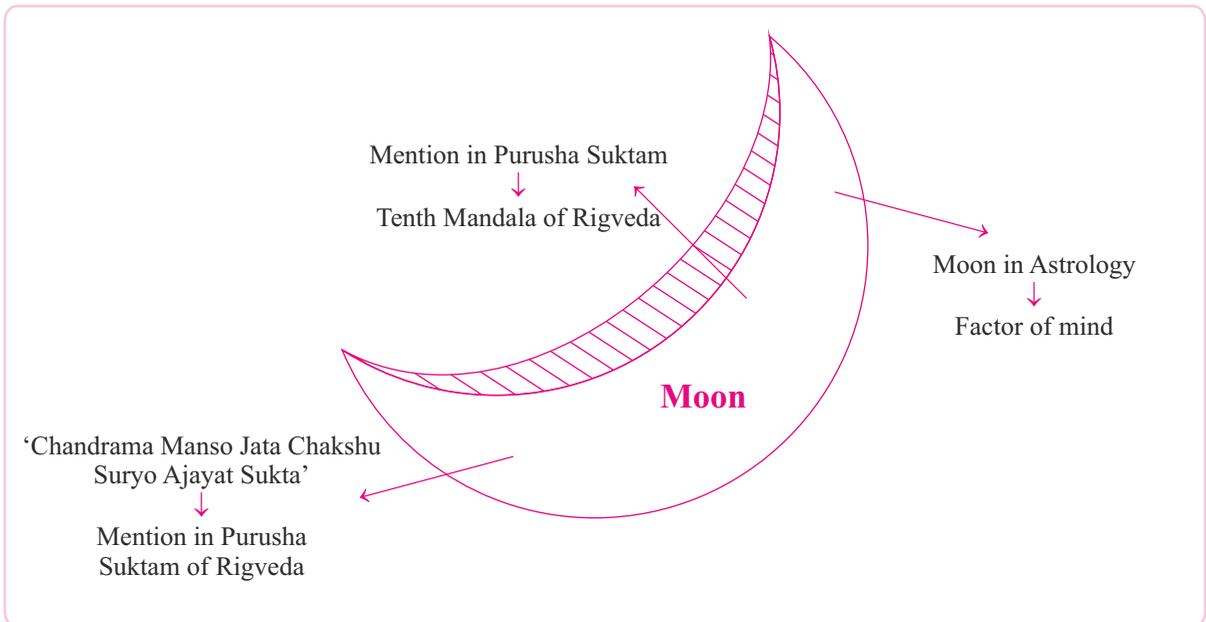


Sun, Earth and Moon in a straight line





20% smaller than normal tides ← **Neap Tide** → Occurs in the situation when Sun, Earth & Moon are at right angles



- ### Important Facts
- The main reason for the shrinking of moon is **-decrease in temperature of its interior part**
 - The International Astronomical Union (IAU) was founded in **-the year 1919**
 - The satellite named 'Lunar Reconnaissance Orbiter' (LRO) was launched by NASA **-in the year 2009**

- ### Exam Facts
- The first space mission to successfully land safely on the surface of moon was **-'Luna 9'**
 - The 'Luna 9' mission was concerned with **-erstwhile Soviet Union (Russia)**
 - First human space mission to reach the Moon's orbit was **-Apollo 11**

Moon Mission of NASA

Launched on July 16, 1969 from the Kennedy space center on Merritt Island, Florida



Apollo 11 :
The first human space mission that landed on the surface of the Moon

Apollo 11 landed on the moon on July 20, 1969

India : Chandrayaan Mission

India : 22 Oct. 2008
Chandrayaan-1 was launched by PSLV-C11 from Satish Dhawan Space Center, Sriharikota, Andhra Pradesh

Note -
Chandrayaan-II was launched on 22 July 2019 by GSLV MK III from second launch pad of same center

Chandrayaan - I
↓
Information about the presence of water on Moon

Chandrayaan -II
↓
Aim
To conduct research/ explore by **reaching to the South pole of the Moon**

Chandrayaan -II Mission
↓
● Orbiter
● Lander (Vikram)
● Rover (Pragyan)

The Comets and Meteors

Components

↓
Bodies of celestial dust, Ice and glacial gases

Characteristics

↓
Comets Generally have 2 kinds of tails:
● Plasma tail and a dust tail

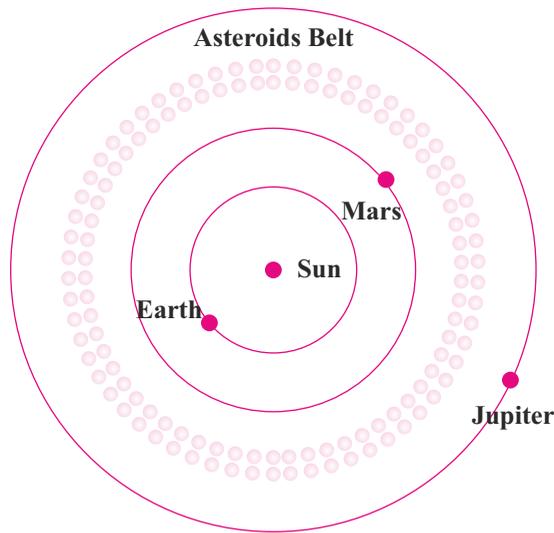
Hale-Bopp

↓
On, 23rd July 1995, the comet was seen near Jupiter

Comet Shoemaker Levy-9

↓
Between 16-22 July, 1994 the comet collided with Jupiter planet

The Asteroids



Earth

Latitudes

It is the distance north or south of the equator, measured along the meridian of that place as an angle from the center of the earth

Important Facts

- Zero degree latitudinal line (Equator) and zero degree longitudinal line (Prime meridian line) meet each other
- In the Gulf of Guinea, located in the western part of Africa
- If the earth were a perfect sphere, the length of 1° of latitude would be a constant value of- **- 111 km.**
- Imaginary Circle dividing the earth into two hemisphere of equal parts is termed as **- Great Circle**

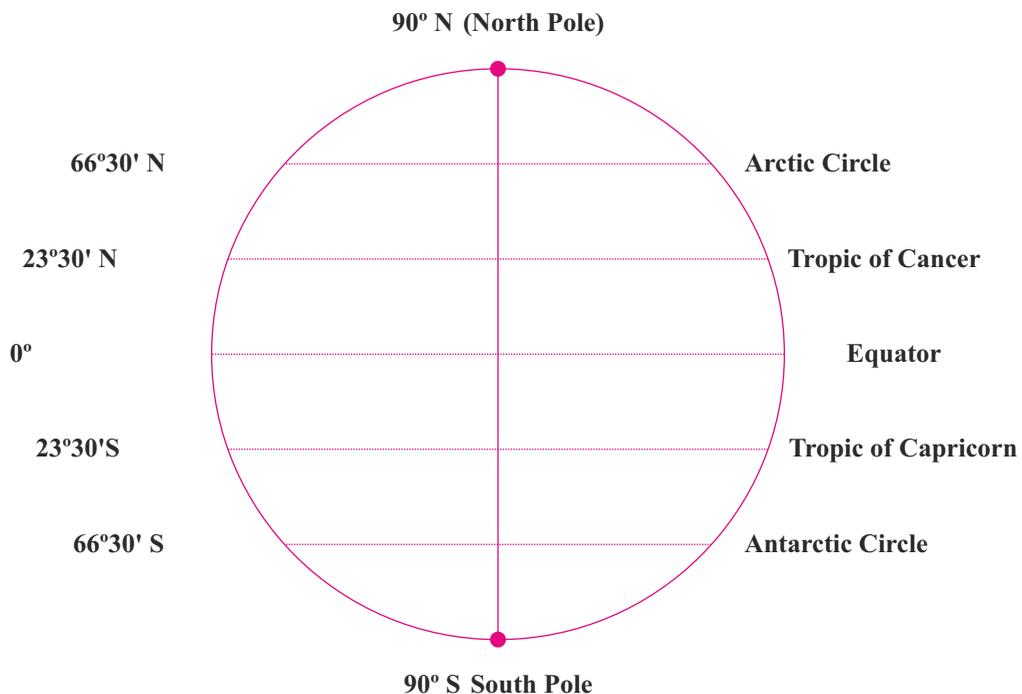
Line related to all parallel circles from the equator to the poles

Lines of Latitudes

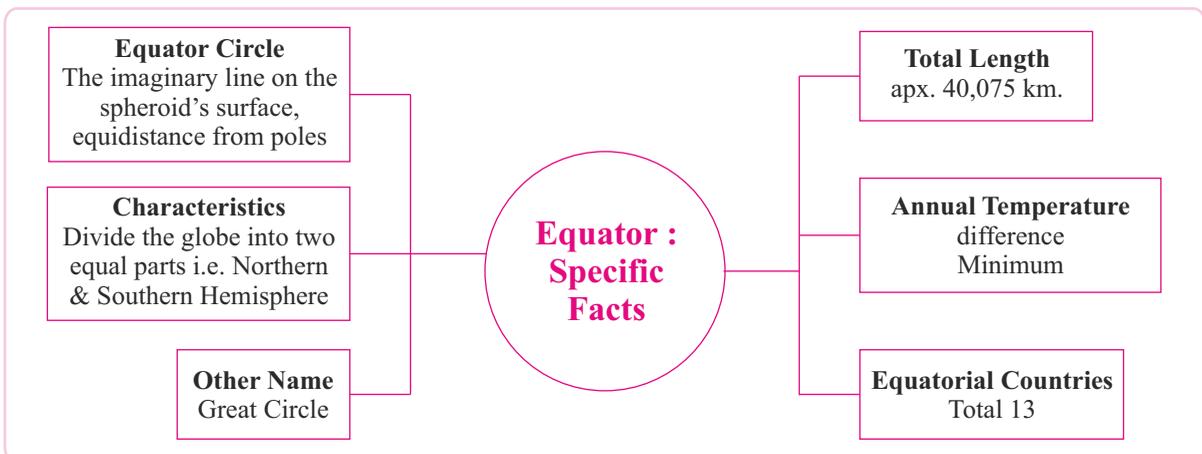
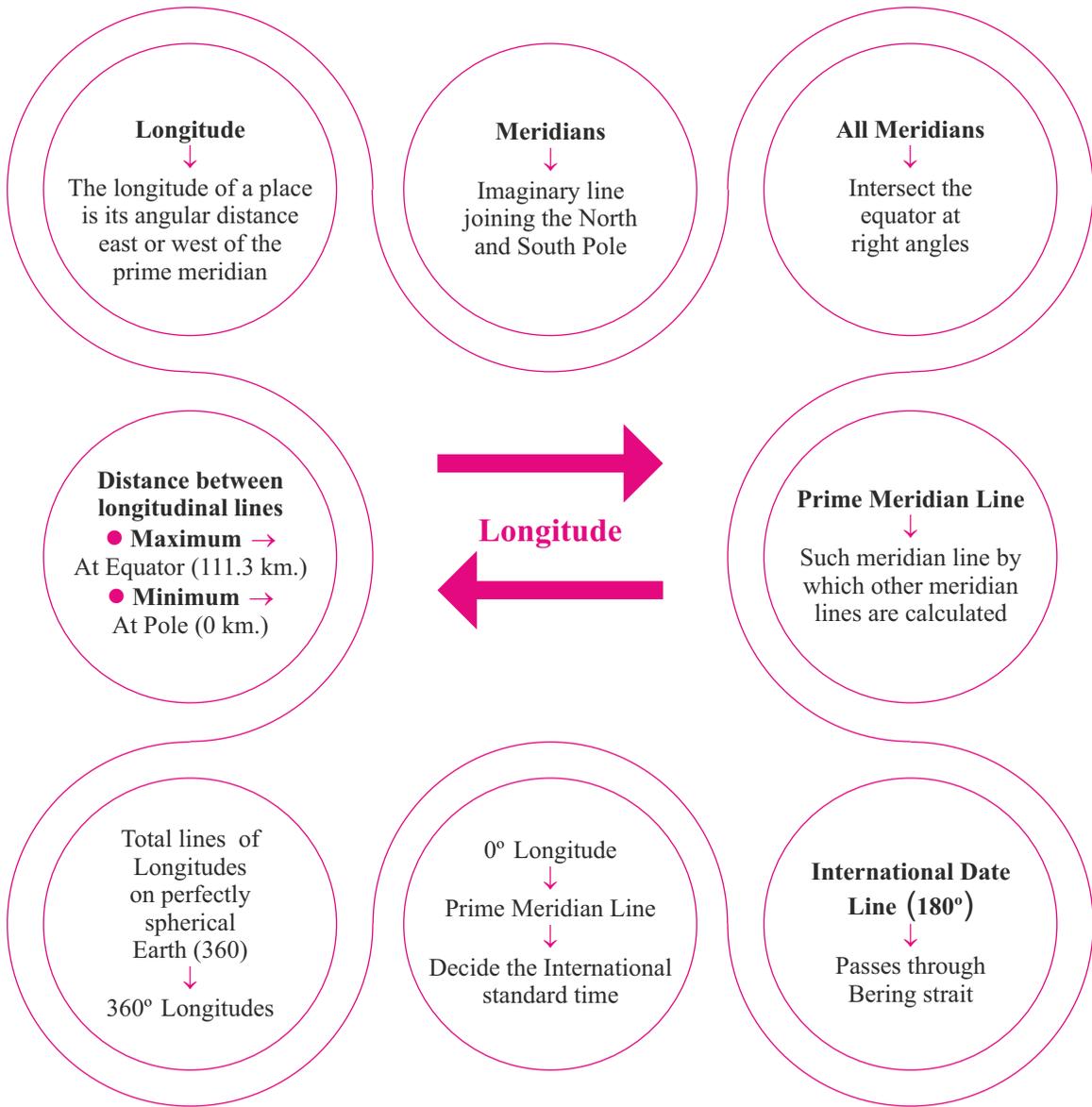
The Equator

0° latitude- It is imaginary line on the spheroid's surface, dividing earth into two hemisphere (Northern and Southern Hemisphere)

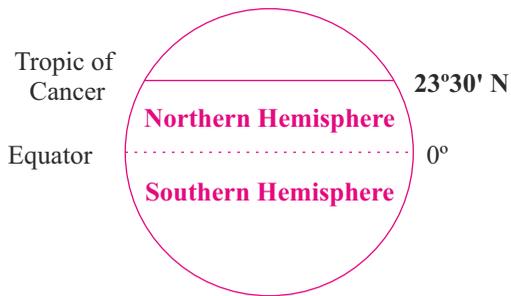
Important Lines of Latitudes



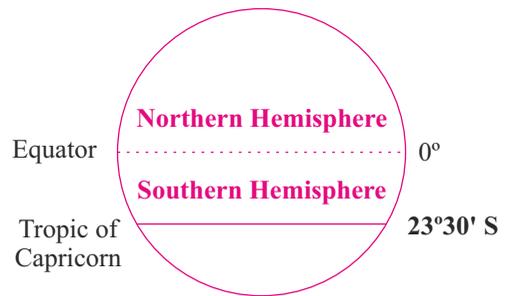
Longitude



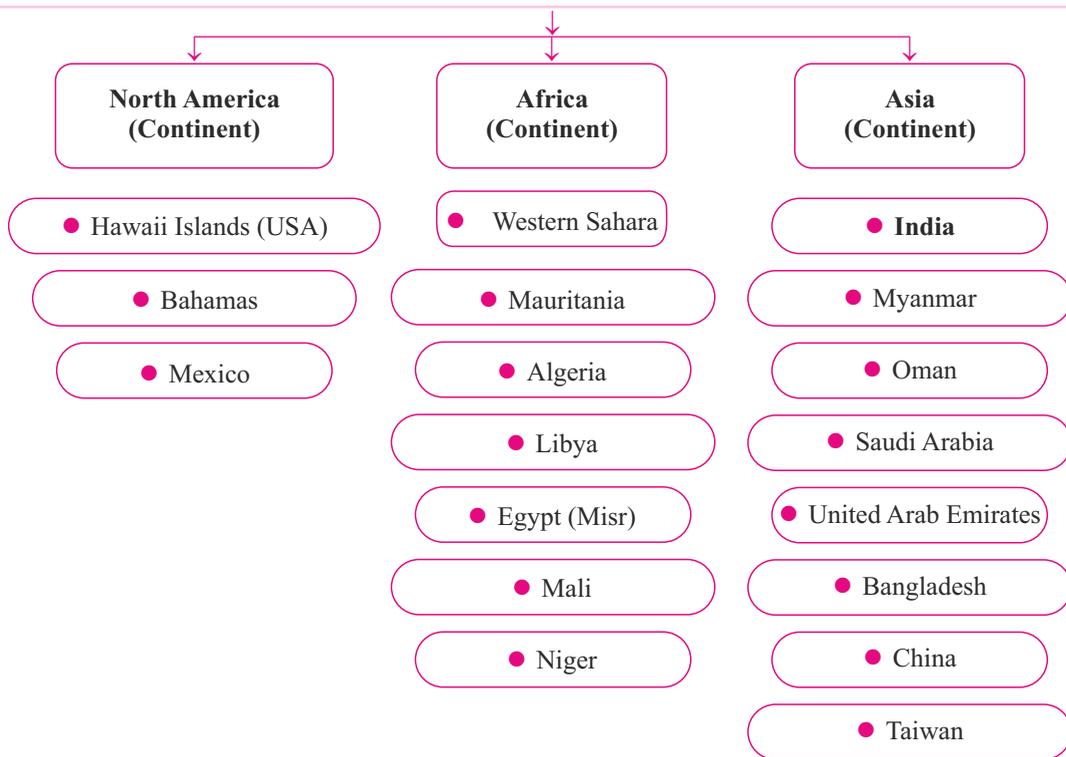
Tropic of Cancer



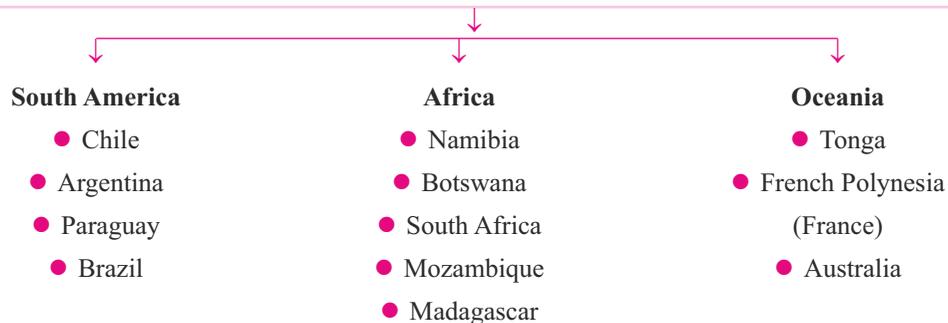
Tropic of Capricorn



Countries/Regions Related to Tropic of Cancer



Countries Related to Tropic of Capricorn



Day and Night

Important Facts

- Equator, Tropic of Cancer and Tropic of Capricorn all passes through
- **African continent**
- Lines passing through South America
- **Equator and Tropic of Capricorn**
- Winter Solstice occurs on 21/22 Dec. at the time when the Sun's ray falls on the Tropic of Capricorn
- **Vertical**
- The Earth always rotates on its axis from west to east, which is called
- **Earth's rotation**
- Duration of day at North pole
- **Six Months**
- Max. duration of daylight northern hemisphere
- **On 21/22 June**
- The Universal theory related to origin of universe
- **Big Bang Theory**

Important Facts

- On 20th/21st March (Spring Equinox) and 22nd/23rd Sept. (Autumnal Equinox) both Day and Night are
- **Equal**
- Used to determine the age of the earth
- **Uranium Dating method**
- Earth originated from gases and dust particles, this was suggested by-
- **Otto Schmidt**

Origin of Earth

Theory
Collision Theory

Propounder
Comte de Buffon

Theory
Tidal Hypothesis

Propounder
James Jeans and
Harold Jeffery

Theory
Fragmentation
Hypothesis

Propounder
Ronzen

Theory
Theory of Nebulous
Material

Propounder
Immanuel
Kant

**Different
Theories
regarding
Origin of
Earth**

Theory
Big Bang Theory

Propounder
Georges Lamaiter

Theory
Nebular
Hypothesis

Propounder
Laplace

Theory
Planetesimal
Hypothesis

Propounder
Chamberlin
Moultan

Theory
Meteoroite
Hypothesis

Propounder
Lockyer

Geological History

Nomenclature and Characteristics of each period of Earth's geological history

Cambrian Period



Speciality

- Emergence of Creatures without Spinal Cord

Ordovician Period



Speciality

- Mountain Formation had started
- Witnessed heavy volcanic activity in Seas

Silurian Period



Speciality

- The emergence of terrestrial Flora however leaf formation was yet not present
- Large scale development and expansion of Coral Reefs

Devonian Period



Speciality

- Witnessed large scale mountain formations and Volcanic activities
 - Various Varieties of fishes emerged
- Note :** This period is also known as 'Age of Fishes'



Carboniferous Period



Speciality



Pangea



Entire land part enclosed as one land part

Panthalassa



Superocean that surrounded the supercontinent Pangaea

Laurasia



Northern Part of Pangea



Comprised

- North America
- Europe
- Asia (without Indian subcontinent)

Gondwana

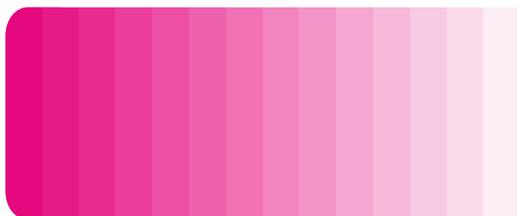


Southern part of Pangea

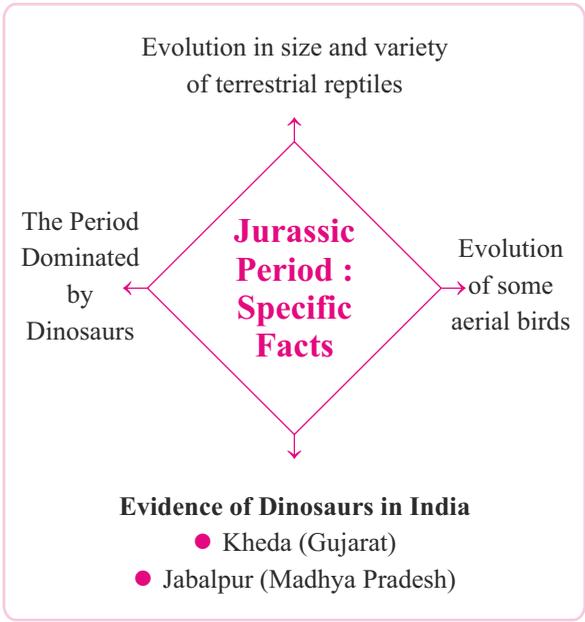
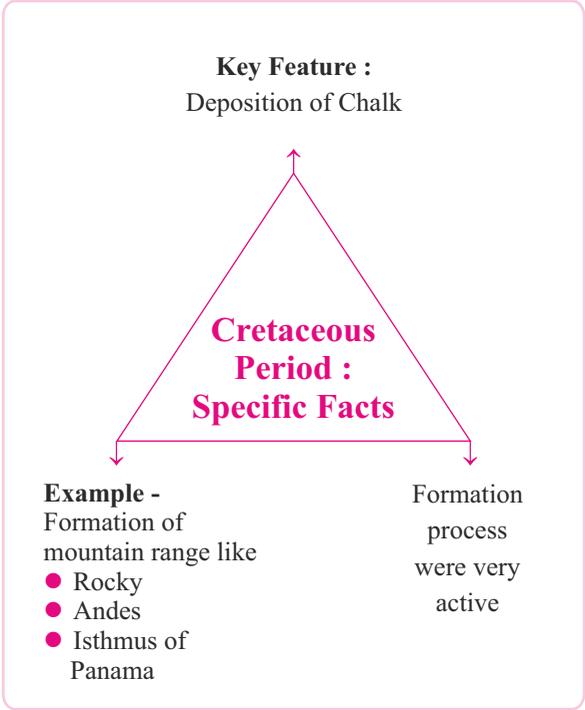
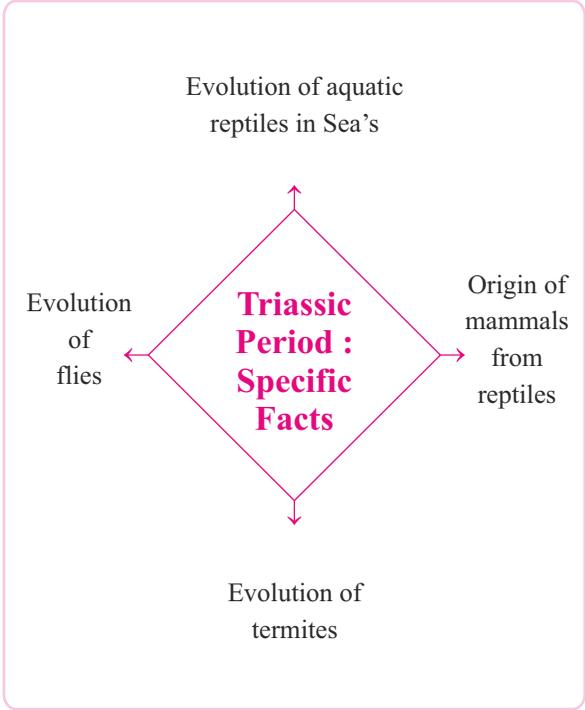
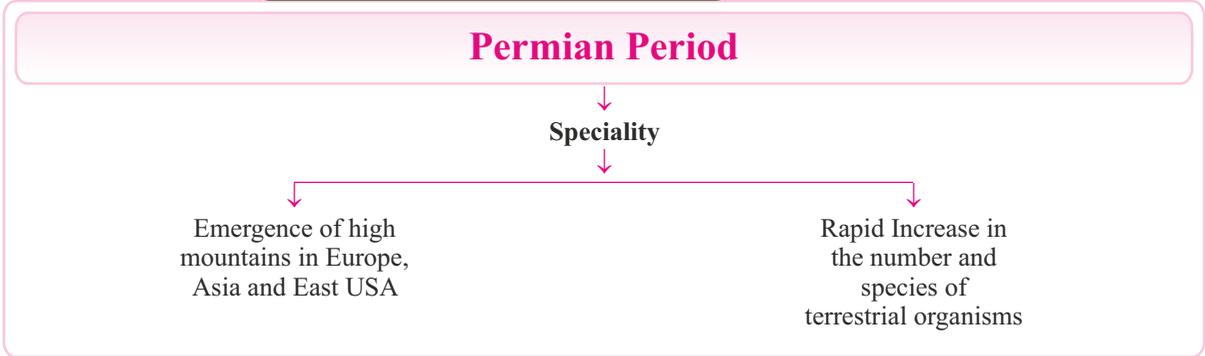


Comprised

- South America
- Africa
- Madagascar
- Peninsular India
- Australia and Antarctica



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- Important Facts**
- North Sea, Black Sea, Arabian Sea, Caspian Sea and Shivalic ranges were formed in **- Pliocene epoch**
 - Indian ocean and Atlantic ocean formed in **-Eocene epoch**
 - Alps mountain ranges was formed in **-Miocene epoch**
 - Holocene and Pleistocene epoch are part of **-Quaternary Period**
 - Period of Dinosaurs **-Start 20.8 crore years B.C. End-14.4 crore B.C.**
 - Rajasthan/Thar desert is an expansion of **-Pleistocene and recent deposit**
 - We are living in the **-Holocene Epoch**

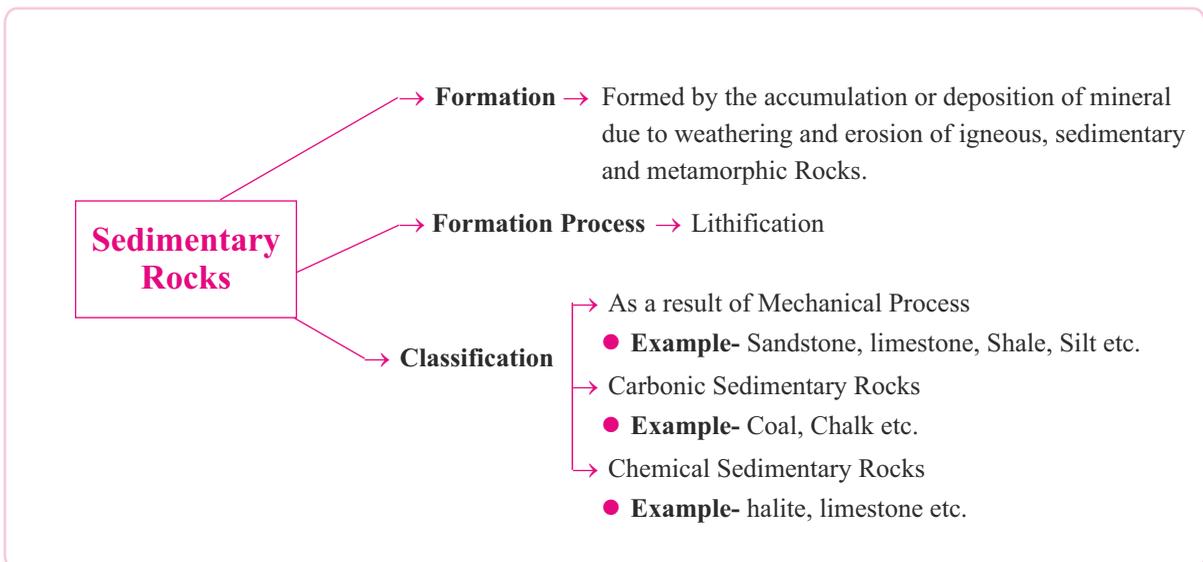
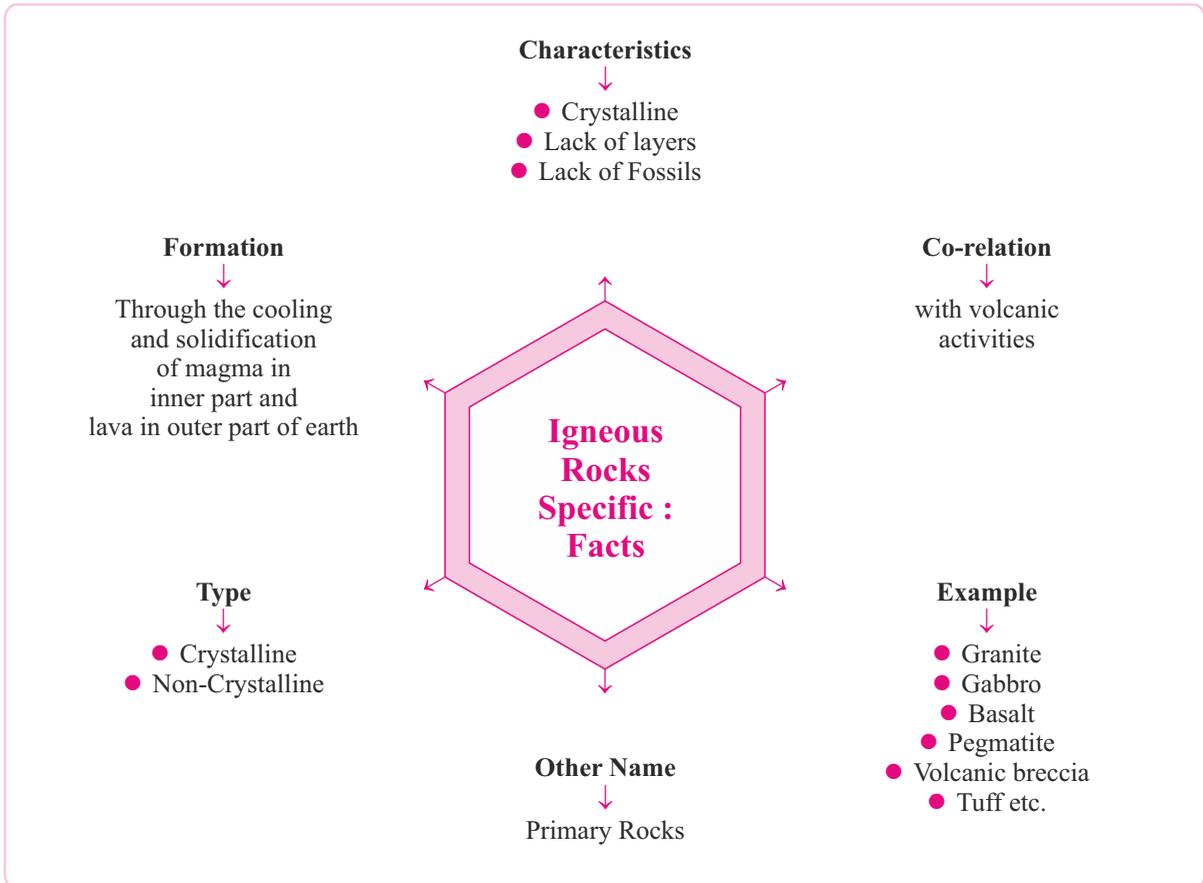
Rocks

The crust of the earth is made up of rocks. Rock is a natural substance, a solid aggregate of one or more minerals or mineraloids.

Petrology is the study of rocks, which is an essential component of Geology.

The Major groups of rocks are defined as

(i) **Igneous Rocks**, (ii) **Sedimentary Rocks** (iii) **Metamorphic Rocks**.



Metamorphic Rocks

Formation

Transformation of existing igneous and sedimentary rock due to temperature and pressure changes

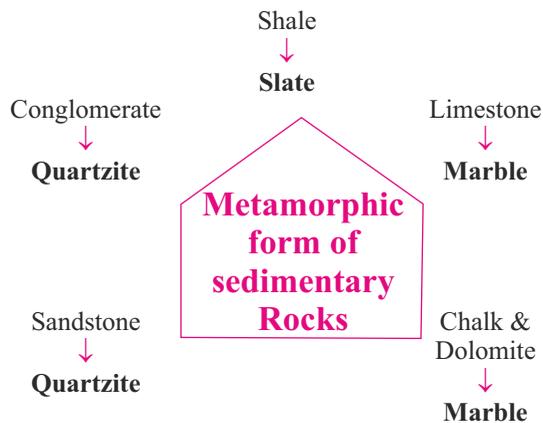
Other Name

Metamorphic shell Reformation - When the transformed shell is also transformed.

Metamorphic Form of Igneous Rocks

Example

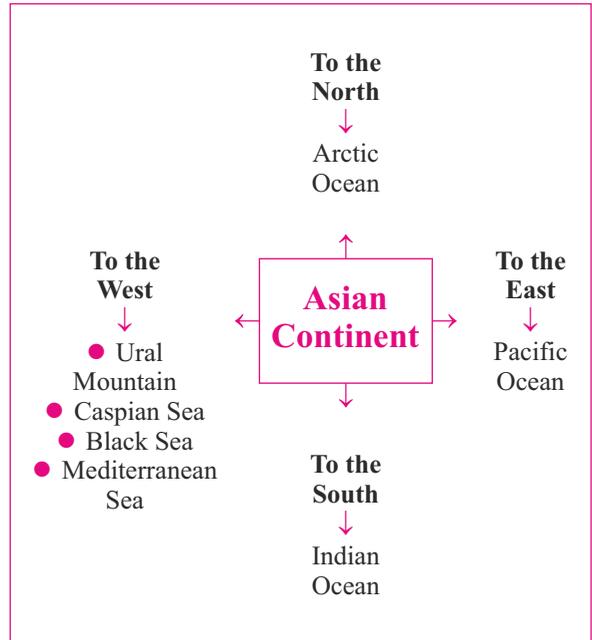
- Granite → Gneiss
- Basalt → Schist
- Basalt → Amphibolite



Metamorphic form of Metamorphic Rocks

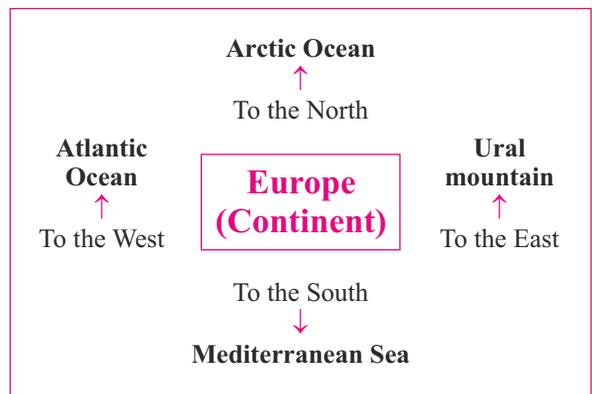
- Slate - Phyllite
- Phyllite - Schist
- Gabbro-Serpentinite

Continent



Area of Continents

Continent	sq. KM.
Asia	44,579,000
Africa	30,065,000
North America	24,256,000
South America	17,819,000
Antarctica	13,209,000
Europe	99,380,00
Australia	76,882,87



Africa Continent

Second
Largest
Continent
after Asia

Characteristics
Three important
latitudes (Tropic
of Cancer, Tropic
of Capricorn and
Equator) passes
through Africa

**Total
Country**
↓
54

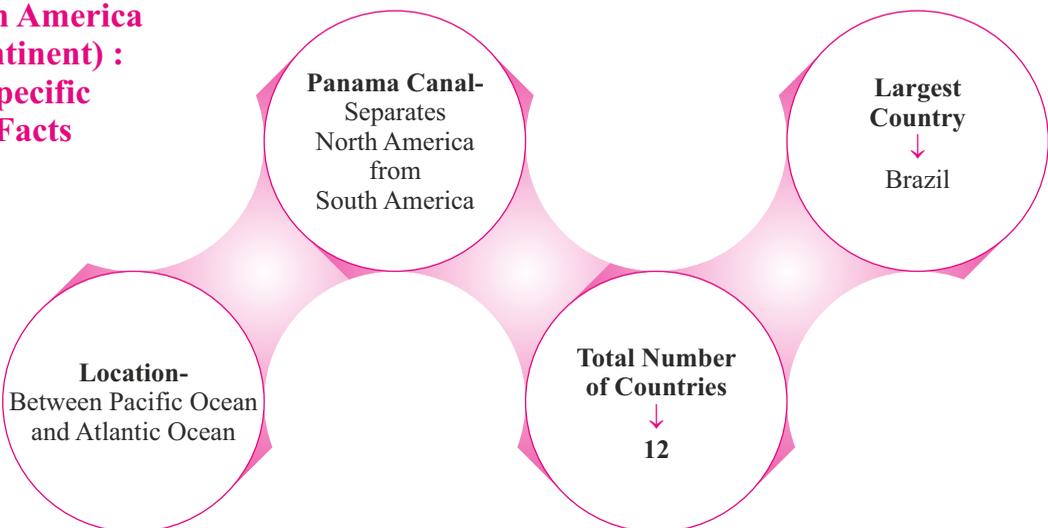
Strait of Gibraltar,
Mediterranean Sea,
Suez Canal, Red Sea
and Arabian Sea
↓
Separates Africa
from Eurasia

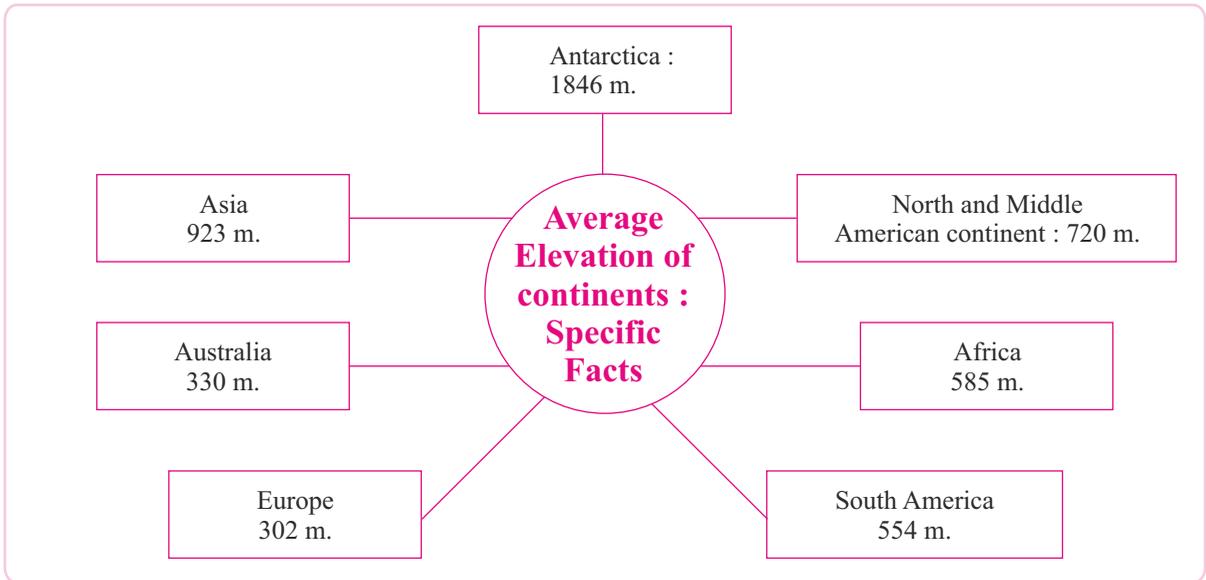
To the East
● Indian
Ocean
To the West
● Atlantic
Ocean

North America (continent): Specific Facts

- **Nomenclature** → On the name of Amerigo Vespucci
- **Total Countries** → 23
- **In the East** → The Atlantic Ocean
- **In the West** → The Pacific Ocean
- **In the North** → The Arctic Ocean
- **Bering Strait** → Separates North America from Asia

South America (continent) : Specific Facts





Important Facts

- South America, Central America, Mexico and Caribbean are jointly called **-Latin America**
- The continent famous as Dark Continent **-Africa Continent**
- Smallest continent in terms of area **-Australia**
- Scientist have claimed it as a 8th continent **-Zealandia**

World Mountain Ranges

Elevated parts of the surface, whose slope is steep and the summit is a narrow area.

Mountainous Region - Area having an elevation of 1000m above sea level and also the relative height in that area is also high

Expansion : About 25% of the world is mountainous

Mountain

Inhabited only by 12% of world's population

Note : 'Parasnath' located near Giridih (Jharkhand) in India is called a hill while its average height is 1366 m.

Major Mountain Ranges of the World

Fold Mountain

- **Formation** ● By Forces of compression
- **Characteristic** ● World's highest and widest mountains
- **Major Examples**
 - **The Andes**
 - Characteristic → Largest mountain range in the world
 - Highest Peak → Aconcagua (6960m.)
 - **The Rocky Mountain**
 - Location → North America
 - Highest Peak → Mount Elbert (4400m.)

Major New / fold mountains of the world : Specific Facts

The Himalayas Mountains

Location :
At the Northern most point of India in South Asia

Highest Peak
Mount Everest or Sagarmatha

Southern Alps mountains

Location
Western part of the Island of New Zealand

Highest Peak
Mount Cook/ Aoraki

Alps Mountains

Extension Area :
France, Austria, Germany, Switzerland etc.

Highest Peak
Mont Blanc

Exam Facts

- | | |
|---|---|
| <ul style="list-style-type: none"> ➤ Rocky and Atlas mountains are examples of -Fold Mountain ➤ The mountain called as oceans of mountains -British Columbia Plateau ➤ The white mountains is located at -California ((USA) | <ul style="list-style-type: none"> ➤ Appalachian is an ancient mountain that was formed -in the Caledonian Orogeny ➤ Black mountain is located -in the province of North Carolina (USA) |
|---|---|

Dome Mountain

Formation

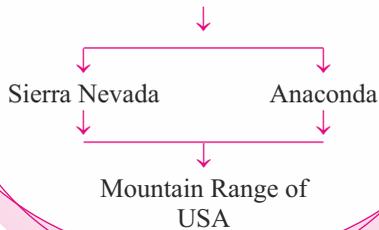
Due to volcanic action and terrestrial uplift

Example

- Cincinnati
- Black Hills → of USA
- Bighorns
- Fujiyama of Japan
- Cotopaxi of Equador

Mixed Mountains

Example :



Residual Mountain

Formation-
as a result of Erosion of an existing mountain by the force of erosion

Example

- Pennines Mountain (Europe)
- Appalachian Mountain (USA)
- Aravalli Mountains (India)

Important Facts

- It forms border between France & Spain
 - **Pyrenees Mountain**
- Apennine mountain is located in
 - **Italy**
- Mount Titlis is located in
 - **Switzerland**
- Highest mountain peak of Russia and Europe
 - **Mount Elbrus**
- Highest Mountain peak in Africa
 - **Mount Kilimanjaro (Tanzania)**
- Highest Mountain peak in South Africa
 - **Drakensberg Range**
- Highest peak of Great Dividing Range (located in Australia)
 - **Mount Kosciuszko**

Block Mountain

Formation

By Tensile/compression force

Characteristic

Fault or crack

Example

- The Sierra Nevada Mountain of California
- Black forest of Germany etc.
- Vosges range of France

The Plateau

Plateau are the prominent example of second grade relief of earth's surface. Plateau comes after mountains in terms of height and in terms of territorial extent after the plains. Plateau covers about 33% of entire crust

Classification of plateaus according to the process of their formation

Glacier Plateau

Formation

- Due to Erosional processes of glacier on mountain ranges

Example

- Plateau of Prussia in Germany
- Formation of 'Marg' in **Kashmir region** of India

Intermontane Plateau : Specific Facts

Characteristics

- Highest, most extensive and complex plateau of Earth's
- Surrounded by mountains on all sides

Example

- Tibetan Plateau/Chang Tang/Qinghai-Tibetan
- Bolivia Plateau
- Peru Plateau
- Colombian Plateau
- Mexican Plateau

Fluvial Plateau

Formation

- Due to vertical movement of earth and due to continue deposition of fluvial deposits brought by the rivers

Example

- India
 - Vindhya Plateau
 - Shillong Plateau
- Myanmar
 - Shan Plateau

Piedmont Plateau: Specific Facts

Characteristic

- Plateau at the foothills of mountains

Example

- USA
 - Eastern margins of Appalachian
 - Patagonia Plateau
- South America

Aeolian Plateau

Example

- Potwar Plateau of Pakistan
- Loess Plateau of China

Domed Plateau

Example

- United State of State
 - Plateau of Ozark (USA)

Continental Plateau

Example

- Deccan plateau
- Arabian Plateau
- Plateau of Australia etc.

Volcanic Plateau

Example

- Columbia Plateau (USA)
- Plateau of Peninsular India

Coastal Plateau

Example

- India's Coromandel Coast

Important Facts

- The mineral rich area in South America
-**Patagonia Plateau**
- Average Height of Tibetan Plateau above sea level is
-**More than 4.5 km.**
- 'Roof of the World' -**The Pamir Plateau**
- Telegraphic plateau is a part of
-**North Atlantic Ocean**

The Volcano

A Volcano is a rupture in the crust of planetary mass object, such as earth, that allows hot lava, volcanic ash and gases to escape from a magma chamber below the surface.

Most abundant gas emitted from Volcanoes

Water (H₂O), Carbon dioxide (CO₂), Nitrogen, Sulphur dioxide (SO₂) etc.



Dormant Volcanoes

Characteristics

- No eruption for a long time
- Possibly erupt

Example

- Mount St. Helens (USA)

Other Name

- Fujiyama of America

Keeps exploding and erupting

Active Volcano : Specific Facts

Mount Kilauea

- At present, most active Volcano in the World

Nevado Ojos Del Salado

- Highest active Volcano in the world (6893 m.)

Mauna Loa

- On the basis of size, the largest active Volcano on Earth

Extinct Volcano

➤ Eruptions are often closed, the possibility of eruption in the future is negligible.

Example



- Mt. Kulal (Africa)
- Chimborazo (Equador)
- Popa (Myanmar)
- Damavand (Iran)

Important Facts

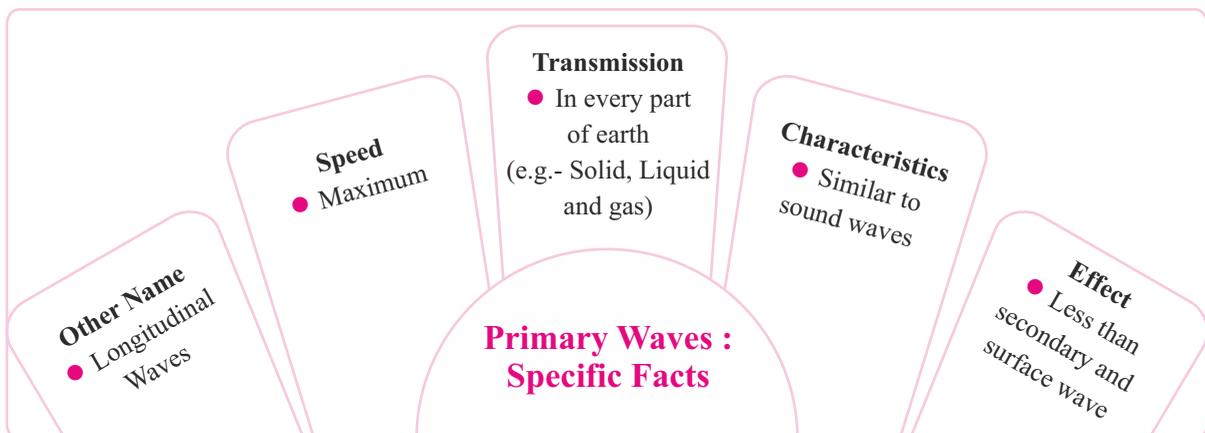
- The fluid present in underground at the time of Volcanic eruption is known as **- Magma**
- The funnel shaped trough commonly found at the top of a volcanic cone is **- Crater**
- Lake located in Buldhana district of Maharashtra is an example of crater **- Lonar Lake**
- The Volcano known as Lighthouse of the Mediterranean sea **- Stromboli Volcano**
- Mount Etna located on the island of Sicily, Italy is **- An Active Volcano**

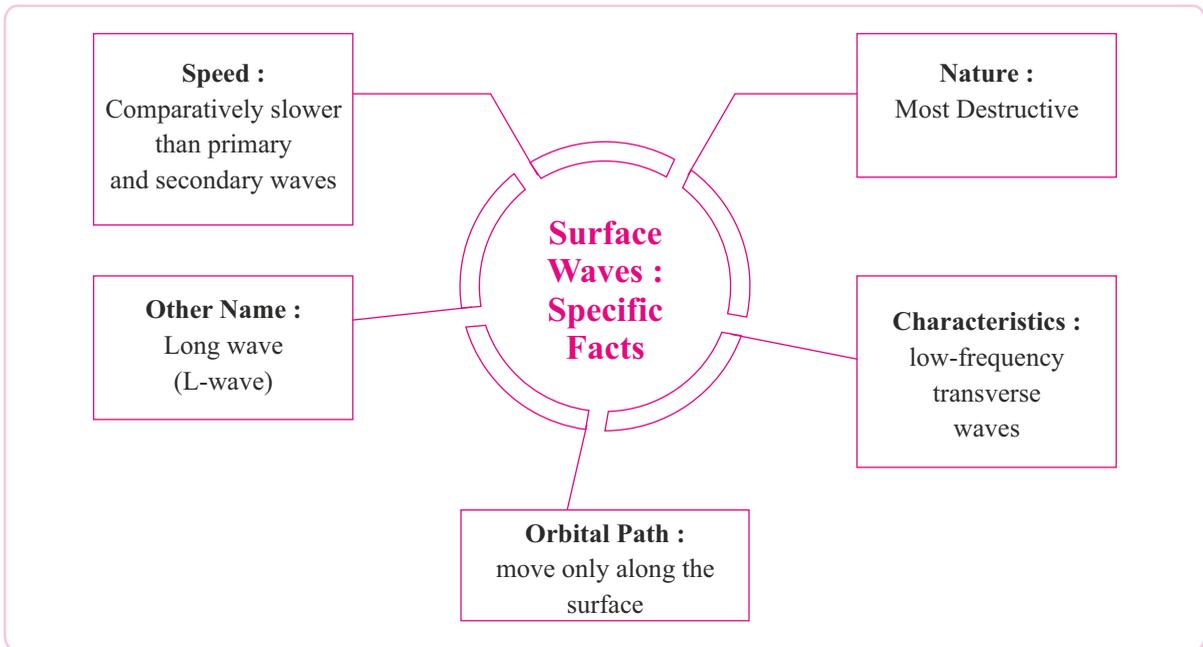
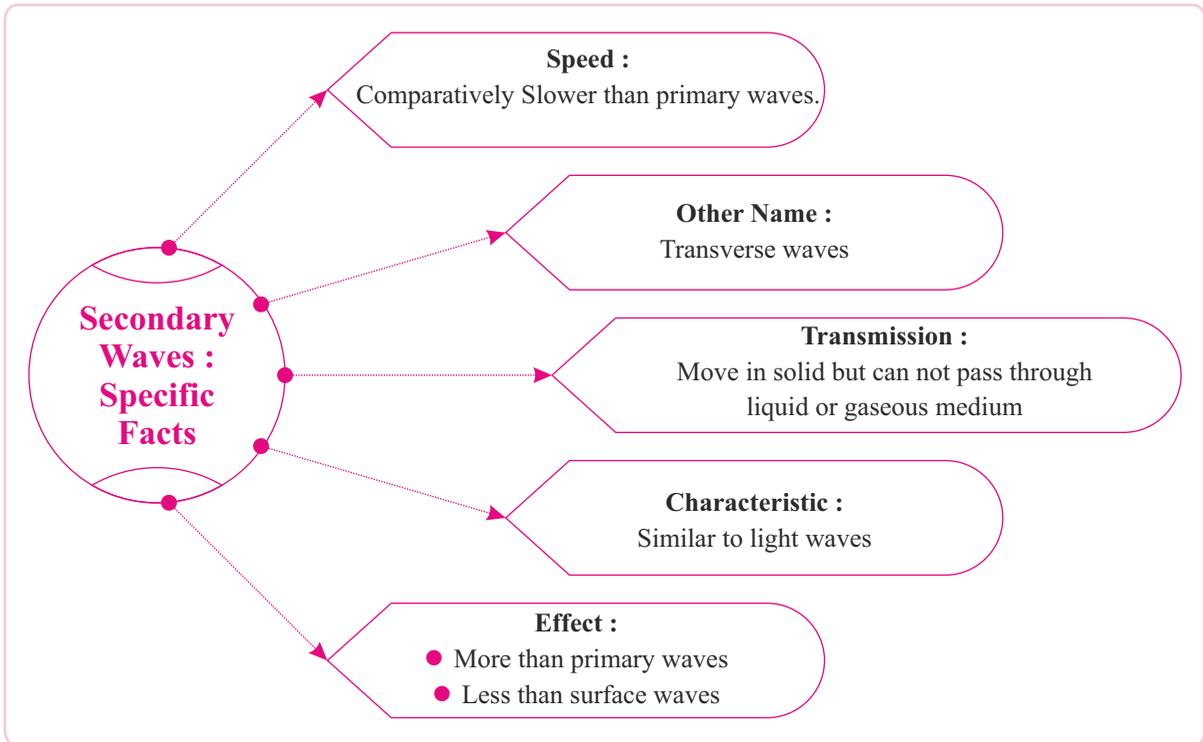
Major Volcanoes of World and their Location

Volcano	Country	Volcano	Country
Mount Kinabalu	Malaysia	Sabancaya	Peru
Alborz	Iran	Mount Etna	Italy
Colima	Mexico	Mount Merapi	Indonesia
Mount Rainier	USA	Pericutin	Mexico
Mount Taal	Philippines	Mount Erebus	Antarctic
Vesuvius	Italy	Damavand	Iran
Cotapaxi	Ecuador	Vilarrica	Chile
Popocatepetl	Mexico	Krakatoa	Indonesia
Mount Shasta	USA	Mount Sinabung	Indonesia
Mayon	Philippines		

The Earthquake

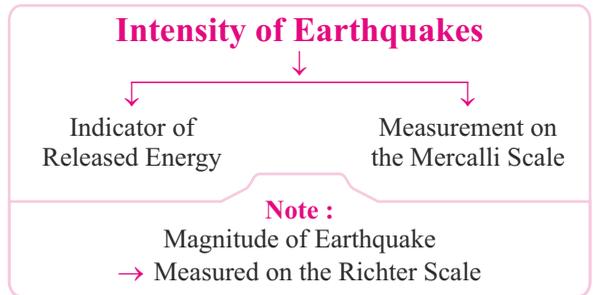
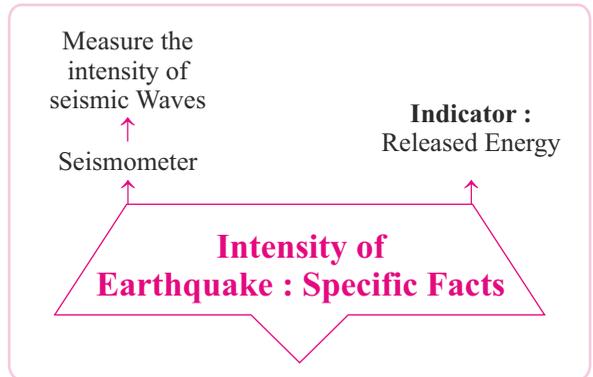
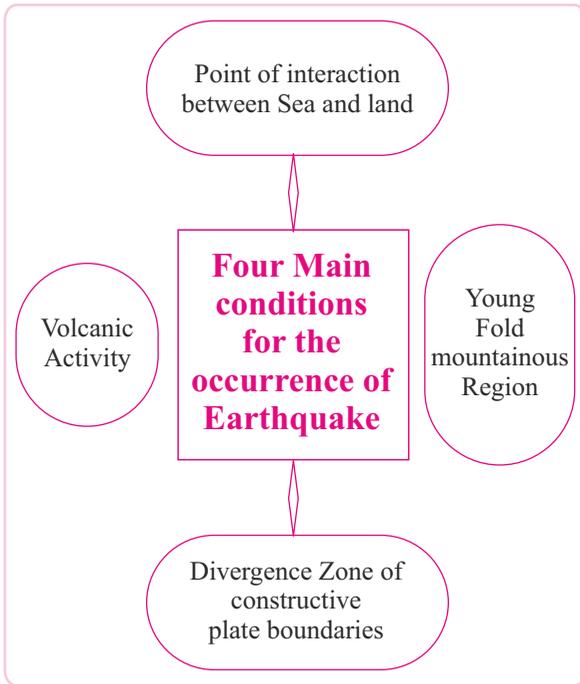
Earthquakes often occur below the surface, but not every earthquake occurs at the same depth. The point or place where the occurrence of an earthquake starts is called 'Seismic Focus or hypocenter'. The point on the surface, nearest to the focus, is called epicentre.





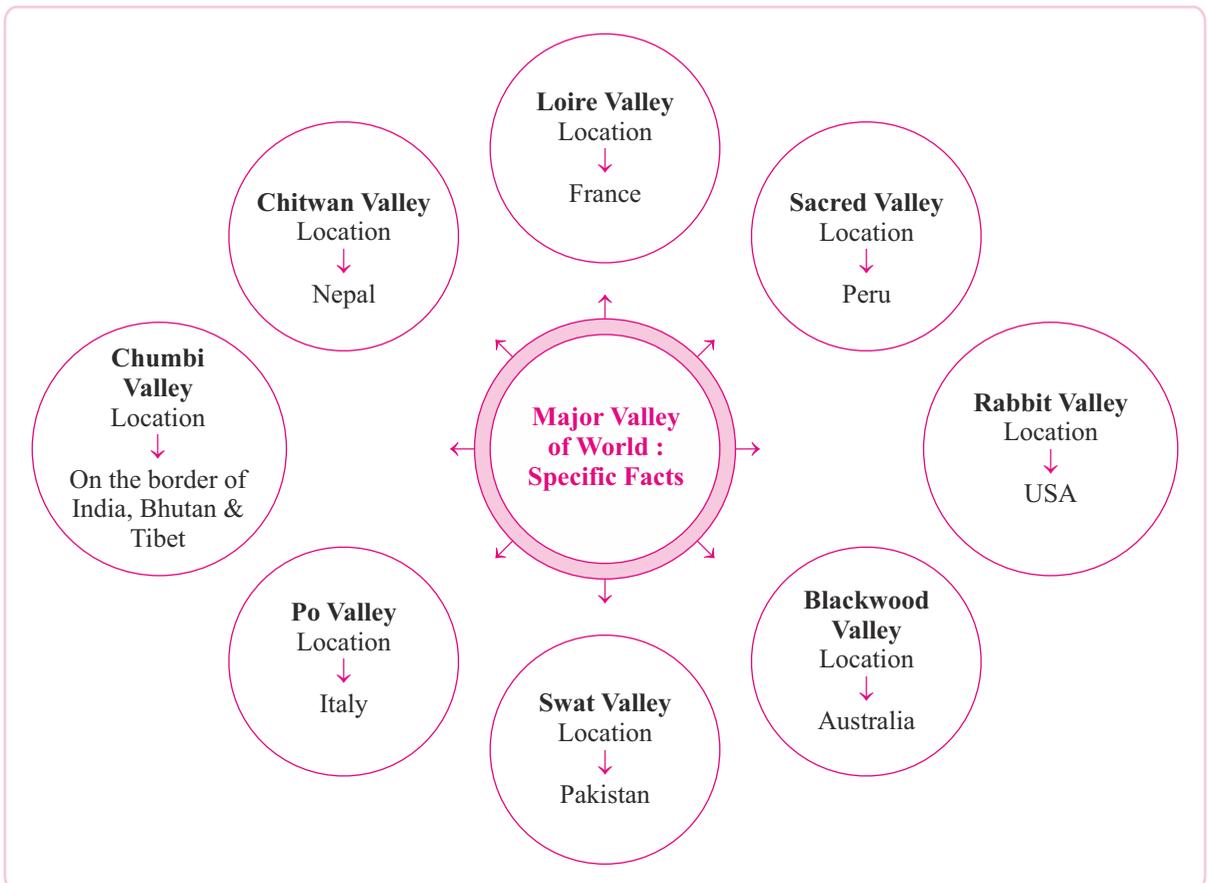
Important Facts

<ul style="list-style-type: none"> ➤ The Epicenter is the point at ground level directly above the hypocenter -At right angle ➤ Waves arising in the ocean as a result of Earthquake -Tsunami ➤ Major area in the basin of the pacific ocean where many earthquake and volcanic eruptions occurs -The Ring of Fire 	<ul style="list-style-type: none"> ➤ The North-West region of Indian sub-continent is prone to earthquakes, due to -Plate Tectonics Activity ➤ The seismic zone of India is included under -Mid-continental belt
--	--



The Valley

A Valley is an elongated low area often running between plain, hills and mountains; formed by erosion of river and glacial ice.



Valley of the King

Location - Egypt
(situated on the western bank of river Nile)

Other Name - Wadi-el-Muluk

Important Facts

Valleys	Locations
Pleasant Valley	USA
Silicon Valley	California (USA)
Ebro Valley	Spain
Panjshir Valley	in Northeastern Afghanistan
Taylor Valley	Antarctica

The arid Regions / Deserts

Deserts are the arid and semi arid parts of land area of earth.

It is mainly found in sub-tropical high-pressure area.

Regions receiving precipitation of less than 25cm. annually are categorized as deserts

Tropical Hot Deserts :

Generally Found in the western side of a continent in the trade wind belt located between 15° to 30° north and South of equator

Tropical Cold Deserts :

Location

- Between 30° to 60° North and South Latitudes

Example

- The Gobi Desert (Mongolia, China)
- Patagonia Desert (Argentina, Chile)

The Sahara Desert

Largest non- polar desert of the World
(Non - Polar)

Location

North Africa

Area -
apx. 3.6 million square mile

Extension

Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Tunisia and Western Sahara

The Atacama

driest non-polar desert

Location

South America

Peru Chile

Important Mineral Deposits

- Sodium
- Nitrate
- Copper etc.

The Thar Desert : Specific Facts

Other Name
Great Indian
Desert

Extension Area

Western
India

South-East
Pakistan

Characteristics

World most
populous desert

Highly dense
populated
desert

Largest
desert of
South Asia

The Grasslands

A Grassland is an area of land that mostly contains grasses.
Grassland are found all over the world from the hot equatorial region to cold polar region.
However, their characteristics and physical attributes change with the change in climate.

● Tropical Grasslands

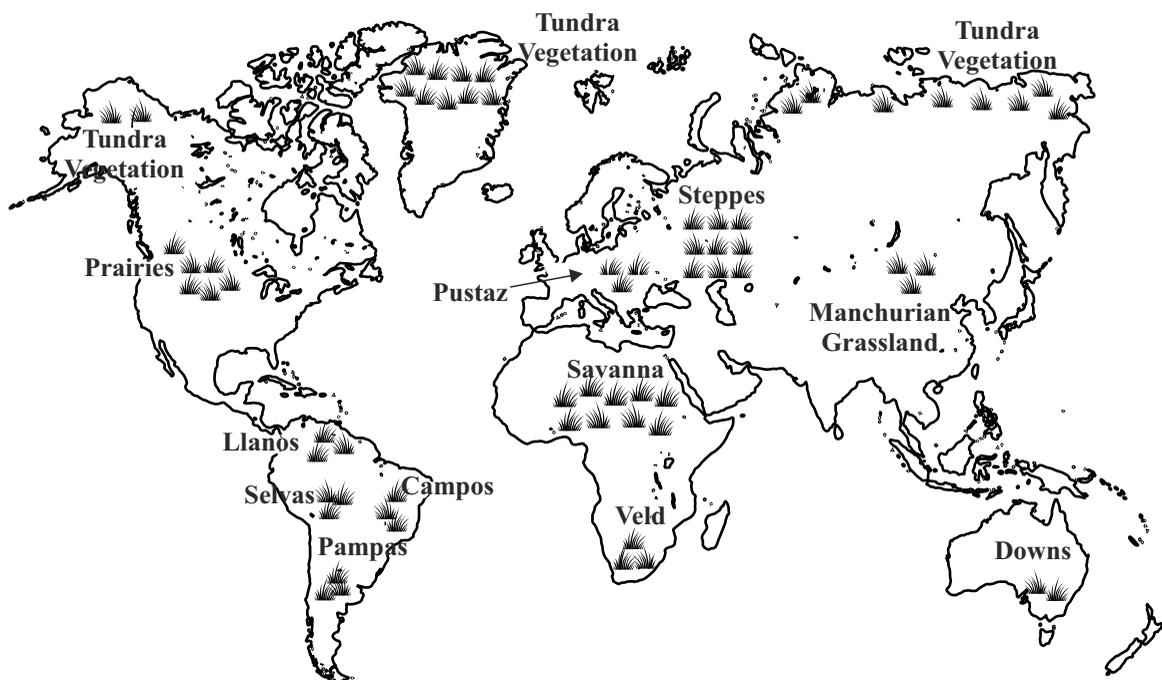
These are located near the equator (10° to 25° North or South Latitudes), between the Tropic of Cancer and Tropic of Capricorn.

Categorized
into two
parts

● Temperate Grasslands

These are located between 30° to 45° North and South Latitudes

Important Grasslands of the World

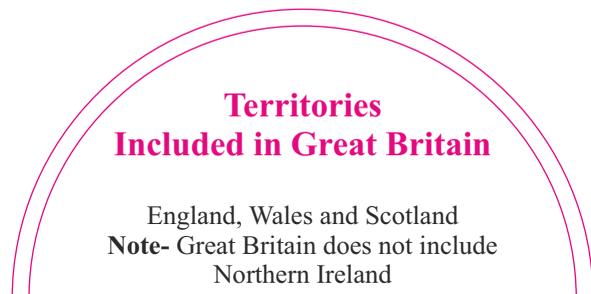
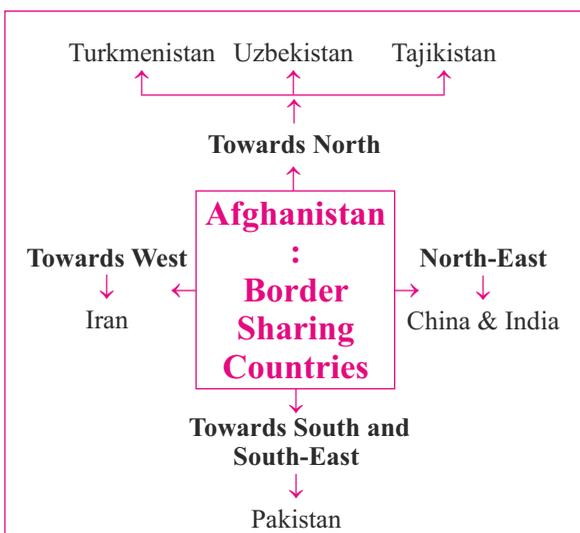
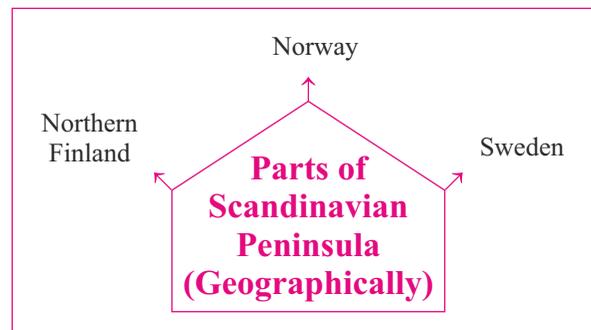
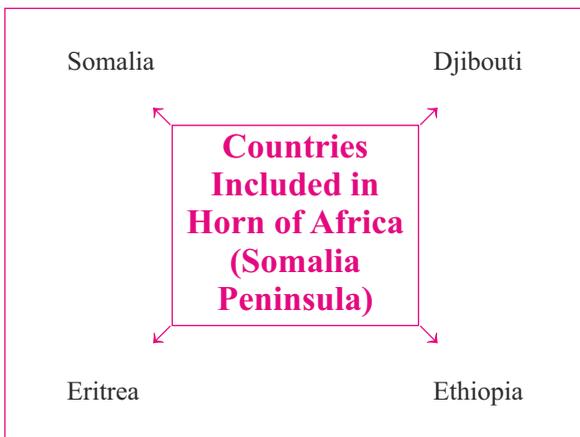


Grasslands	Continents/ Countries
Llanos	South America
Steppes	Eurasia
Prairies	North America
Veld	South Africa
Campos	S. E. part of Brazil
Pampas	Argentina, Brazil and Uruguay
Selvas	Amazon Basin

Important Facts

- Temperate Grassland found in Australia, known as **-Downs**
- Savanna grassland are mainly found in **-Eastern Africa**
- Prairies, Pampas, Veld, Steppes and downs grassland are example of **-Temperate Grassland**
- Grassland found in South India, Orinoco Basin (Venezuela and Colombia), Brazil and Honduras grassland are called **-Savanna Grassland**
- Land, which is extended somewhere at 50° latitude in northern due to maximum extension of land in northern hemisphere **-Temperate Grassland**

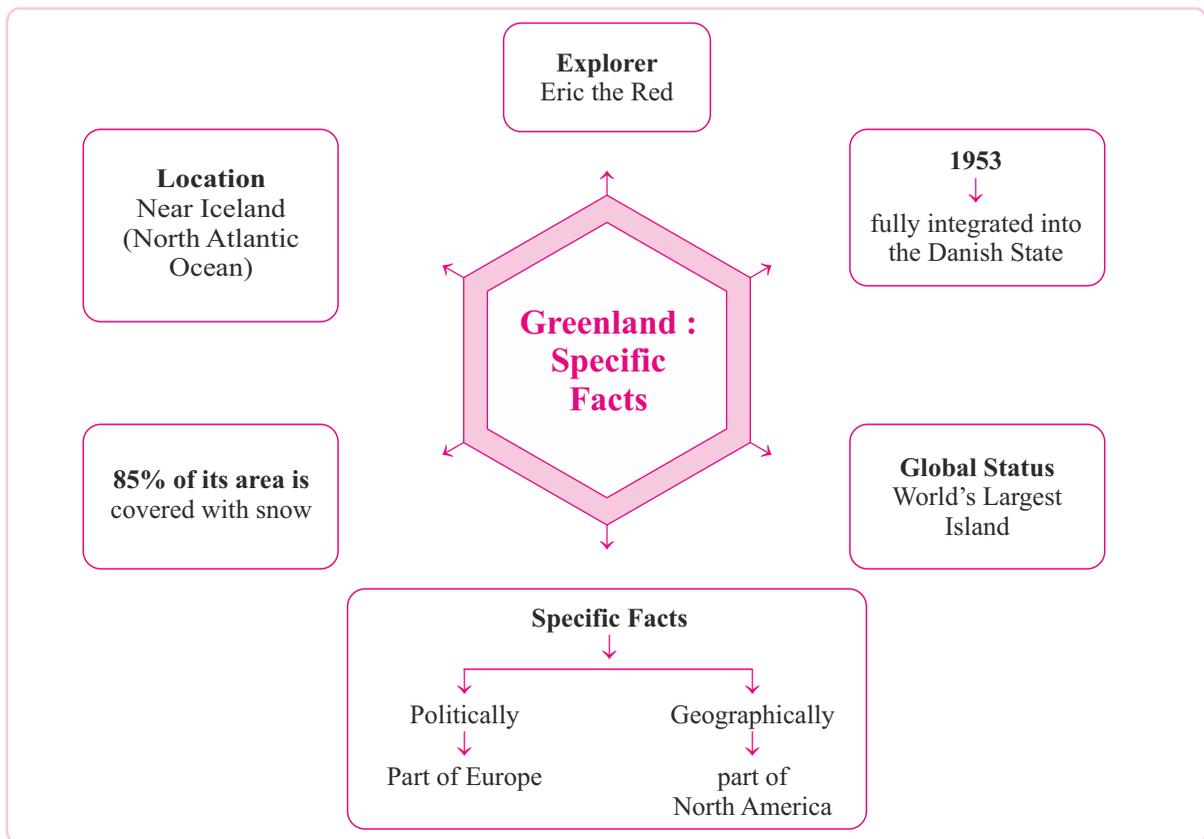
Countries of World and Their Borders



Dependent Territories

- The smallest country of South-Asia in terms of area
-**Maldives**
 - This country shares largest land boundary with India
-**Bangladesh**
 - Serbia and Macedonia are completely
-**Land Locked Country**
 - The Melanesia, Micronesia and Polynesia are
-**Subregion of Oceania**
 - A South American country with the longest north-Southern (latitudinal) length border is
-**Chile**
- Desert, located in Kazakhstan and Turkmenistan, lying east of Caspian Sea
-**Karakum Desert**
 - Great Victoria desert is located in
-**Western Australia and Southern Australia**
 - Dast-e Kavir desert is located in
-**Iran**
 - Desert, located in Uzbekistan, Turkmenistan and Kazakhstan
-**Kyzylkum Desert**
 - Taklamakan desert is located in
-**China (Region of Xinjiang Province)**

Dependent Territories



Islands of World	Owner Country
Aleutian Islands	USA
Bear Islands	Norway
Franz Josef Islands	Russia
Azores Island	Portugal

Note

- A dependent territory is a territory that does not possess full political independence sovereignty as a sovereign state yet remains politically outside the controlling State's integral area.

Important Facts

- | | |
|--|---|
| <ul style="list-style-type: none"> ➤ Medeira Island group is in control of
-Portugal ➤ Martinique Island, located in the east of Caribbean sea is under control of - France ➤ Falkland Islands located in the South Atlantic ocean, is a -British overseas Territories | <ul style="list-style-type: none"> ➤ Bouvet Island located in South Atlantic Ocean, is -under Spain's sovereignty ➤ Canary Islands located in the North-West of Africa is -under sovereignty of Spain ➤ Christmas Island located in the Indian Ocean is under the control of -Australia |
|--|---|

Land-Locked countries

Important Facts

- Continent, in which no country is land locked
-North America
- The only one Landlocked country of South-East Asia **-Laos**
- Largest Landlocked country of Asian continent
-Kazakhstan
- Land-locked country of South America continent
-Bolivia and Paraguay

Note :

Land-locked countries are those which do not have a coastline or which international borders do not meet with the sea. There are 44 land-locked countries in the world.

Older Names of Countries

Countries (New Name)	Old Name	Countries (New Name)	Old Name
Japan	Nippon	Belize	British Honduras
Iran	Persia	Cambodia	Kampuchea
Lesotho	Basutoland	Zimbabwe	Southern Rhodesia
Ethiopia	Abyssinia	Democratic Republic of Congo	Zaire
Botswana	Bechuanaland	Bangladesh	East Pakistan
Zambia	Northern Rhodesia	Malaysia	Malaya
Madagascar	Malagasy	Sri Lanka	Ceylon
Malawi	Nyasaland	Myanmar	Burma
Netherlands	Holland		

International Border Lines

Rio Grande River

Separates the southern border of United States of America from Mexico

Basin

↓
United States of America and Mexico

Mouth

↓
Gulf of Mexico

McMohan Line : Specific Facts

Characteristics :

defines boundary between India and China

Under Shimla convention, a treaty signed in 1914 (Agreement between Britain and Tibet)

Naming :

On the name of Sir Henry McMahon

Sir Henry McMahon

- Foreign Secretary of British India
- Chief negotiator of the convention at Shimla

Recognition

China	India
↓	↓
Temporary line of control	Permanent National Border

Oceania : Countries and their capitals

Country
● Fiji

Capital
● Suva

Country
● Federated states of Micronesia

Capital
● Palikir

Country
● Australia

Capital
● Canberra

Country
● New Zealand

Capital
● Wellington

Country
● Papua New Guinea

Capital
● Port Moresby

Europe : Major Countries and their capitals

Country
● Ireland

Capital
● Dublin

Country
● Belgium

Capital
● Brussels

Country
● Belarus

Capital
● Minsk

Country
● Germany

Capital
● Berlin

Country
● Denmark

Capital
● Copenhagen

Country
● Finland

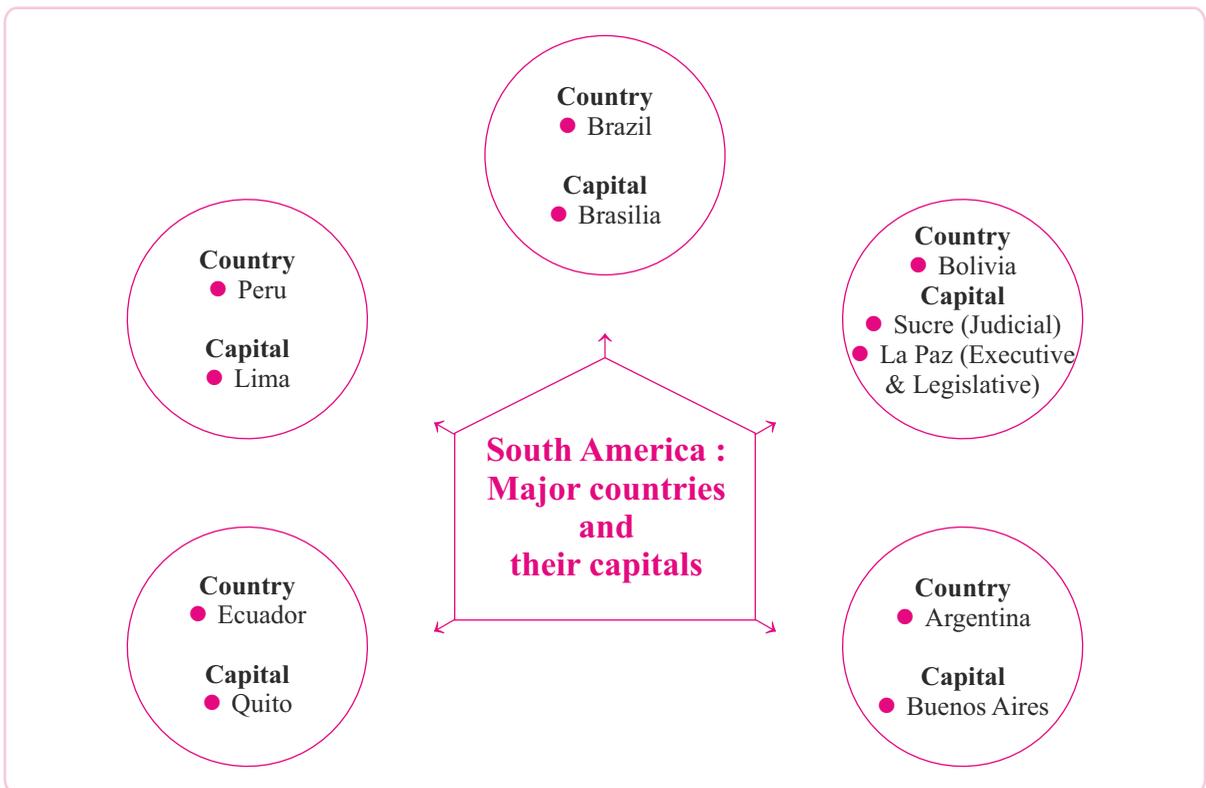
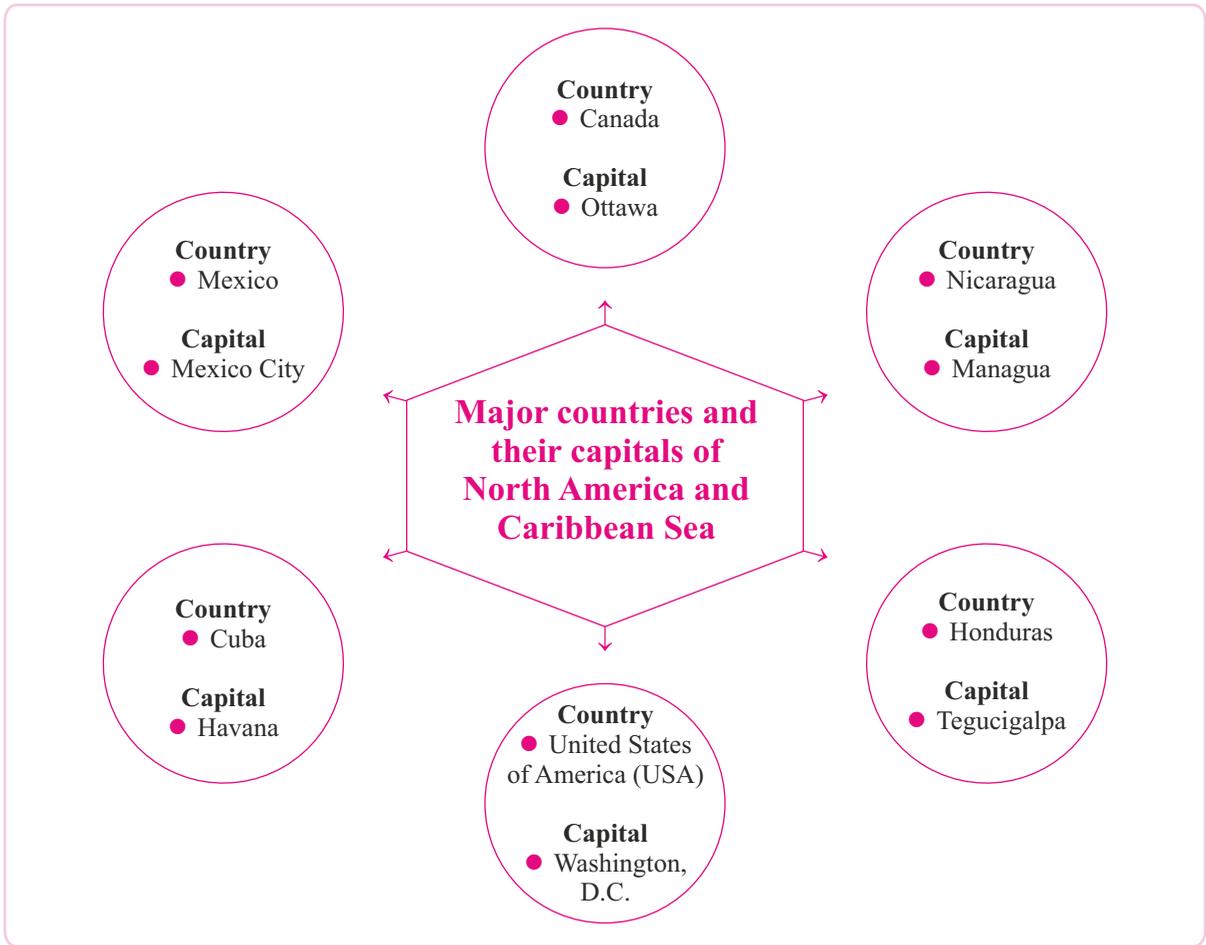
Capital
● Helsinki

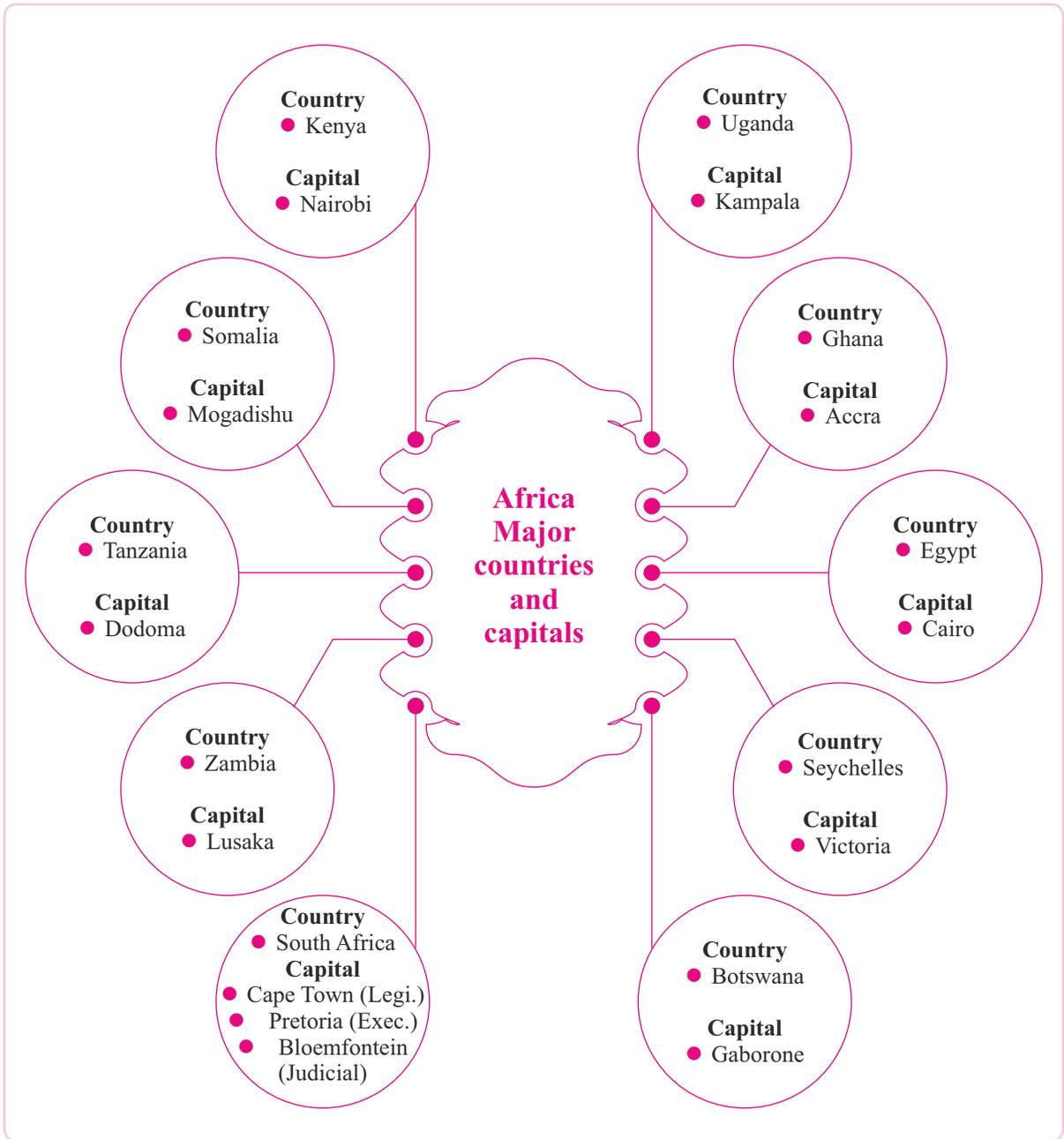
Country
● Norway

Capital
● Oslo

Country
● Portugal

Capital
● Lisbon



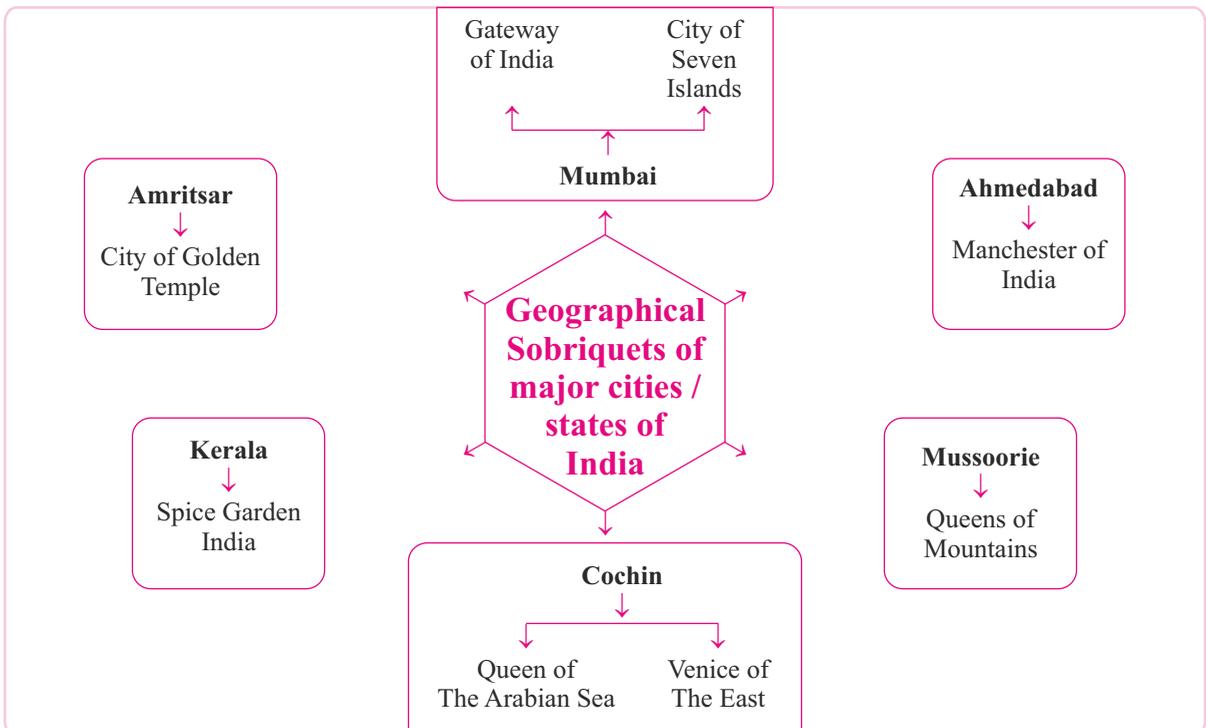
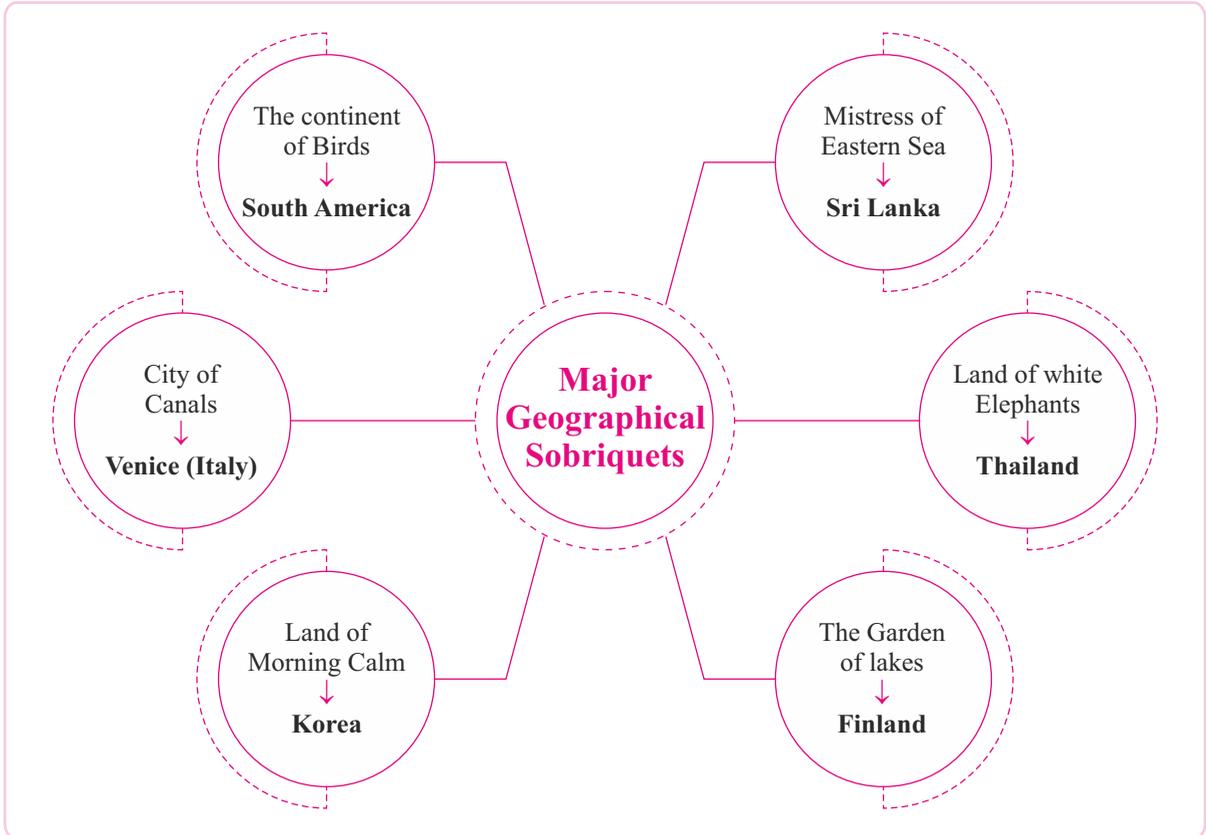


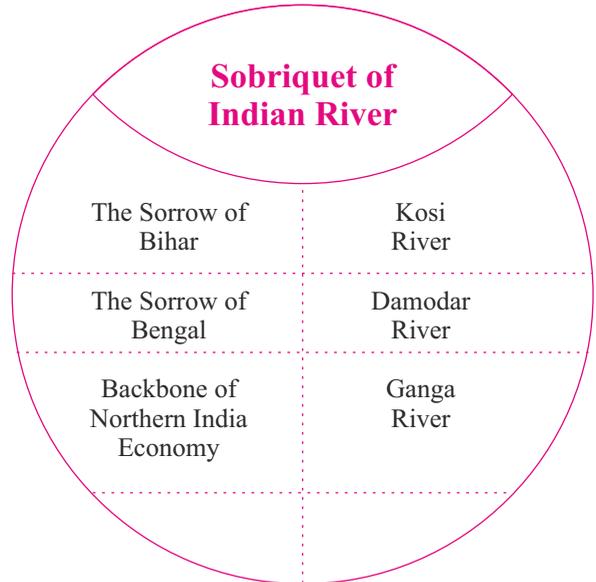
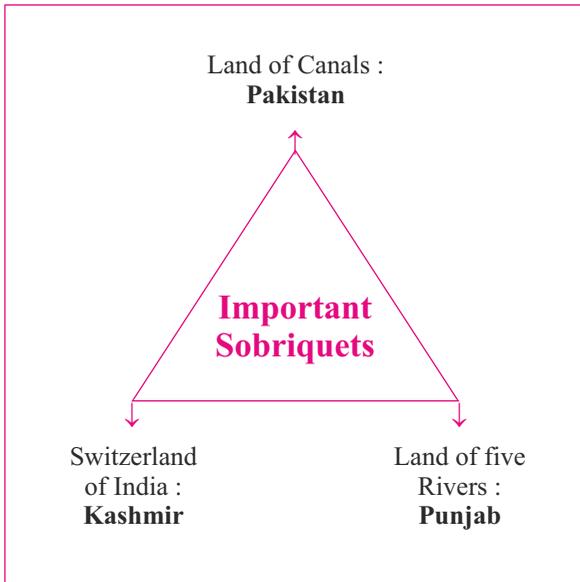
World Tour

Important Facts	
<ul style="list-style-type: none"> ➤ It is located in the North West province of South Africa between the Elands river and Pilanesberg mountains -Sun City ➤ It is situated on the bank of Arghandab river -Kandahar city (On the border of Pakistan in South East of Afghanistan) 	<ul style="list-style-type: none"> ➤ It is located on the bank of River Pedieos -Nicosia (Capital of Cyprus) ➤ Located on the bank of Lake Ontario - Hamilton and Toronto cities of Canada ➤ One of the highest elevation city in the world -Lhasa (Tibet)

Geographical Sobriquets (Nickname)

There are many countries in the world which are often known by their geographical sobriquets due to their geographical location and climate

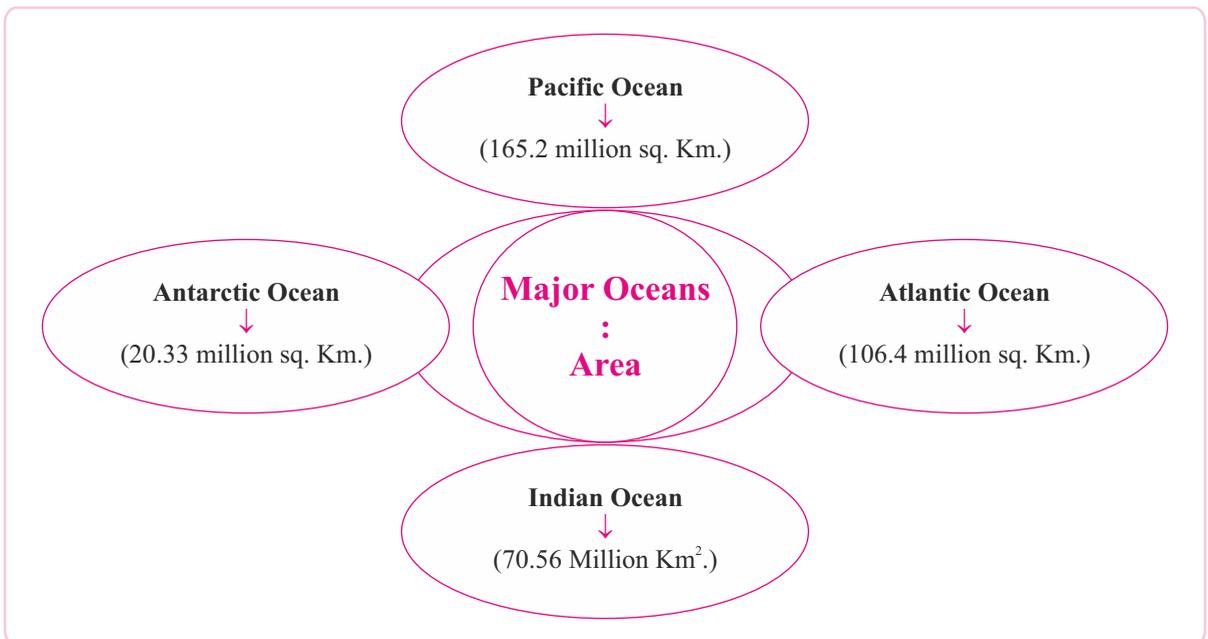




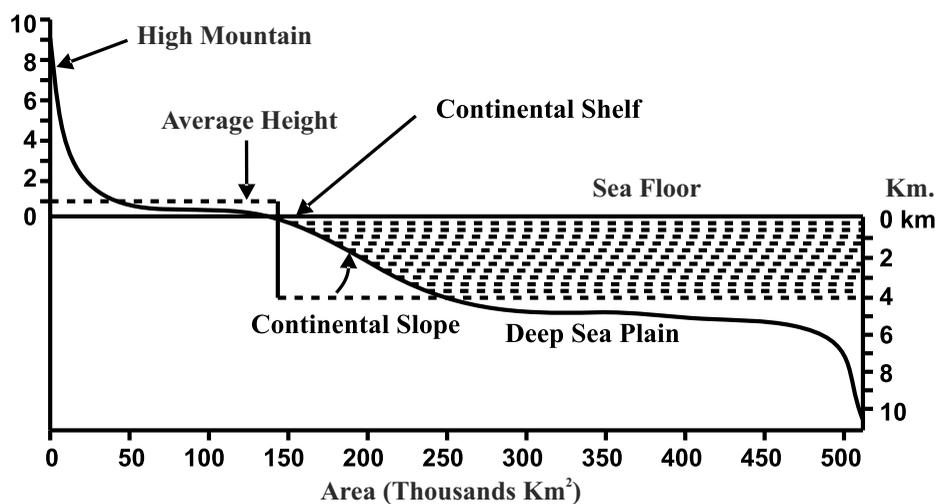
Important Facts

➤ Land of Golden Pagodas -Myanmar	➤ It is called “Pearl of Siberia” -Lake Baikal
➤ Holy Land -Palestine (Jerusalem)	➤ It is called “Oil City of Europe” -Aberdeen
➤ Windy City -Chicago (USA)	➤ It is known as “Queen of Chotanagpur” -Netarhat (Jharkhand)
➤ City of Golden Gate -San Francisco	➤ It is known as “country of rivers” -Bangladesh

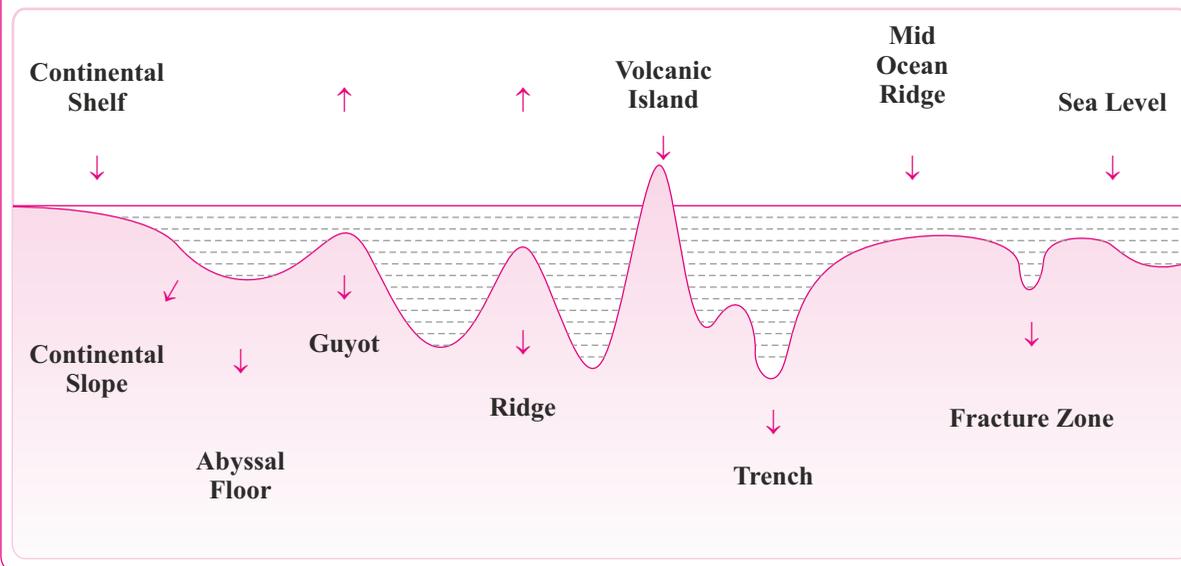
The Hydrosphere



Hypsometric Curve

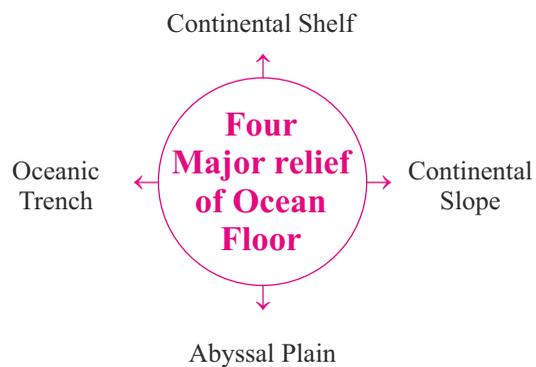


Relief of Ocean Floor



Important Facts

- Horizontal line used to measure height and depths
-Datum Line
- Area covered by water on the total surface area of earth
-About two-third
- Widest part of Ocean Floor is
-Deep Ocean Plain
- 'The Ninety east ridge' is located in
-Indian Ocean
- In our satellite, it has highest amount of soft water
-Continental and Mountainous Glaciers



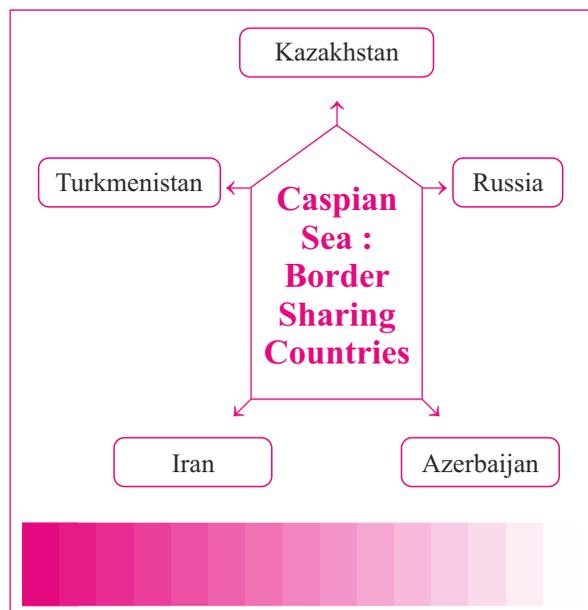
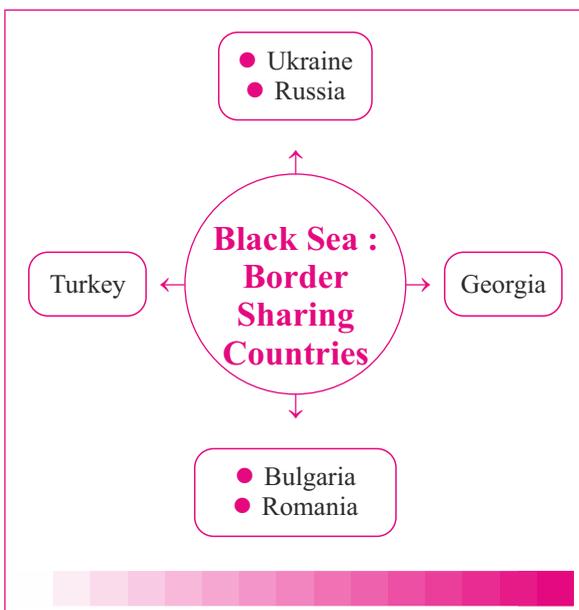
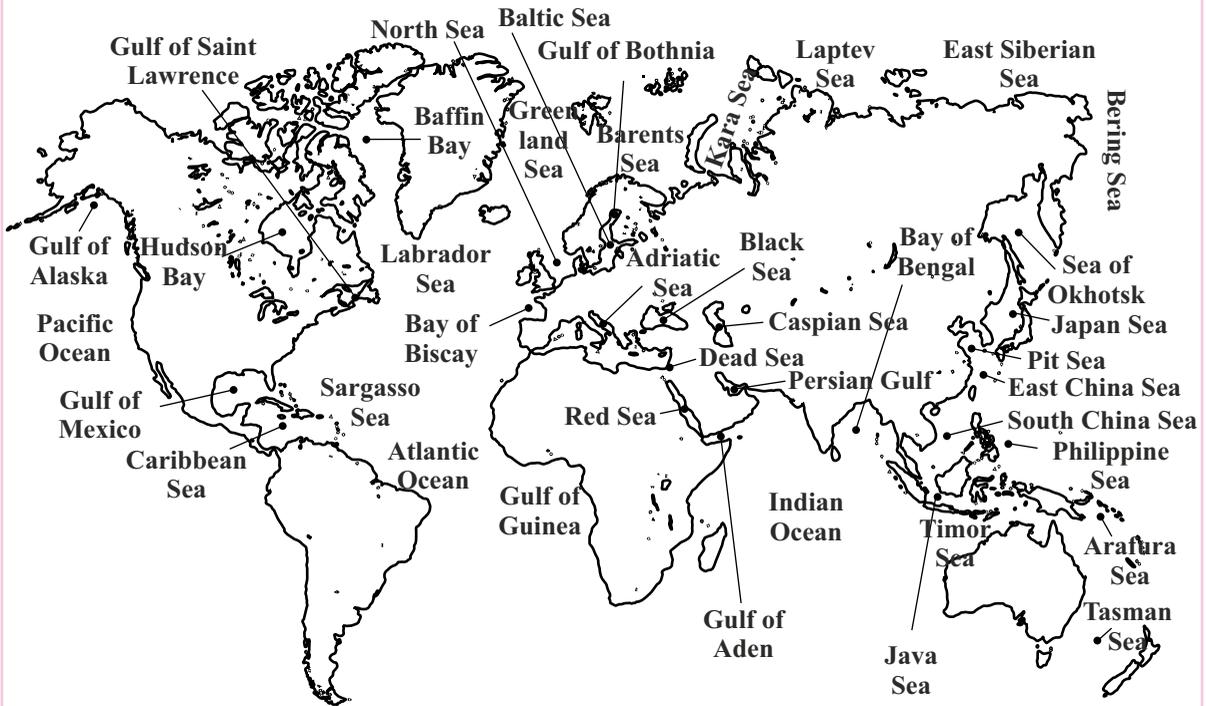
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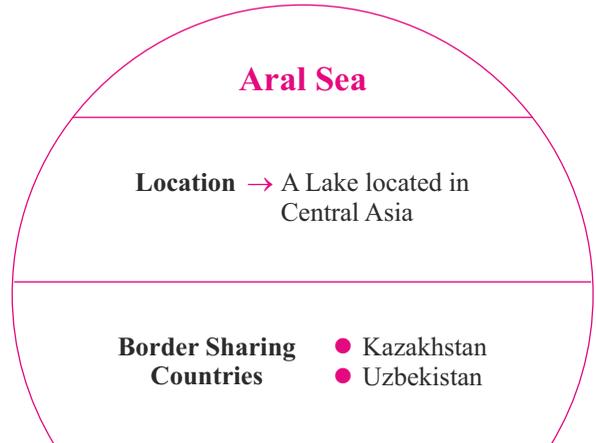
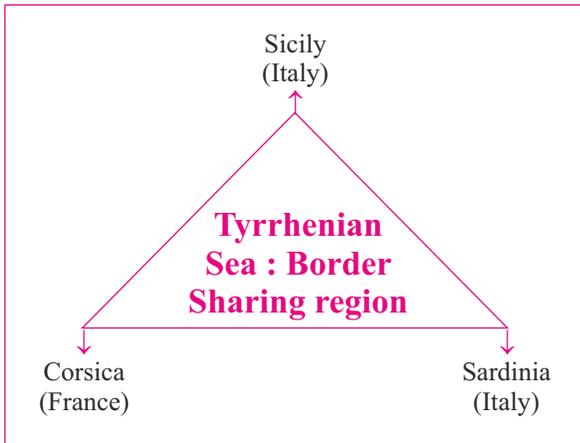
World Important Seas

Ocean is a continuous body of salt water covering more than 70% of Earth's surface.

The ocean play an essential role in regulating the climate on earth, providing food and oxygen maintaining bio-diversity and also in transport sector.

Major Sea and Oceans



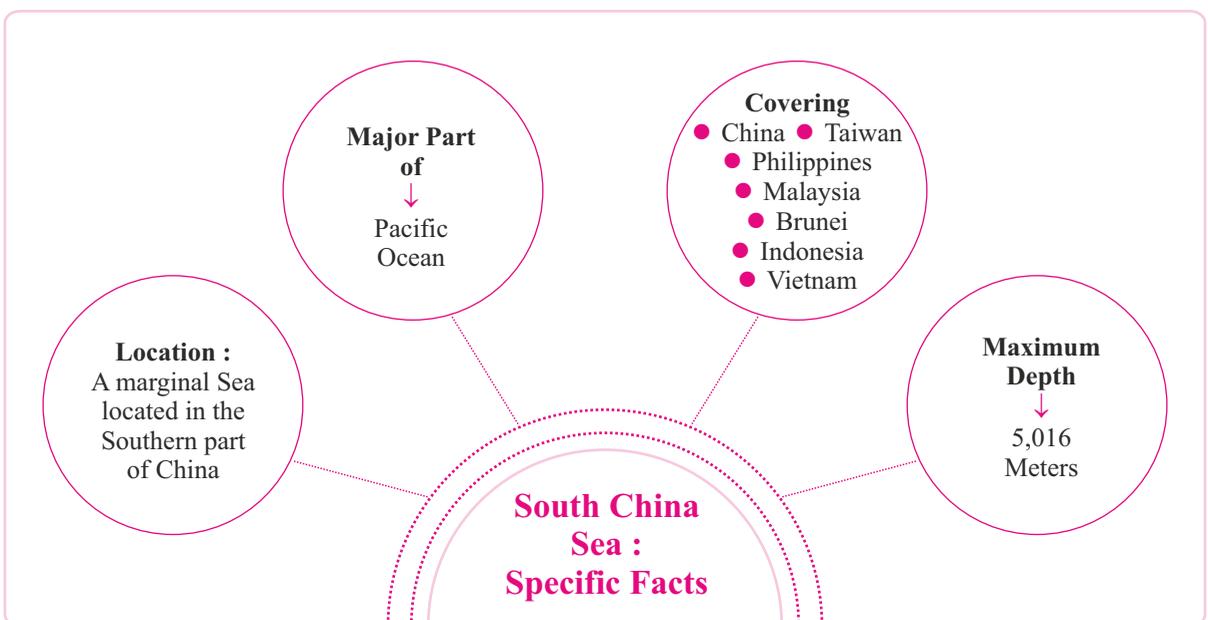


Important Facts

- It is largest of all seas enclosed by land
-**Mediterranean Sea**
- Sea that is also known as continental Sea
-**Black Sea**
- It is the word largest salt water lake
-**Caspian Sea**
- It is bounded by the gulf stream on the west, the North Atlantic ocean on the North, the canary current on the east and the North Atlantic equatorial current on the South
-**Sargasso Sea**

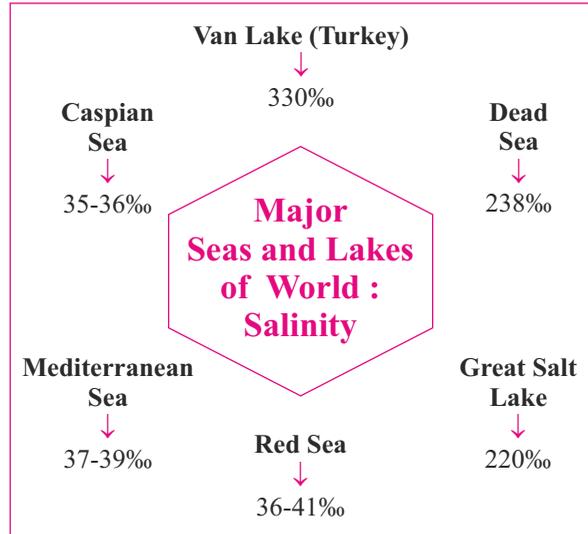
Important Facts

- Baku, the capital of Azerbaijan is located on
-**The shores of Caspian sea**
- Turkey is located between
-**The Black Sea and the Mediterranean Sea**
- The sargasso Sea is characterized by
- **Typical marine vegetation**
- Red Sea is an example of
-**Axial trough**
- OMT stands for
-**Ocean Mean Temperature**



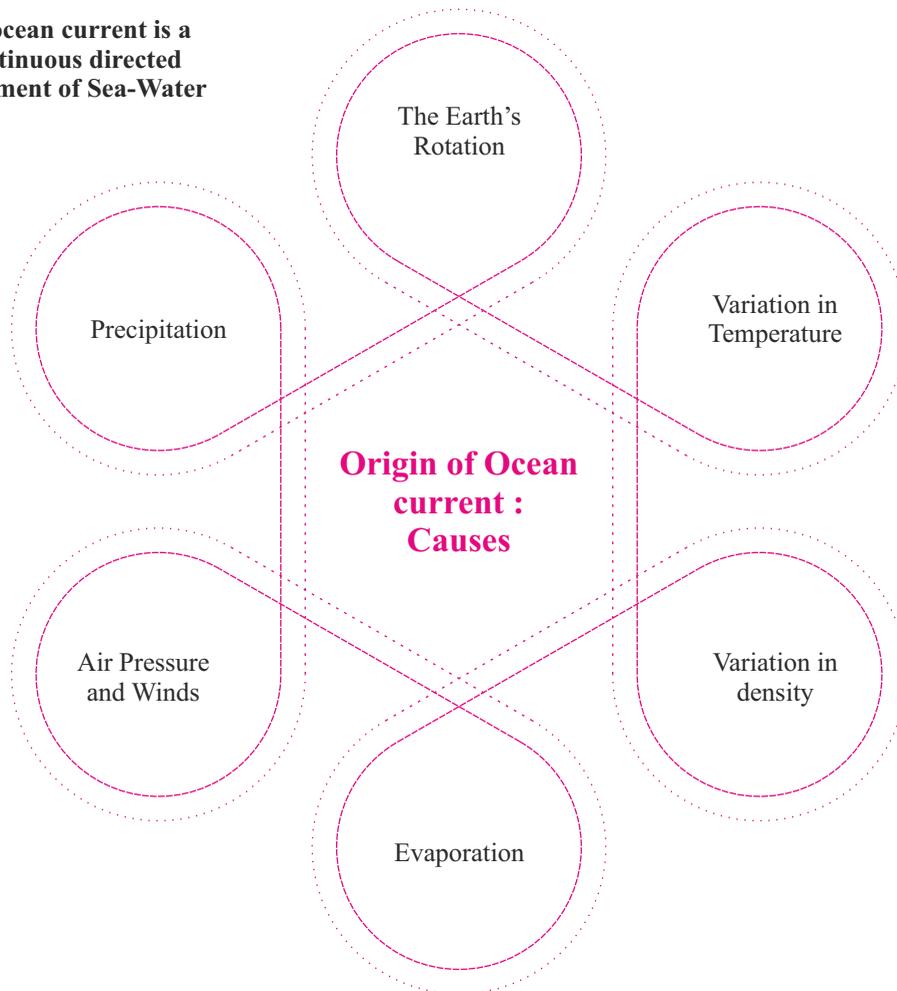
Salinity

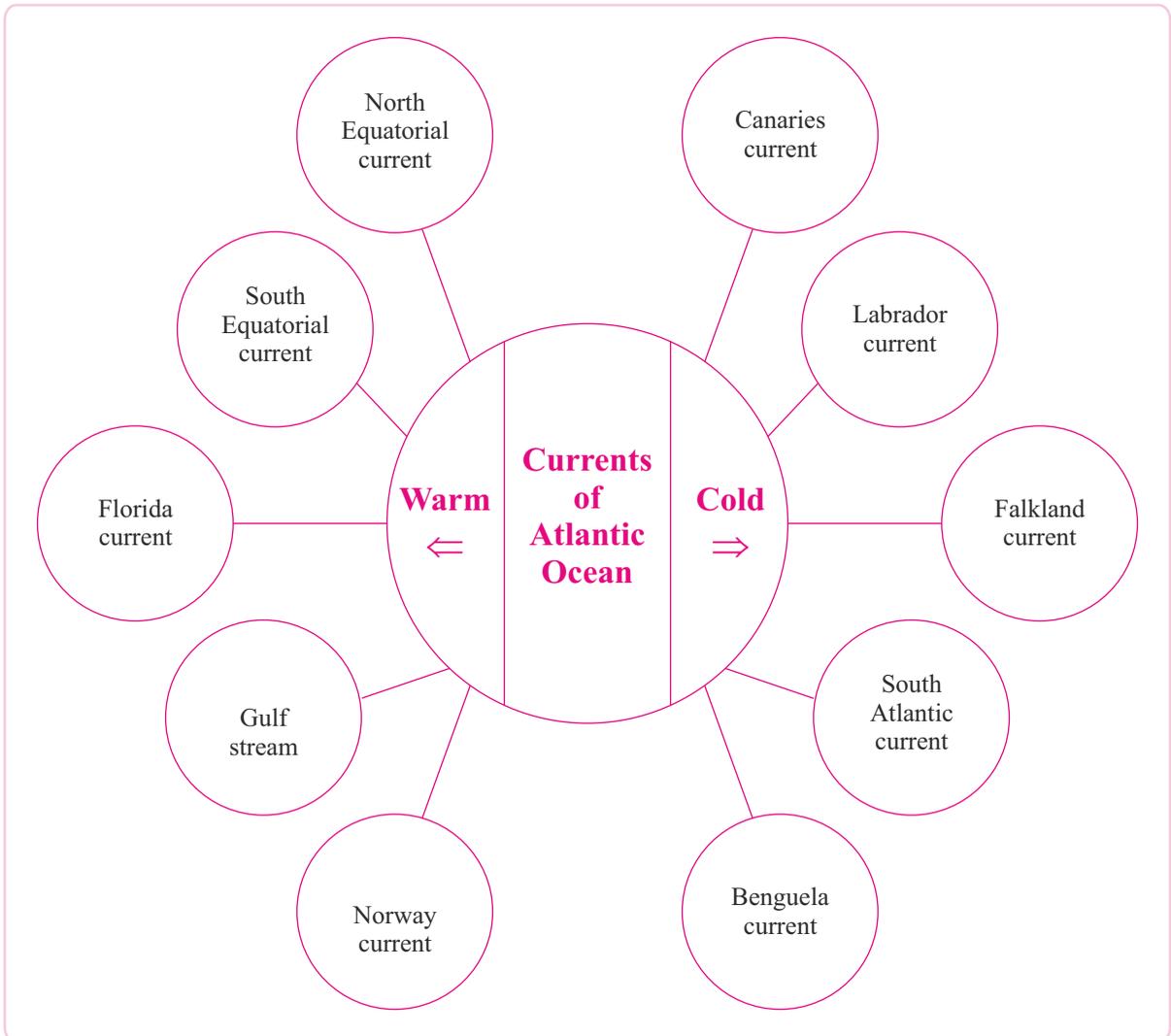
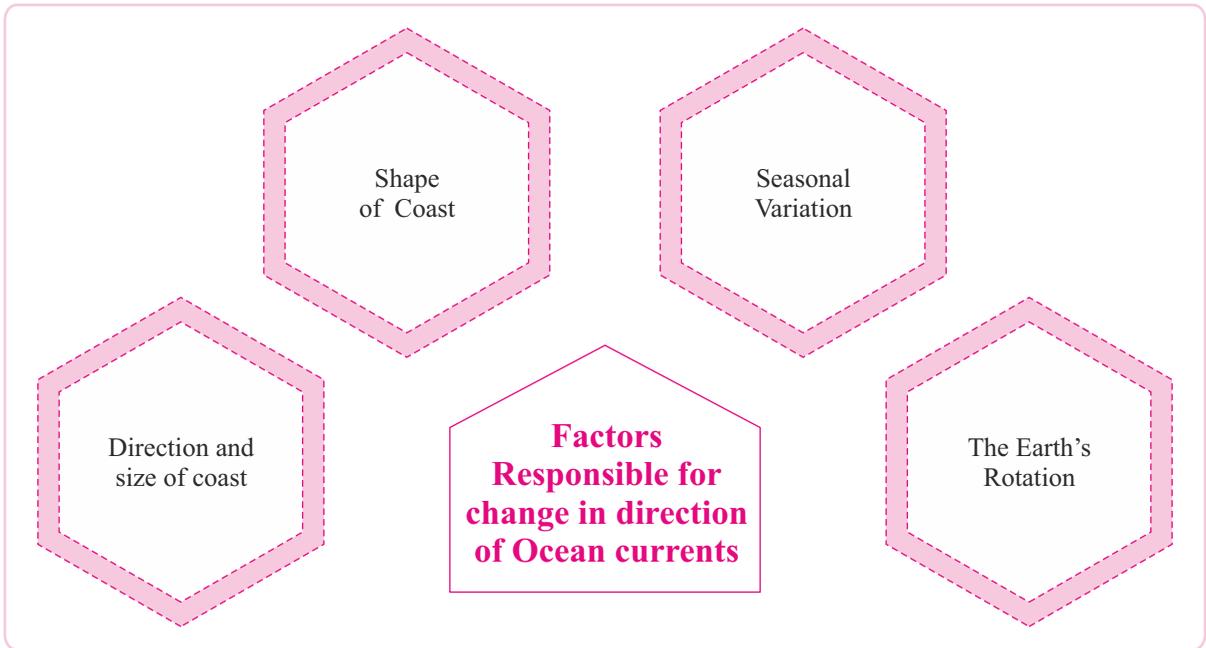
Salt	Salinity	Percentage
Sodium Chloride	27.213	77.8
Magnesium Chloride	3.807	10.9
Magnesium Sulphate	1.658	4.7
Calcium Sulphate	1.260	3.6
Potassium Sulphate	0.863	2.5
Calcium Carbonate	0.123	0.3
Magnesium Bromide	0.076	0.2

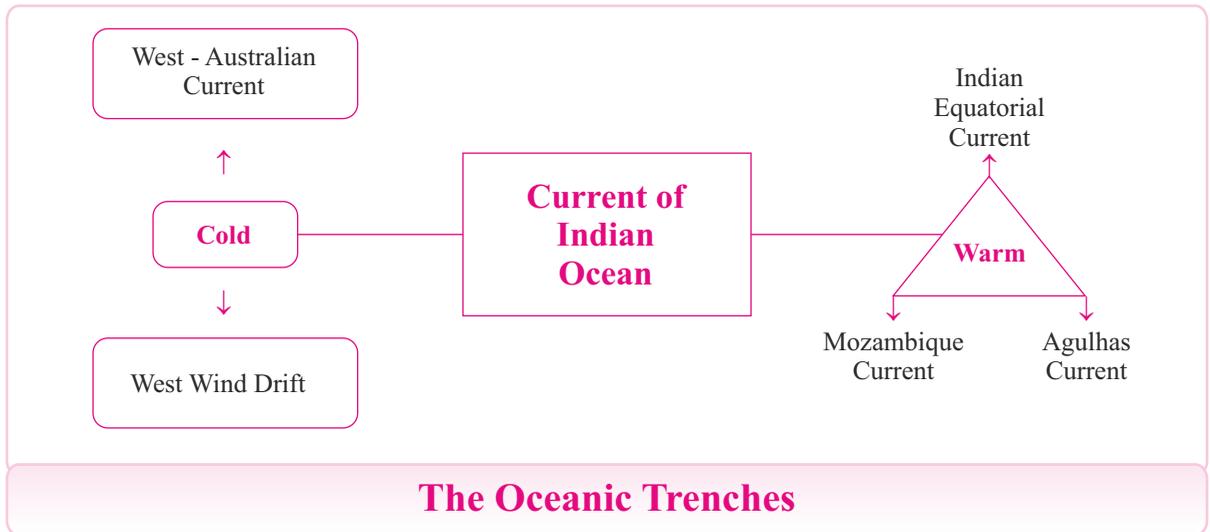
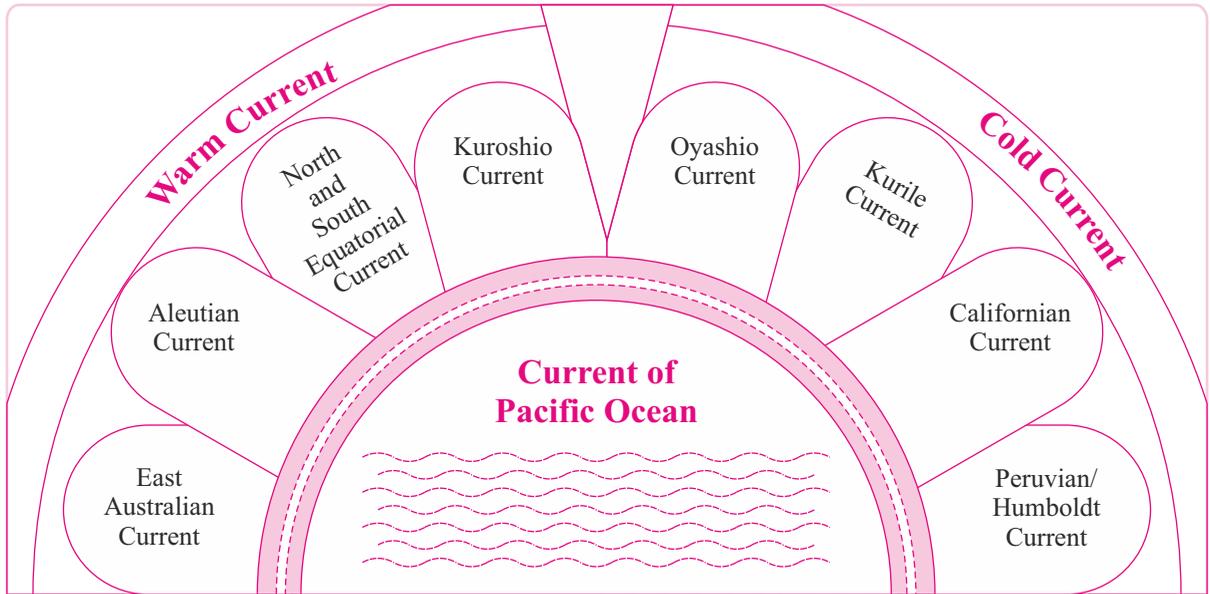


The Ocean Currents

An ocean current is a continuous directed movement of Sea-Water

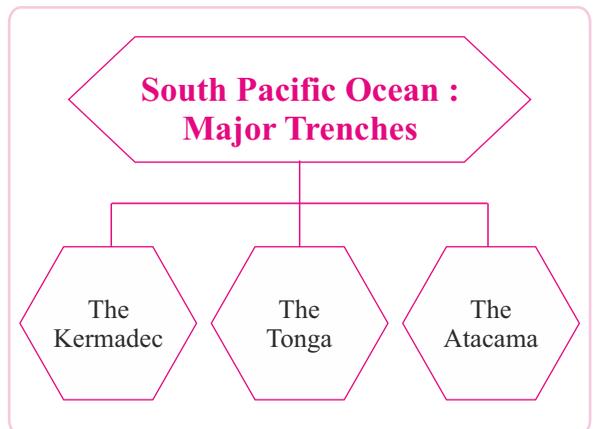
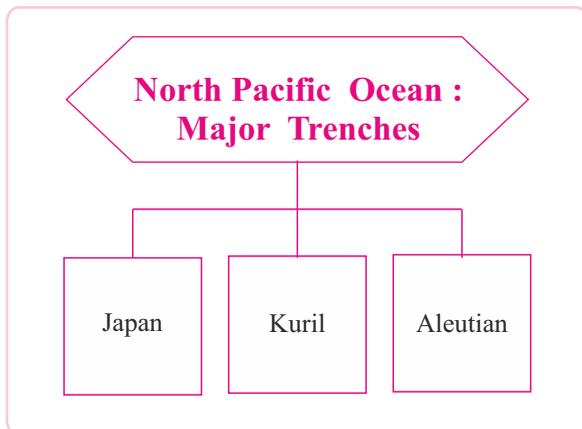


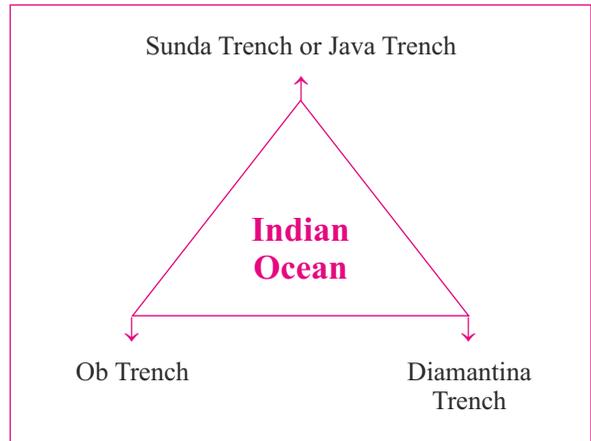
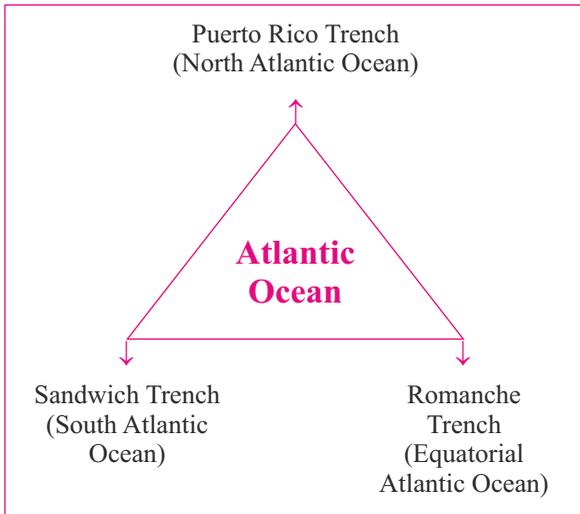




The Oceanic Trenches

Oceanic Trenches are the deepest parts of the Oceans.
Trenches accounts for approximately 7% of Ocean's relief
They are more often found along the coast in front of the mountain ranges.





Important Facts

- Deepest trench in the world
-Mariana Trench
- Deepest trench in Indian Ocean
-Java Trench

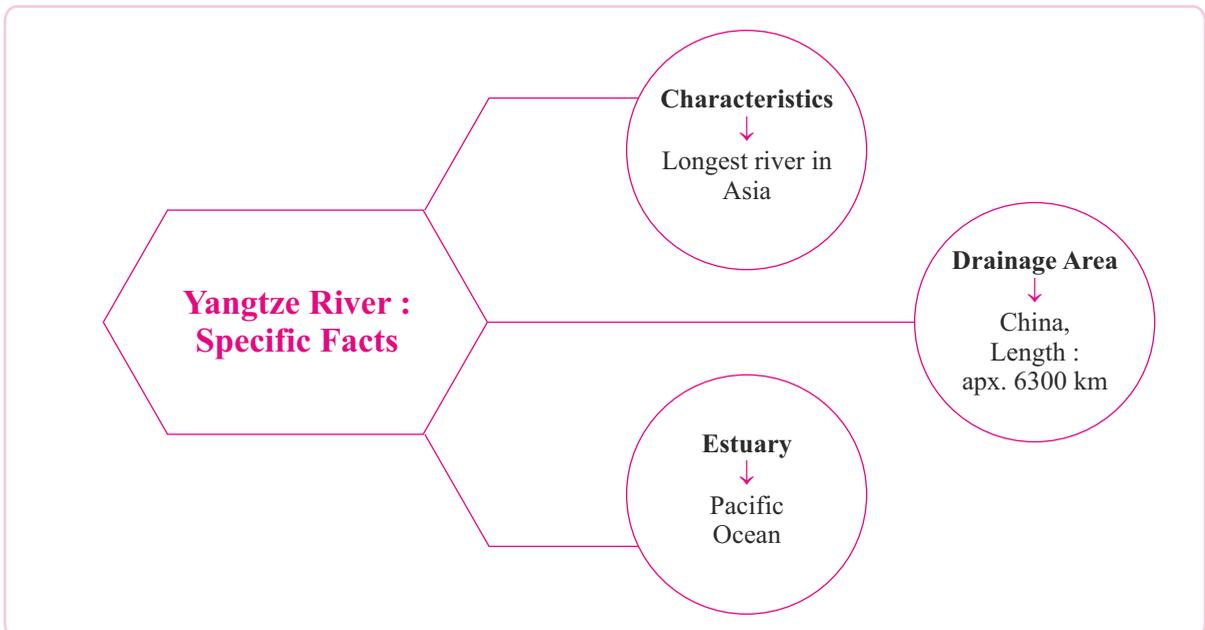
Exam Facts

- Average Salinity of Oceans -3.5%
- It has maximum Contribution to the salinity of ocean -Sodium Chloride
- Salinity is denoted by -Halocline
- Lake with maximum salinity -Lake Assal (398%)

Rivers

Important Rivers of Asian Continent

Rivers are known as 'cradle of civilization' and Asia is known as birthplace of every religion. Mesopotamia civilization nurtured in the region enclosed by Dajla-Farat (Tigris - Euphrates) river system and Harappa Civilization prospered in Indus River system.



Salween River

- **Origin**
 - Tibet
- **Estuary**
 - Gulf of Martaban (Andaman Sea)

Amur River

- **Characteristics**
 - It flows through the border of China and Russia
- **Estuary**
 - Strait of Tartary (Pacific Ocean)

Taurus Mountains

Origin

Tigris River

- Estuary**
 - ↓
 - Persian Gulf
- Drainage Area**
 - Turkey
 - Syria
 - Iraq

Breg river (Germany)

Origin

Danube River

- Characteristic**
 - ↓
 - Second Largest River of Europe
- Drains into**
 - ↓
 - Black Sea

Rhine River

- **Origin**
 - Confluence of Rein Anterior/Vorderrhein and Rein Posterior/Hinterrhein

Estuary

- North Sea

Coastal City

- Bonn (Germany)

Characteristic

- Busiest inland waterway of Europe

Major Rivers of European Continent

Volga River: Specific Facts

Characteristics
Longest river of Europe

Origin
Valdai Hills

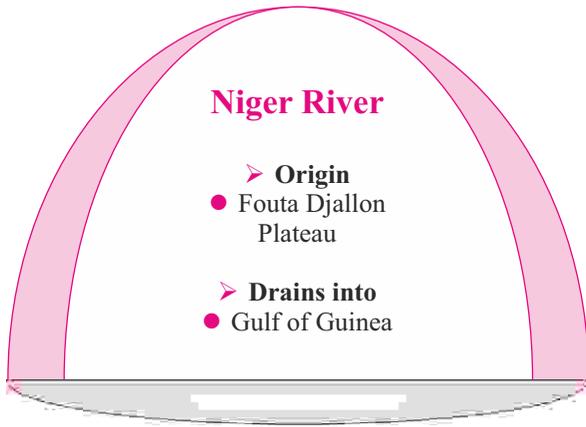
Estuary
Caspian Sea

Major Rivers of African Continent

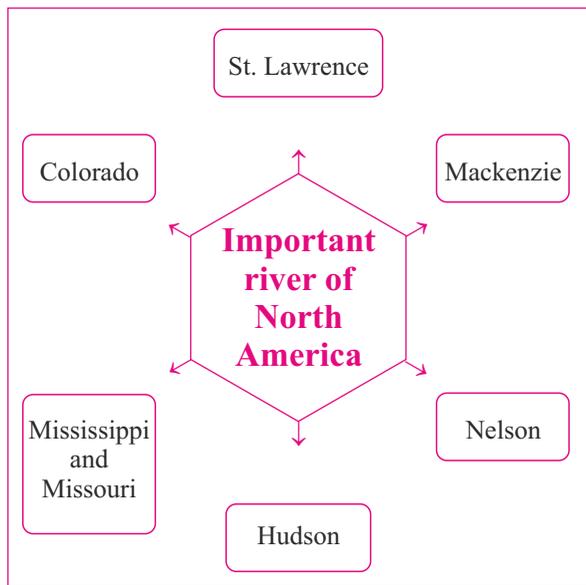
Congo River

Specific Facts

- Other Name
 - Zaire
- Length
 - apx. 4700 km.
- Characteristics
 - Crosses the equator twice
- Drainage Area
 - more than 40 Lakh Sq. Km.

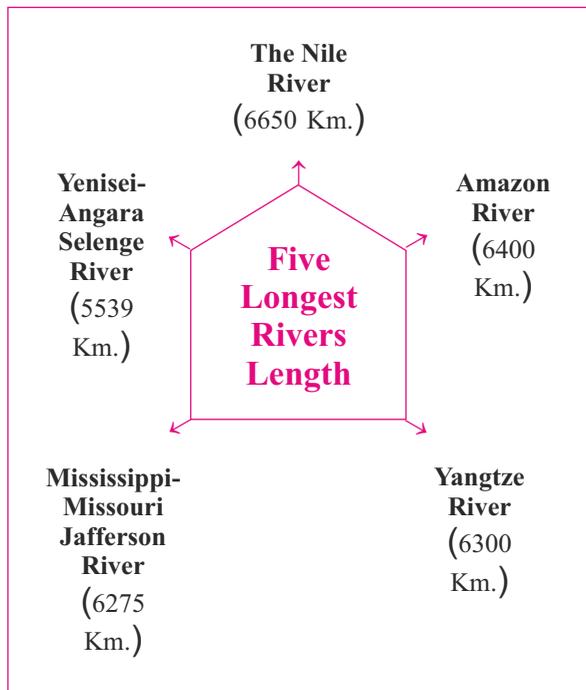


International Boundaries formed by Rivers	
River	Countries
The Shatt-al-Arab	Iraq and Iran
Yalu	North Korea and China
Mahakali	India and Nepal
Kaladan	India and Myanmar
Dnieper	Belarus and Ukraine
Orange	Namibia and South Africa
Congo	Republic of Congo and Democratic Republic of Congo
Douro	Portugal and Spain



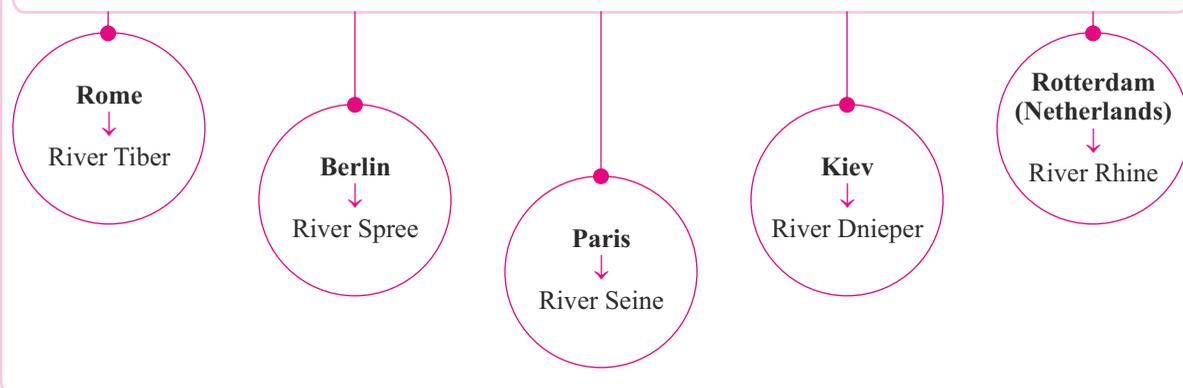
Important Facts

- The largest area of world in terms of drainage area - **Amazon (70 Lakh Sq. Km.)**
- River of Africa, which crosses the Tropic of Capricorn twice - **Limpopo River**
- The Itasca Lake is the source of river - **Mississippi**
- It is known as lifeline of the country Myanmar - **River Irrawaddy**
- It is known as 'Ganga of Italy' - **River Po**
- It rises from the western Russian city of Tula and drains into the sea of Azov. - **River Don**
- Name Two rivers that meet and the collective water body is known as the River Nile - **White Nile and Blue Nile**
- River that connects the great lakes to Atlantic Ocean - **St. Lawrence river**
- It determines the border of Brazil and Paraguay - **Parana River**



Towns and cities along the Banks of Rivers

Cities on the banks of European Rivers



Exam Facts

- Fiji Island is located in - the Pacific Ocean
- Balearic Islands is located in - the Mediterranean Sea
- Majuli, the world's largest river island belongs to - the Brahmaputra River
- The Largest number of islands - In the Indonesia
- An island located between the Caribbean sea and the Atlantic Ocean that is known for its salt-plate resources -St. Martin's Island

Important Facts

- Perth city of Australia is located -On the bank of Swan River
- Lahore city of Pakistan is located -On the banks of River Ravi
- Washington (D.C.) city of America (U.S.A.) is located on -the bank of Potomac River
- Diego Garcia is located in -the Indian Ocean

The Islands

An island is a piece of land surrounded on all sides by water.

Major Islands of World



Geographical Location North America continent

Autonomous
Constituent
Country in
Kingdom of
Denmark

World
Largest
Island

Greenland : Specific Facts

Capital
'Nuuk'

Area
(21,66,086 Sq. Km.)

Islands of Japan : Specific Facts

- Northernmost Island of Japan
 - **Hokkaido**
- Island located in center of Japan
 - **Honshu**
(Largest island of Japan)
- Island located in South West →
 - Kyushu
 - Shikoku

Indonesia

Borneo Islands : is divided among

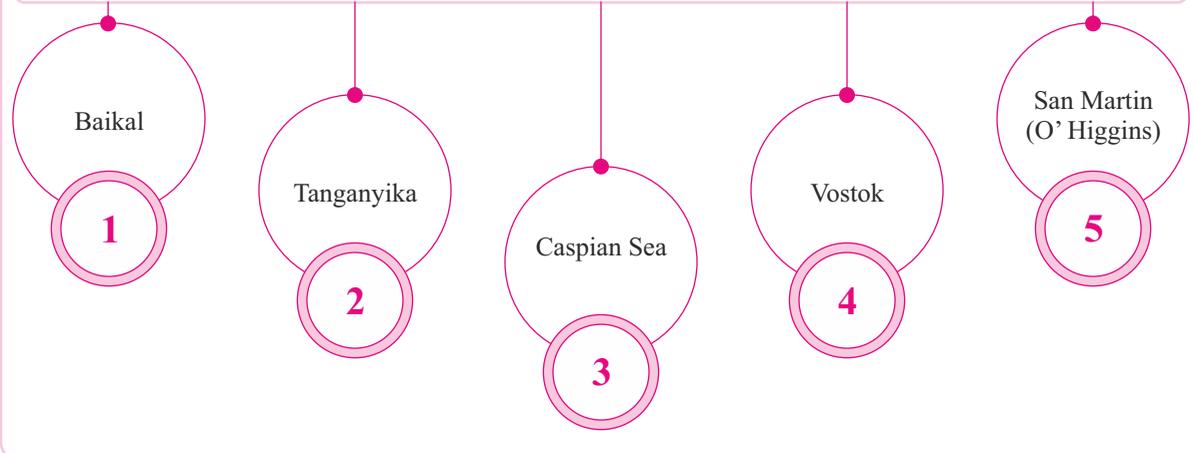
Brunei

Malaysia

Important Facts

- The Kalimantan region of Indonesia is a part of **-Borneo Islands**
- Second and third largest islands of the world
-New Guinea and Borneo respectively.
- Fourth largest islands in the world
-Madagascar (African continent)

Five Deepest Lakes of World



Important Lakes of World

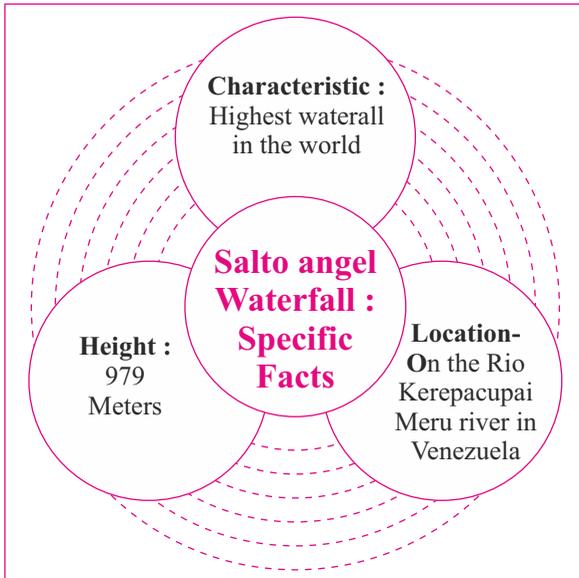


Five Largest Lakes in the World based on volume



Water Fall

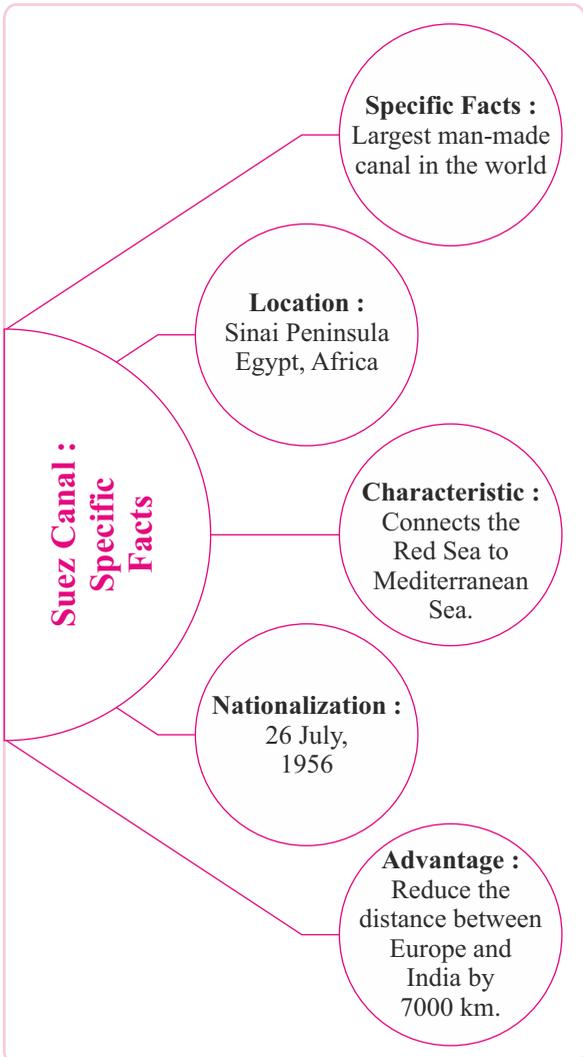
When the water of river falls from a height to steep slope i.e. at the top of cliff with high velocity then it is called a waterfall



Exam Facts

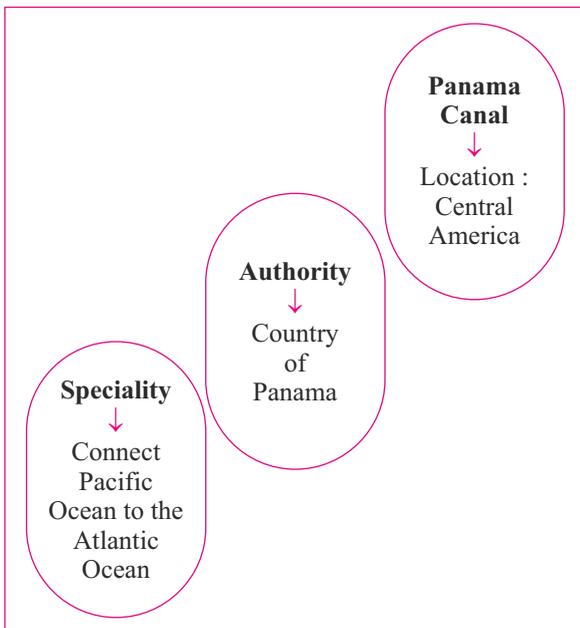
- The famous 'Finger Lake' is located in **-USA**
- Garden of lake **-Finland**
- Victoria Falls is related to **-Zambezi River**
- Niagara Falls is located on **-The Niagara River**

The Canals



Important Facts

- The Highest navigable lake in the world **-Titicaca (Peru and Bolivia)**
- Deepest and oldest lake of world **-Baikal Lake**
- Lake out of Michigan Superior, Ontario and Erie, which is completely located in America **Michigan Lake**
- Largest fresh water lake in the world **-Lake Superior**



Important Facts

- **New Water Way Canal**
 - **Country** → Germany
 - **Location** → Between North Sea & Rotterdam

Important Dams of the World

Important Facts

- A dam is a barrier that stops or restricts the flow of surface water create a reservoir. Reservoir is used for supply of irrigation, hydroelectricity generation, drinking water etc.

Important Dams of the World

Aswan Dam :
Location : Egypt
Construction on :
Nile River

Grand Coulee Dam :
Location : USA
Construction on :
River Columbia

Kariba Dam Location :
On the border of
Zambia and
Zimbabwe
Construction on :
River Zambezi

Oroville Dam Location :
USA
Construction on :
River Feather

Some Other Important Dams of world

Itaipu Dam
↓
Construction on -
The Parana River

Hoover Dam
↓
Construction on -
River Colorado

Xiaowan Dam
↓
Construction on -
The Mekong
River

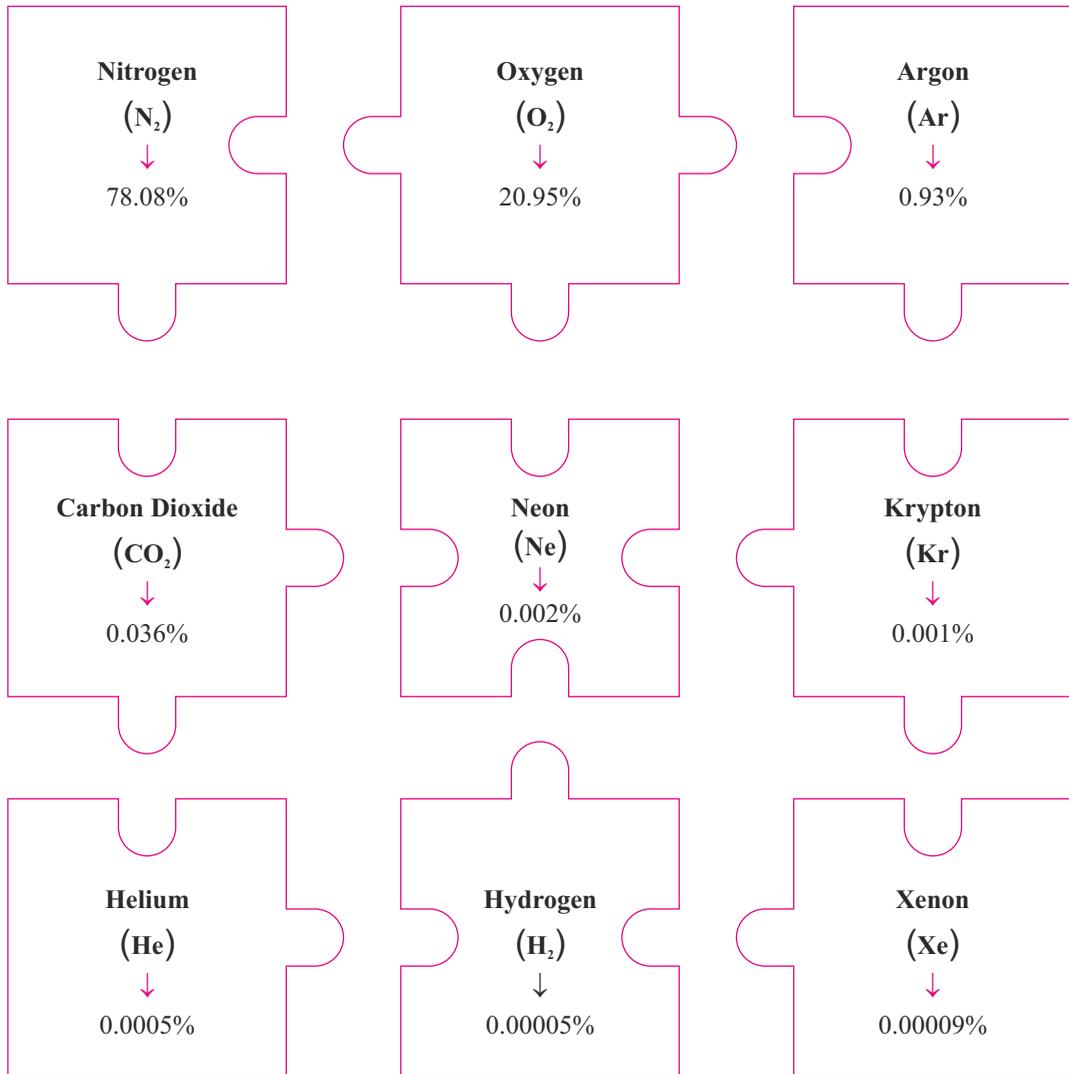
Nurek Dam
↓
Construction on -
The River Vakhsh

Kurobe Dam
↓
Construction on -
River
Kurobe

Atmosphere

The Atmosphere is a mixture of different gases :
Among all these gases oxygen and carbon dioxide are
important for the existence of Humans and Plants respectively

Gases of Atmosphere and their presence in atmosphere (in percentage)



Cyclones and their local names

Cyclone

Willy-Willy
Hurricanes
Typhoons
Baguio
Cyclone
Tornados

Country

Australia
USA
China
Philippines
India
Caribbean Sea and
North America Region

Winds of World

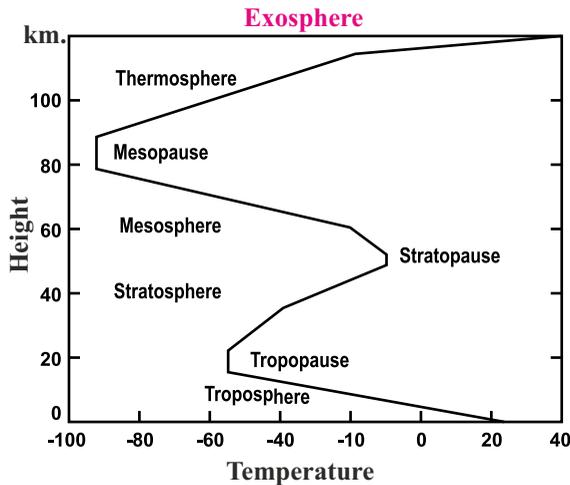
Region

- Alps Mountain
- Adriatic Coast
- Spain and France
- Egypt
- USA(Rocky Mountain)
- Sudan
- Mediterranean
Sea to Sahara Desert

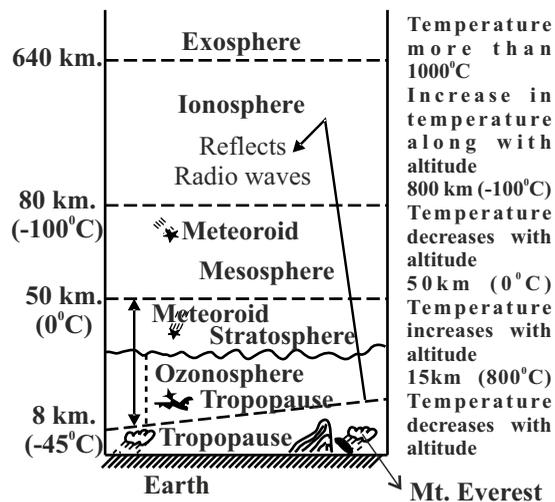
Nature of Wind

Foehn (Warm)
Bora (Cold)
Mistral (Cold)
Khamsin
Chinook (Warm)
Haboob (Cold)
Sirocco (Warm)
(Blood rain in
Italy)

Stratification of Atmosphere



Structure of Atmosphere



Troposphere : Specific Facts

Definition :
The Lowest layer of atmosphere

Height :
apx. (8 - 15 km.)

Average Height :
12 km.

Troposphere : Key Features

Decrease of temperature 6.5°C with an increase of every 1000 mt. in altitude

Layer related to all weather phenomena

Height of Troposphere

More at Equator

Low at poles

Related to Cloud, Fog, Storm etc.

Important Facts

- Atmospheric layer which is used for telecommunication system
-Ionosphere
- Ozone layer is mainly located in
-Stratosphere
- Example of permanent gases present in atmosphere is
-Mainly Nitrogen, Oxygen and Argon
- Lowest layer (vertically) of Atmosphere
-Troposphere

Ozone Layer

Location

In the lower part of stratosphere
↓
At an altitude of 15 - 35 km.

Characteristics

absorbs ultra-violet radiation and shields life on the earth from an intense and harmful form of energy

Cirrus Cloud

Occasional clouds on the lower surface of stratosphere

Stratopause

Upper ceiling of Stratosphere

Stratosphere : Specific Facts

- Ideal layer for commercial jets
- Negligible seasonal events
- **Speciality-** Presence of very low amount of water vapor in the air
- Second layer of earth's atmosphere
- **Location** - between troposphere and Mesosphere
- **Extension-** Up to the height (altitude) of 50 km from the upper boundary of the troposphere

Mesosphere

- **Extension**
 - Upto 50 - 80 km above earth surface
- **Characteristic**
 - Decrease in temperature with height
- **Mesopause**
 - Upper ceiling of Mesosphere

Thermosphere

- **Extension**
 - Atmospheric part above the Mesosphere
- **Characteristic**
 - A rapid increase in temperature with Mesosphere
- **Sub - Layer**
 - Ionosphere
 - Exosphere

Extension :

Between
apx.
80 to 640 km.

Ionosphere : Specific Facts

➤ Different layers

- **D layer-** Reflection of low frequency radio waves
- **E layer-** Reflect and send high frequency Radio waves to earth
- **F and G layer** - Examples of main layer of Ionosphere
- **Note** - 'F' layer is also called 'Appleton layer'.

Characteristics :

Related to the phenomena of Aurora Borealis and Aurora Australis

Exosphere

- **Extension**
 - Top most layer of the atmosphere
- **Characteristic**
 - Communication Satellites are placed in this layer