CHAPTER -2 Physical Feature Of India

Introduction:

India is a large country with many different types of landforms like:

- Mountains
- Plains
- Deserts
- Plateaus
- Islands

Where you live affects what you see around you. For example:

- **In the plains, the land is flat and wide.**
- **In hilly or mountain areas, the land has steep slopes, valleys, and high peaks.**

❖ **Geological History of India:**

- The Peninsular Plateau is very old and stable. It is made of hard rocks like igneous and metamorphic rocks.
- The Himalayas and Northern Plains are newer in geological terms.
- The Himalayas are still growing and are an unstable zone, meaning earthquakes and landslides can happen.
- The Northern Plains were formed by rivers depositing alluvium (mud, sand, and clay).

❖ **Major Physical Features of India:**

India is divided into six main landform regions:

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

❖ **The Himalayan Mountains (Simple Explanation):**

- The Himalayas are young fold mountains (formed by plates crashing into each other).
- They are in the northern part of India and stretch from the Indus River (west) to the Brahmaputra River (east).
- They are the highest and most rugged mountains in the world.
- The total length is around 2,400 km.
- They are wider in Kashmir (400 km) and narrower in Arunachal Pradesh (150 km).
- The eastern Himalayas have more height variation than the western side.
- The Himalayas have 3 main ranges (from north to south):
    1. Himadri (Great Himalayas) – northernmost and highest, with peaks over 6,000 meters, includes Mount Everest and Kanchenjunga.
    2. Himachal (Middle Himalayas) – has many hill stations.
    3. Shiwalik (Outer Himalayas) – youngest, lowest hills.

Some Highest Peaks of the Himalayas

Peak Name	Country	Height (in metres)
Mt. Everest	Nepal	8,848 m
Kanchenjunga	India	8,598 m
Makalu	Nepal	8,481 m
Dhaulagiri	Nepal	8,172 m
Nanga Parbat	India	8,126 m
Annapurna	Nepal	8,078 m
Nanda Devi	India	7,817 m
Kamet	India	7,756 m
Namcha Barwa	India	7,756 m
Gurla Mandhata	Nepal	7,728 m

1 Great Himalayas (Himadri)

- **Northernmost and highest range**
- Made of **granite** (a hard rock)
- Always covered in **snow**
- Many **glaciers** (like Gangotri) start from here
- **Asymmetrical folds** (uneven shape)

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2 Lesser Himalayas (Himachal)

- Lies **south of the Himadri**
- Very **rugged and rocky**
- Made of **compressed and altered rocks**
- Height: **3,700 to 4,500 metres**
- Width: **About 50 km**

Important Ranges:

- Pir Panjal (longest)
- Dhauladhar
- Mahabharat

Famous Valleys:

- Kashmir Valley
- Kangra Valley
- Kullu Valley

Popular for **hill stations** like Shimla, Manali, Gulmarg

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3 Outer Himalayas (Shiwaliks)

- **Southernmost** range of the Himalayas
- Height: **900 to 1,100 metres**
- Width: **10 to 50 km**
- Made of **loose sediments** (gravel, sand, etc.) brought down by rivers
- Not very stable (prone to landslides)

Duns:

- **Flat valleys** between the Lesser Himalayas and Shiwaliks
- Made of **gravel and alluvium**
- Examples: **Dehra Dun**, **Kotli Dun**, **Patli Dun**

Regional Divisions of the Himalayas (West to East)

The Himalayas are also divided based on **rivers** and **regions**:

Region	Between Rivers	Also Known As
Punjab Himalayas	Indus – Satluj	Kashmir & Himachal Himalayas
Kumaon Himalayas	Satluj – Kali	Uttarakhand region
Nepal Himalayas	Kali – Teesta	Covers most of Nepal
Assam Himalayas	Teesta – Dihang (Brahmaputra)	Includes parts of Arunachal Pradesh

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Purvachal (Eastern Hills)

- Located **beyond the Brahmaputra** (easternmost part of the Himalayas)
- The Himalayas **bend southward** here
- Made of **sandstone (sedimentary rocks)**
- Covered in **dense forests**
- Contains **parallel hills and valleys**

Hills in the Purvachal region:

- **Patkai Hills**
- **Naga Hills**
- **Manipur Hills**
- **Mizo Hills** (also called Lushai Hills)

✅ **Summary:**

Himalayan Range	Height	Features
Himadri	~6,000 m & above	Snowy peaks, glaciers, granite rocks
Himachal	3,700–4,500 m	Rugged mountains, famous valleys
Shiwaliks	900–1,100 m	Made of sediments, duns (valleys)
Purvachal Hills	Varies	Forested hills in northeast India

1️⃣ **The Northern Plains**

- **Formed by:** Indus, Ganga, and Brahmaputra river systems.
- Made of **alluvial soil** (very fertile).
- Spread across **7 lakh sq. km**, 2400 km long and 240–320 km wide.
- **Densely populated** and very good for agriculture.

🌊 **River Features:**

- Rivers slow down in the plains and form **riverine islands**.
- In the lower course, rivers split into **distributaries**.
- Example: **Majuli Island** (Brahmaputra) – world's largest inhabited riverine island.

Divisions of the Northern Plains:

1. **Punjab Plains** – Formed by Indus and its tributaries (Jhelum, Chenab, Ravi, Beas, Satluj). Most of this is in Pakistan. Known for **doabs** (land between two rivers).
2. **Ganga Plains** – Between Ghaggar and Teesta rivers. Covers Haryana, Delhi, UP, Bihar, parts of Jharkhand and West Bengal.
3. **Brahmaputra Plains** – In Assam.

Relief Features:

- **Bhabar:** Pebble-rich belt (8–16 km wide) near Shiwaliks where streams disappear.

- **Terai:** Marshy, swampy land just south of Bhabar; full of forests and wildlife (Dudhwa National Park).
- **Bhangar:** Older alluvium, has **kankar** (lime nodules).
- **Khadar:** Newer alluvium, **very fertile**, ideal for farming.

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2 The Peninsular Plateau

- **Oldest part** of the Indian landmass.
- Made of **igneous and metamorphic rocks**.
- Formed from **Gondwana land**.

Divided into:

1. **Central Highlands** – North of Narmada river.
    - Includes **Malwa Plateau**, **Vindhya**, **Satpura**, **Aravalis**.
    - Rivers (Chambal, Betwa, Ken) flow **from southwest to northeast**.
    - Eastward parts: **Bundelkhand**, **Baghelkhand**.
    - Further east: **Chotanagpur Plateau** (Damodar River).
2. **Deccan Plateau** – South of Narmada.
    - Triangular in shape.
    - Bounded by **Satpura (north)**, **Mahadev, Kaimur, Maikal Hills (east)**.
    - Slopes from **west to east**.
    - Northeastern extension: **Meghalaya Plateau**, **Karbi Anglong**, **North Cachar Hills**.
    - **Black soil (Deccan Trap)** formed from ancient lava – good for cotton farming.

Hill Ranges:

- **Garo, Khasi, Jaintia** Hills (Northeast India)
- **Western Ghats** – High, continuous; cause **orographic rainfall**.
    - Highest peak: **Anai Mudi (2,695 m)**
- **Eastern Ghats** – Lower, broken by rivers.
    - Highest peak: **Mahendragiri (1,501 m)**

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3 The Indian Desert

- Located in **western Rajasthan**, near **Aravalli Hills**.
- **Very dry** (less than 150 mm rainfall per year).
- Sandy plains with **sand dunes (barchans, longitudinal dunes)**.
- Only major river: **Luni**
- Mostly **arid** (dry), with very low vegetation.

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4 The Coastal Plains

Narrow strips of land along the coast.

🏝️ Western Coastal Plain:

- Between **Western Ghats** and **Arabian Sea**.
- **Narrow and steep**.
- Divided into:
    1. **Konkan Coast** (Mumbai to Goa)
    2. **Kannad Coast** (Karnataka)
    3. **Malabar Coast** (Kerala)

Eastern Coastal Plain:

- Between **Eastern Ghats** and **Bay of Bengal**.
- **Wider and flatter**
- Divided into:

1. **Northern Circar** (north part)
2. **Coromandel Coast** (south part)

- Formed **large deltas** (Mahanadi, Godavari, Krishna, Kaveri)
- **Chilika Lake** (Odisha) – **Largest saltwater lake** in India

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5 The Islands

Andaman and Nicobar Islands:

- In **Bay of Bengal**
- Volcanic origin
- Strategic location for India

Lakshadweep Islands:

- In **Arabian Sea**
- Formed by **coral reefs**
- Flat, small islands

The Islands of India – Explained Simply

India has **two main groups of islands**:

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1 Lakshadweep Islands – *In the Arabian Sea*

- Located **near the Malabar Coast** (Kerala).
- Made of **coral** (formed by marine life).
- Earlier known as **Laccadive, Minicoy, and Amindive**.
- Renamed as **Lakshadweep** in **1973**.
- Covers only **32 sq. km** – very small!
- **Kavaratti** is the **capital** and main island.
- **Pitti Island** is **uninhabited** but has a **bird sanctuary**.
- Rich in **flora and fauna** (plants and animals).

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2 Andaman and Nicobar Islands – *In the Bay of Bengal*

- *A* **long chain of islands** stretching from **north to south**.
- Divided into:
  - **Andaman Islands** (North)
  - **Nicobar Islands** (South)
- These islands are believed to be the **tips of underwater mountains**.
- They are **larger and more spread out** than Lakshadweep.
- Located **close to the equator**, so they have **equatorial climate**:
  - **Hot, humid**, and **thick forests**.
- Very important for **strategic, military and biodiversity purposes**.

How India's Physical Features Help the Country

	Region	Importance
1)	**Mountains**	Provide **water**, **forests**, and protect the country from cold winds
2)	**Northern Plains**	Very **fertile** – the **"food bowl"** of India, ideal for farming
3)	**Plateau**	Rich in **minerals** – helps in **industries** and **electricity production**
4)	**Coastal Plains**	Useful for **fishing**, **ports**, and **trade**
5)	**Islands**	Rich in **biodiversity**, important for **security** and **tourism**

Himalayas & Mountains

1. What are the three parallel ranges of the Himalayas?

➡️ The three ranges are:

- **Himadri (Great Himalayas):** Highest and most continuous range.
- **Himachal (Lesser Himalayas):** Rugged terrain with famous valleys.
- **Shiwaliks:** Outer Himalayas made of loose sediments.

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2. Differentiate between the Himadri and the Shiwalik ranges.

Feature	Himadri	Shiwaliks
Height	Highest (avg. 6000 m)	Lowest (900–1100 m)
Composition	Granite core, snowbound	Unconsolidated sediments
Peaks/Glaciers	Lofty peaks, glaciers	None

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3. What are 'Duns'? Name any two.

➡️ Duns are **longitudinal valleys** between the Lesser Himalayas and the Shiwaliks.
Examples: **Dehra Dun**, **Kotli Dun**, **Patli Dun**.

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4. Explain the regional division of the Himalayas based on river valleys.

➡️ From west to east:

- **Punjab Himalaya** – between Indus and Satluj
- **Kumaon Himalaya** – between Satluj and Kali
- **Nepal Himalaya** – between Kali and Teesta
- **Assam Himalaya** – between Teesta and Dihang

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5. What is Purvachal? Name the hills included in it.

➡️ The **eastern extension** of Himalayas beyond the Brahmaputra valley.
Includes: **Patkai Hills**, **Naga Hills**, **Manipur Hills**, **Mizo Hills**.

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6. Why are the Himalayas important for India?

➡️ They:

- Protect from cold winds
- Source of rivers
- Rich in forests and biodiversity
- Affect monsoon and climate

Northern Plains

7. How were the Northern Plains formed?

➡️ Formed by **deposition of alluvium** by the Indus, Ganga, and Brahmaputra rivers over millions of years.

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8. Differentiate between Bhabar, Terai, Bhangar, and Khadar.

Feature	Bhabar	Terai	Bhangar	Khadar
Location	Foothills of Himalayas	South of Bhabar	Older alluvium (above floodplain)	Newer alluvium (floodplain)
Soil	Pebbly	Marshy, fertile	Contains kankar (lime)	Very fertile

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9. What is a 'Doab'? Give examples.

➡️ Land between two rivers.

Example: **Punjab** means "land of five rivers" – Beas, Ravi, Satluj, Chenab, Jhelum.

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10. Why is the Northern Plain agriculturally important?

➡️ Because of:

- Fertile alluvial soil
- Adequate water
- Flat land
- Suitable climate

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11. Name the three divisions of the Northern Plains.

➡️

- **Punjab Plains** – Indus river system
- **Ganga Plains** – From Ghaggar to Teesta
- **Brahmaputra Plains** – In Assam

Peninsular Plateau

12. Describe the two broad divisions of the Peninsular Plateau.

➡️

- **Central Highlands** – North of Narmada, includes Malwa Plateau
- **Deccan Plateau** – South of Narmada, triangular in shape

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13. What is the Deccan Trap? Why is it important?

➡️ It's a **volcanic region** of black soil.

- Formed from lava flows
- Soil is **very fertile**, especially for cotton

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14. Why does the Peninsular Plateau slope from west to east?

➡️ Because of the **structure of land** – rivers like Godavari and Mahanadi flow eastwards.

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15. Name the important hill ranges of the Peninsular Plateau.

➡️ **Vindhya, Satpura, Aravali, Mahadev, Maikal, Kaimur, Garo, Khasi, Jaintia**

Indian Desert

16. Describe the main features of the Indian Desert.

➡️

- Sandy, dry area in western Rajasthan
- Less than **150 mm rainfall** per year
- **Sand dunes** (barchans, longitudinal)
- Only major river: **Luni**

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17. Why do streams in the Indian Desert disappear quickly?

➡️ Because of **loose sand and dry soil**, which absorb the water quickly.

🌊 **Coastal Plains & Islands**

18. Distinguish between Eastern and Western Coastal Plains.

Feature	Western Coastal Plains	Eastern Coastal Plains
Location	Between Western Ghats and Arabian Sea	Between Eastern Ghats and Bay of Bengal
Width	Narrow	Wide
Rivers	Short rivers, not forming deltas	Long rivers form large deltas
Sections	Konkan, Kannad, Malabar	Northern Circar, Coromandel

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19. Write a short note on Lakshadweep Islands.

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- Located in **Arabian Sea**
- Made of **coral islands**
- Total area: **32 sq. km**
- **Kavaratti** is the capital
- Rich in marine life and flora

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20. How are the Andaman and Nicobar Islands different from Lakshadweep?

➡️

Feature	Andaman & Nicobar	Lakshadweep
Location	Bay of Bengal	Arabian Sea
Origin	Volcanic, submerged hills	Coral
Size	Larger, more numerous	Smaller
Climate	Equatorial, forested	Tropical, fewer trees

1. Describe the main physical divisions of India.

Answer:

India's physical features can be broadly classified into the following divisions:

- The Northern Mountains (Himalayas)
- The Northern Plains (Indo-Gangetic Plains)
- The Peninsular Plateau
- The Indian Desert
- The Coastal Plains
- The Islands

The Himalayas run across the northern boundary of India and are the youngest mountain range in the world. The Indo-Gangetic plains lie south of the Himalayas and are formed by the Indus, Ganga, and Brahmaputra rivers. The Peninsular Plateau, composed of ancient rocks, is divided by river valleys and is surrounded by mountain ranges. The Indian Desert lies in the western part of Rajasthan. The Coastal Plains lie between the plateau and the seas on the east and west. The Andaman and Nicobar Islands lie in the Bay of Bengal, while Lakshadweep is in the Arabian Sea.

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2. Explain the significance of the Himalayan mountain ranges in shaping India's climate and physical features.

Answer:

The Himalayas have a significant impact on India's climate and physical landscape. They act as a natural barrier preventing the cold Central Asian winds from entering India, thus keeping the Indian subcontinent warmer in winter. They also block the southwest monsoon winds, causing heavy rainfall in the northern plains and foothills. The Himalayas are the source of many important rivers like the

Ganga, Yamuna, and Brahmaputra. They also contribute to soil fertility through river deposits. Their forests influence biodiversity, and the mountain passes have historically facilitated trade and cultural exchange.

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3. Describe the formation and characteristics of the Northern Plains of India.
Answer:
The Northern Plains were formed by the deposition of sediments brought by the three major river systems—Indus, Ganga, and Brahmaputra—over millions of years. These plains are broad, flat, and fertile, making them suitable for agriculture. The plains are divided into three parts:

- The Punjab Plains (formed by Indus and its tributaries)
- The Ganga Plains (formed by Ganga and Yamuna)
- The Brahmaputra Plains

The plains have rich alluvial soil and a dense network of rivers. They support a large population due to the fertile land and favorable climate.

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4. Discuss the main features and importance of the Peninsular Plateau of India.
Answer:
The Peninsular Plateau is one of the oldest landmasses in India, formed during the Precambrian era. It is a triangular plateau bounded by the Aravalli Hills in the northwest, the Vindhya and Satpura ranges in the north, and the Eastern and Western Ghats on the east and west. The plateau is rich in minerals and has undulating topography with several hill ranges and plateaus like the Malwa and Chota Nagpur plateau. The plateau has a number of rivers and fertile soil in some areas. It supports agriculture, mining, and is crucial for India's biodiversity.

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5. Write a detailed note on the Western and Eastern Ghats.
Answer:
The Western and Eastern Ghats are two mountain ranges flanking the Peninsular Plateau.

- The Western Ghats run parallel to the western coast and are higher and more continuous, with several peaks above 2,000 meters. They intercept the southwest monsoon, resulting in heavy rainfall on the windward side.
- The Eastern Ghats are lower and discontinuous, running along the eastern coast. They receive less rainfall due to the rain-shadow effect. Both Ghats are rich in biodiversity and are home to many endemic species. They are also important for hydropower, forestry, and agriculture.

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6. Explain the physical features of the Indian Desert and its climatic conditions.
Answer:
The Indian Desert, also called the Thar Desert, lies mainly in Rajasthan. It is characterized by sandy plains, sand dunes, and sparse vegetation. The region receives very low rainfall (less than 150 mm annually), has extreme temperatures (hot summers and cold winters), and frequent droughts. Despite harsh conditions, some drought-resistant plants and animals survive here. The desert is important for mineral deposits and supports pastoral communities.

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7. Describe the coastal plains of India and their significance.
Answer:
India has two coastal plains:

- The Western Coastal Plains, which are narrow and lie between the Western Ghats and the Arabian Sea. They include the Konkan, Malabar, and Kanara coasts.

- The Eastern Coastal Plains, which are broader and lie between the Eastern Ghats and the Bay of Bengal, including the Utkal and Coromandel coasts.

The coastal plains are fertile, support fishing and agriculture, and have several important ports facilitating trade. They are prone to cyclones on the eastern side but also have rich biodiversity in mangroves and estuaries.

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8. Discuss the importance of the Himalayan passes in the physical and cultural history of India.
Answer:
Himalayan passes like the Khyber Pass, Zoji La, Nathu La, and Lipulekh have been crucial for trade, invasion, and cultural exchange between India and Central Asia. These passes allowed movement of people, goods, and ideas, shaping the cultural diversity of northern India. They were important in historical trade routes like the Silk Road and also have strategic military importance.

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9. Explain the formation and characteristics of the Islands of India.
Answer:
India has two main groups of islands:

- The Andaman and Nicobar Islands in the Bay of Bengal are of volcanic origin, with hilly terrain and dense forests. They are rich in biodiversity and are strategically important.
- The Lakshadweep Islands in the Arabian Sea are coral islands with low elevation, sandy beaches, and lagoons. These islands have unique ecosystems and support fishing communities.

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10. Write about the major river systems of India and their role in shaping physical features.
Answer:
India's major rivers include the Indus, Ganga, Brahmaputra, Godavari, Krishna, and Mahanadi. The northern rivers form the Indo-Gangetic plain through alluvial deposits, creating fertile land for agriculture. The peninsular rivers flow through plateaus and coastal plains, carving valleys and deltas. These rivers provide water for irrigation, hydroelectric power, and are central to Indian culture and economy.

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11. Discuss the significance of the Aravalli Range in India's physical geography.
Answer:
The Aravalli Range is one of the oldest mountain ranges in the world, located in Rajasthan. It runs southwest to northeast and acts as a barrier between the Thar Desert and the fertile plains of Haryana and Punjab. The range is rich in minerals and influences local climate by intercepting the monsoon winds. It also prevents the desert from spreading further east.

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12. Describe the climate and vegetation of the Himalayan region.
Answer:
The Himalayan climate varies with altitude, from subtropical at the base to alpine and tundra at higher elevations. Winters are severe in the higher reaches with heavy snowfall. The region receives high rainfall on the southern slopes. Vegetation ranges from tropical forests in the foothills to coniferous forests at higher altitudes, and alpine meadows above the tree line. The Himalayas are home to diverse flora and fauna.

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13. Explain the geological importance of the Peninsular Plateau.
Answer:
The Peninsular Plateau consists of ancient crystalline rocks, making it one of the oldest geological formations on Earth. It has stable landforms and is rich in minerals like iron, manganese, and bauxite.

The plateau's rivers are mostly rain-fed and flow through fault lines and valleys. Its geological stability contrasts with the seismic activity in the Himalayan region.

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14. What are the major types of soil found in India and their relation to physical features?
Answer:
Major soil types include alluvial soil in the northern plains, black soil on the Deccan Plateau, red soil in the southern and eastern plateau regions, laterite soil in high rainfall areas, desert soil in Rajasthan, and mountain soil in the Himalayas. Soil type depends on parent rock, climate, and vegetation, influencing agriculture and vegetation patterns.

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15. Discuss the role of the Himalayas in the hydrological cycle of India.
Answer:
The Himalayas are the source of many perennial rivers fed by melting snow and glaciers, ensuring a continuous water supply. They influence the monsoon pattern by intercepting monsoon winds and causing rainfall. Snow and glaciers act as water reservoirs. The mountains help recharge groundwater and support millions of people downstream.

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16. Write a note on the importance of the Indo-Gangetic Plains.
Answer:
The Indo-Gangetic Plains are the most fertile and densely populated region of India. Formed by sediment deposits from the Indus, Ganga, and Brahmaputra rivers, the plains support extensive agriculture, especially rice and wheat cultivation. The region is also an economic and cultural hub with many major cities.

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17. Describe the natural vegetation of the Peninsular Plateau.
Answer:
Vegetation varies with rainfall and altitude. Tropical dry deciduous forests dominate due to moderate rainfall. In the Western Ghats and northeastern hills, tropical evergreen forests flourish due to high rainfall. Scrub and thorny vegetation are found in drier parts like the Deccan plateau.

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18. Explain the origin and features of the Satpura and Vindhya ranges.
Answer:
The Satpura and Vindhya ranges are old mountain chains in central India, formed by tectonic activities during the Gondwana period. They are lower and eroded hills running east-west. These ranges divide the northern plains from the southern plateau and are important for biodiversity and mineral resources.

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19. Discuss the impact of physical features on the population distribution of India.
Answer:
Population density is highest in fertile and flat regions like the Indo-Gangetic Plains and coastal plains, where agriculture and trade thrive. Mountainous regions and deserts have sparse populations due to harsh terrain and climate. Physical features thus strongly influence settlement patterns, occupation, and lifestyle.

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20. Write about the physical features and climatic conditions of the North-East India.
Answer:
The North-East region is hilly and mountainous with the Eastern Himalayas and Patkai hills. It has a

humid subtropical to alpine climate depending on altitude, with heavy monsoon rainfall. The region has rich biodiversity, dense forests, and fertile valleys supporting agriculture and tribal cultures.