

PHYSICAL FEATURES OF INDIA

Premium Comprehensive Study Notes & Exam Resource

Target Audience: Central Board of Secondary Education (CBSE) Students & Educators

Academic Level: Secondary School (Class IX)

Subject: Contemporary India - I (Geography)

Core Theoretical Framework

Detailed analysis of the Theory of Plate Tectonics, crustal movements, and the historical drift of Gondwana Land.

Physiographic Divisions

In-depth breakdowns of all 6 geographical zones of the Indian subcontinent with extensive structural profiles.

Comparative Analysis Tables

Structured tabular evaluations comparing major geological frameworks for precise point-wise revision.

Comprehensive Question Bank

Curated Very Short Answer Questions and High-Yield MCQs rigorously mapped to standard board patterns.

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Chapter Overview

India is a land of remarkable physical diversity. From the snow-capped Himalayas in the north to the sun-drenched coastal plains in the south, from the arid Thar Desert in the west to the lush rainforests in the east—India's landscape tells a fascinating story of geological evolution spanning millions of years. This chapter explores the six major physiographic divisions that make India a geographical wonderland. Understanding these physical features is essential as they influence climate, agriculture, human settlement, and economic activities across the country.

LEARNING OBJECTIVES

1. To master and apply the **Theory of Plate Tectonics** and comprehensively analyze its fundamental role in shaping the modern relief and landforms of the Indian subcontinent.
2. To identify, locate, and intricately describe the unique characteristics of the **six major physiographic divisions** of India.
3. To comprehend the precise chronological formation, geological composition, and socio-economic importance of each distinct physical feature.
4. To develop advanced **map-reading and spatial skills** necessary for accurately locating major mountain ranges, peaks, plateaus, plains, passes, and coastal regions on the official political and physical maps of India.

QUICK CHAPTER SUMMARY

India's physical features are the cumulative result of complex, dynamic geological processes spanning hundreds of millions of years. According to the globally accepted *Theory of Plate Tectonics*, the Earth's solid outer crust is segmented into several major and minor lithospheric plates that move continuously due to powerful thermal convectional currents operating deep within the Earth's semi-molten interior.

Geologically, the Peninsular Plateau constitutes an exceptionally stable part of the ancient, southern supercontinent known as **Gondwana Land**. Conversely, the majestic Himalayan Mountains and the

expansive Northern Plains represent incredibly young, flexible, and structurally dynamic formations that emerged far later in the planet's history.

Key Concepts Explained

1. Formation of India's Physical Features

THE THEORY OF PLATE TECTONICS

The outer shell of the Earth, known as the lithosphere, is not a single continuous solid piece. Instead, it is broken down into **seven major** and several minor lithospheric or tectonic plates. These massive slabs of rock float upon the weak, semi-molten asthenosphere beneath them. Their motion is fueled by thermal convection cells that transport heat from the Earth's core up toward the crust.

As these tectonic plates move unceasingly across the globe, they interact along their boundaries. This persistent movement builds up immense structural stress within the continental and oceanic crusts. Over eons, this accumulated stress is released through large-scale geological phenomena, primarily categorized as folding, faulting, and volcanic activity, which collectively sculpt mountain chains and ocean basins.

CLASSIFICATION OF PLATE BOUNDARIES

The interactions between tectonic plates along their edges define three primary types of structural boundaries:

- **Convergent Boundary:** Occurs where two adjacent tectonic plates move towards each other. The resulting compressive forces cause the earth's crust to buckle, crumple, and fold upward, leading to the formation of massive fold mountain systems. Alternatively, one plate may be forced beneath the other into the mantle in a process known as subduction.
- **Divergent Boundary:** Occurs where two tectonic plates pull apart or move away from each other. This crustal separation creates deep rifts, fractures, and structural gaps. Magma frequently wells up from the mantle to fill these voids, leading to seafloor spreading or the creation of new marine bodies and rift valleys.
- **Transform Boundary:** Occurs where two plates grind horizontally past one another along major transform faults. Because the plates slide past each other without creating or destroying crustal material, these boundaries are highly volatile zones characterized by sudden friction releases that trigger severe earthquakes.

THE SEVEN MAJOR LITHOSPHERIC PLATES

The surface of the Earth is dominated by seven primary plates: the African Plate, Antarctic Plate, Eurasian Plate, Indo-Australian Plate, North American Plate, South American Plate, and Pacific Plate. It is the complex interplay between the Indo-Australian and Eurasian plates that directly caused the geological birth of India's northern relief.

The Historical Evolution of the Indian Subcontinent

| The Story of Gondwana Land

The geological history of India is rooted in the fragmentation of an ancient southern supercontinent called **Gondwana Land**. Millions of years ago, the landmasses of modern-day India, Australia, South Africa, South America, and Antarctica were fused together into a single mega-continent, isolated from the northern landmass known as Laurasia or Angaraland.

Roughly 200 million years ago, highly intense convectional currents within the Earth's mantle began to fracture the thick crust of Gondwana Land into separate fragments. This structural fracturing isolated the ancient Indian crustal plate, forming what geologists identify as the **Indo-Australian Plate**. Driven by sub-crustal forces, this newly independent plate began a long, steady northward drift across the ancient Tethys Ocean.

| The Collision that Formed the Himalayas

The prolonged northward journey of the Indo-Australian Plate eventually culminated in a cataclysmic, slow-motion collision with the massive, stable **Eurasian Plate** situated in the northern hemisphere. Because both masses were continental in nature, neither could easily subduct beneath the other.

Instead, the vast accumulation of marine sedimentary rocks that had settled over millions of years at the bottom of the **Tethys Geosyncline** (a massive, shallow oceanic depression separating the two plates) was caught in a colossal tectonic vise. Subjected to extreme compression, these thick layers of sediment were forced to buckle, compress, and fold dramatically upward. This epic wrinkling of the Earth's crust generated the magnificent, towering mountain systems of Western Asia and the entire Himalayan mountain arc.

This mountain-building process, known as orogeny, is far from complete. The Indian plate continues its relentless northward push today, moving at a sustained rate of approximately **58 ± 4 mm** per year. As a direct result, the Himalayas continue to rise in elevation, and the region remains highly susceptible to seismic activity and earthquakes.

FLOWCHART: THE OROGENESIS OF THE HIMALAYAS



2. Major Physiographic Divisions

Based on distinct variations in relief, structural composition, and geological age, India is systematically divided into six major physiographic zones:

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

A. The Himalayan Mountains

GEOLOGICAL AND STRUCTURAL PROFILE

The Himalayan Mountains are geologically young, structurally complex **fold mountains** that span the entire northern boundary of the Indian republic. Stretching in a majestic, continuous arc from the deep gorges of the Indus River in the west to the rugged valley of the Brahmaputra River in the east, they cover a linear distance of approximately **2,400 kilometers**.

The structural width of this mountain system varies significantly across its length, measuring around 400 kilometers in the western region of Kashmir and narrowing down to about 150 kilometers in the eastern state of Arunachal Pradesh. This vast mountain wall covers a total area exceeding 750,000 square kilometers, acting as an impenetrable natural fortress.

THE THREE PARALLEL LATITUDINAL RANGES

The Himalayas do not form a single isolated ridge; rather, they comprise three distinct, parallel latitudinal mountain ranges separated by deep structural valleys. Each range exhibits its own unique altitude profile, geological composition, and topography:

RANGE NAME	AVERAGE ELEVATION	KEY GEOLOGICAL & STRUCTURAL FEATURES
Himadri (Greater or Inner Himalayas)	6,000 meters	The northernmost, most continuous, and loftiest range. It is composed of highly resilient, ancient core granite. It permanently hosts all the world's highest, snow-clad peaks (e.g., Mount Everest, Kanchenjunga) and feeds massive glaciers.
Himachal (Lesser or Middle Himalayas)	3,700 to 4,500 meters	A highly rugged, compressed mountain system with an average width of 50 km. Composed primarily of highly altered and compressed rocks. Features prominent, long ranges like the Pir Panjal, Dhauladhar, and Mahabharat, alongside iconic hill stations.
Shivaliks (Outer Himalayas)	900 to 1,100 meters	The outermost, youngest southern range with a width of 10–50 km. Formed by unconsolidated sediments brought down by rivers from the main ranges. Highly prone to landslides and rich in longitudinal valleys called 'Duns'.

The Eastern Extension and Regional Variations of the Himalayas

The Purvachal (The Eastern Hills and Mountains)

Upon reaching its easternmost extremity at the deep Dihang Gorge, the Himalayan mountain system undergoes an extremely sharp, near-orthogonal southward bend. From this point, the mountains fan out across the northeastern frontier states of India, running parallel to the international border with Myanmar. This specialized eastern mountain wing is collectively designated as the **Purvachal**.

Structurally, the Purvachal hills are composed of remarkably strong, dense sandstones and sedimentary rocks. These ranges are characterized by parallel, long ridges and deep valleys covered under a mantle of thick, rich subtropical rainforests. The Purvachal incorporates several prominent regional hill systems:

- **Patkai Bum:** Forms the rugged international boundary between Arunachal Pradesh and Myanmar.
- **Naga Hills:** Characterized by highly complex topography running through Nagaland.
- **Manipur Hills:** Creates a natural geographic basin surrounding the central plains of Manipur.
- **Mizo Hills (Lushai Hills):** The southern-most extension of the Purvachal chain, known for its unique steep terrain.

Regional/Geographical Classifications from West to East

In addition to the latitudinal division into three ranges, the Himalayas are also systematically classified from west to east based on the major river valleys that cut across them:

1. **Punjab Himalayas:** This extensive western section lies between the Indus and Satluj rivers. Regionally, it is often sub-classified as the Kashmir and Himachal Himalayas as it transitions from west to east.
2. **Kumaon Himalayas:** Located in the central-western sector, this portion stretches between the Satluj and Kali rivers, hosting numerous sacred pilgrimage valleys.
3. **Nepal Himalayas:** A massive central section bounded by the Kali River in the west and the Teesta River in the east, containing some of the tallest peaks on Earth.
4. **Assam Himalayas:** The easternmost sector, spanning the region between the Teesta and Dihang (Brahmaputra) rivers.

Socio-Economic and Ecological Importance of the Himalayas

The Himalayan range serves multiple critical functions for the Indian subcontinent:

- **Climatic Barrier:** It blocks the sub-zero, freezing continental winds of Central Asia from sweeping into northern India, ensuring a warmer environment. It also intercepts the moisture-laden South-West monsoon winds, forcing them to shed torrential rain across the fertile plains.
- **Perennial Hydrographic Source:** It is the birthplace of India's three major river networks (Indus, Ganga, Brahmaputra). Fed continuously by melting glacial ice, these rivers ensure stable, year-round water flows.

- **Forest Wealth and Biodiversity Hotspot:** The varied altitudinal zones support dense alpine, coniferous, and temperate forests that shelter endangered wildlife.

B. The Northern Plains

Geological Formation and Origin

The formation of the Northern Plains is inextricably linked to the tectonic uplift of the Himalayas. As the sedimentary layers of the Tethys Sea were squeezed upward into massive mountain folds, the northern flank of the ancient Peninsular Plateau experienced deep structural subsidence. This simultaneous movement created an incredibly deep geological basin running parallel to the foot of the rising mountains.

Over millions of years, the perennial rivers descending from the Himalayan heights in the north, alongside the seasonal streams draining the Peninsular Plateau in the south, deposited immense quantities of fine sediment within this basin. This continuous accumulation of rich **alluvial deposits** completely filled the depression, giving birth to a remarkably flat, vast alluvial plain.

Key Structural Features

The Northern Plains extend across an area of approximately **7 lakh square kilometers**. The plain features a uniform length of roughly 2,400 kilometers and a varying structural width ranging between 240 and 320 kilometers. It stands as one of the single most fertile, flat, and densely populated agricultural zones found anywhere on Earth.

The Three Primary Regional Sections

Based on hydrographic characteristics and river networks, the Northern Plains are divided into three distinct zones:

- **The Punjab Plains:** This forms the westernmost sector of the plain. It was created by the Indus River and its five major tributaries—the Jhelum, Chenab, Ravi, Beas, and Satluj. The larger part of this plain now lies within Pakistan. A defining landscape feature of this region is the dominance of **Doabs** (fertile land lying between two converging rivers).

- **The Ganga Plains:** The expansive central core of the Northern Plains, extending geographically between the Ghaggar River in Haryana and the Teesta River in West Bengal. It stretches across the states of North India, including Haryana, Delhi, Uttar Pradesh, Bihar, parts of Jharkhand, and West Bengal.
- **The Brahmaputra Plains:** The easternmost section of the plain, situated primarily within the narrow valley of Assam. It is formed by the Brahmaputra River and its numerous high-volume tributaries, which frequently cause shifting river channels and seasonal floods.

FLOWCHART: GENESIS OF THE NORTHERN PLAINS



Geomorphological Zones of the Northern Plains

Relief Features and Soil Characterization

Although the Northern Plains are often generalized as completely flat terrain, they exhibit significant geomorphological variations from north to south based on sediment grain size, moisture levels, and age. The plains are systematically divided into four distinct relief belts running parallel to the Shiwalik foothills:

RELIEF BELT	GEOGRAPHIC LOCATION	STRUCTURAL COMPOSITION & AGRICULTURAL VALUE
Bhabar	Lies immediately adjacent to the Shiwalik slopes; forms a narrow belt about 8 to 16 km wide.	Composed of heavy boulders, coarse gravel, and porous pebbles deposited by descending rivers. Due to the exceptionally high rock porosity, surface streams sink and completely disappear underground within this zone. Unsuitable for agriculture.
Terai	Situated directly south of the Bhabar belt.	A wet, swampy, and highly marshy region created where the underground Bhabar streams re-emerge at the surface. Historically characterized by thick sub-tropical forests and rich wildlife. Mostly cleared now for intensive agriculture and settlement.
Bhangar	Forms the older, elevated parts of the alluvial plain situated well above modern floodplains.	Composed of older, mature alluvial soil. It presents terrace-like features and is characterized by calcareous clay deposits locally known as Kankar . It is stable and moderately fertile.
Khadar	Found in the low-lying active floodplains near river channels.	Consists of fine, newer, and younger alluvial deposits that are renewed annually by seasonal floodwaters. The soil is rich, non-calcareous, and highly fertile, making it ideal for intensive agriculture.

Strategic and Economic Importance of the Northern Plains

The Northern Plains are commonly referred to as the "**Granaries of India**" because their deep, fertile alluvial soils, perennial water supplies from massive river networks, and favorable flat terrain support intensive, high-yield agriculture. This rich agricultural surplus historically sustained the rise of early civilizations along the Indus and Ganga. Today, it remains the demographic heartland of the nation, supporting an extremely high concentration of human settlement, transport infrastructure, and industrial development.

C. The Peninsular Plateau

Geological Origin and Structure

The Peninsular Plateau is a massive, elevated tableland characterized by rounded hills and wide, shallow valleys. Unlike the young sedimentary mountains of the north, this plateau is composed of old crystalline, igneous, and metamorphic rocks. Geologically, it was formed due to the structural breaking, fracturing, and northward drifting of the ancient **Gondwana Land** supercontinent. This makes the Peninsular Plateau the single oldest, most rigid, and seismically stable landmass anywhere within the Indian subcontinent.

The Central Highlands

The Peninsular Plateau is divided into two broad sub-regions, separated by the deep structural rift valley of the Narmada River. The northern section is known as the **Central Highlands**.

The Central Highlands lie north of the Narmada River, covering a major portion of the Malwa Plateau. This highland zone is bounded by the Vindhyan Range to the south and the highly weathered Aravali Hills to the northwest. The plateau is wider in the west but narrows significantly toward the east. The streams draining this region—such as the Chambal, Sind, Betwa, and Ken—flow from the southwest toward the northeast, reflecting the general slope of the landmass. The eastward extensions of this highland are known locally as Bundelkhand and Baghelkhand, culminating further east in the mineral-rich **Chhotanagpur Plateau**, which is drained by the Damodar River.

The Deccan Plateau

The southern section of the tableland, located south of the Narmada River, is the **Deccan Plateau**. It is a triangular landmass that slopes downwards from west to east.

The Deccan Plateau is bordered by the broad Satpura, Mahadev, Kaimur, and Maikal ranges along its northern base. Its western edge is defined by the continuous wall of the Western Ghats, while its eastern edge is marked by the fragmented line of the Eastern Ghats. This plateau extends into the far northeast, where it appears as an isolated block comprising the Meghalaya Plateau, the Karbi-Anglong Plateau, and the North Cachar Hills. This northeastern extension is separated from the main shield by the Malda fault gap. It features three prominent hill ranges, named after the local tribes from west to east: the **Garó, Khasi, and Jaintia Hills**.

A notable feature of the western Deccan Plateau is the **Deccan Trap**, a region of volcanic origin covered in thick, dark basaltic lava flows. Over time, weathering has broken down this volcanic rock to form highly fertile black soil, which is ideal for cotton cultivation.

Comparative Analysis: The Ghats of the Peninsular Plateau

The Edge of the Deccan Shield

The Western Ghats and the Eastern Ghats form the structural borders of the triangular Deccan Plateau, running parallel to the western and eastern coasts of India, respectively. While both serve as major upland watersheds, they exhibit profound differences in continuity, elevation, geomorphology, and rainfall patterns:

GEOGRAPHICAL FEATURE	THE WESTERN GHATS (SAHYADRI)	THE EASTERN GHATS
Spatial Alignment	Runs parallel to the western coast along the Arabian Sea.	Stretches along the eastern coast from the Mahanadi Valley to the Nilgiri Hills in the south.
Continuity	Highly continuous; can be crossed only through specific natural passes (e.g., Thal, Bhor, and Pal Ghats).	Discontinuous and highly irregular; thoroughly dissected by large, east-flowing peninsular rivers.
Average Elevation	Significantly higher, ranging uniformly between 900 and 1,600 meters.	Considerably lower, with a modest average elevation of approximately 600 meters.
Highest Mountain Peak	Anaimudi , reaching an altitude of 2,695 meters located in Kerala.	Mahendragiri , standing at an elevation of 1,501 meters in Odisha.
Precipitation Pattern	Receives heavy orographic rainfall as its high western slopes intercept moisture-laden Arabian Sea monsoon winds.	Receives far less rainfall during the summer monsoon; experiences rain mostly from retreating northeast monsoons.
Topographical Trend	Increases steadily in height from north to south, forming a steep, dramatic escarpment facing the sea.	Forms a series of low, weathered, detached hill ranges (e.g., Javadi and Shevroy Hills).

Economic and Resource Significance of the Peninsular Plateau

The Peninsular Plateau is of immense economic value to India. It serves as the primary **storehouse of minerals** for the country, holding massive reserves of iron ore, coal, manganese, bauxite, and mica, particularly within the Chhotanagpur Plateau. The black agricultural soil of the Deccan Trap supports extensive cotton cultivation. Additionally, the plateau's rugged topography features numerous cascading waterfalls that are utilized to generate hydroelectric power, while its scenic hill ranges support valuable tea, coffee, and spice plantations.

D. The Indian Desert

Location and Arid Geomorphology

The Indian Desert, professionally known as the **Thar Desert**, lies toward the western margins of the ancient Aravali Hills. It is a vast, undulating sandy plain covered with extensive blankets of loose sand dunes. The landscape is shaped by powerful wind action, which creates distinctive sand formations. The most notable of these are **Barchans**—large, crescent-shaped sand dunes whose tips point in the direction of the wind. These dunes dominate the landscape near the international border with Pakistan.

Climatic Conditions and Hydrography

This region experiences an arid climate characterized by extremely low annual rainfall—typically receiving **below 150 mm** per year. Consequently, it has low vegetation cover, consisting mainly of thorny bushes and shrubs. Due to high evaporation rates and scarce precipitation, surface streams appear only briefly during the short rainy season. They quickly disappear into the sand, lacking the water volume needed to carve a path to the open sea. The **Luni River** is the only large, integrated river system that successfully flows through this desert landscape.

E. The Coastal Plains

| The Western Coastal Plain

The Western Coastal Plain is a narrow, compressed strip of land sandwiched between the Western Ghats and the Arabian Sea. It is divided into three distinct regional zones from north to south:

- **The Konkan Coast:** The northernmost section, stretching from Mumbai to Goa, characterized by rocky, indented shorelines.
- **The Kannad Plain:** The central section, encompassing the coastal stretch of Karnataka.
- **The Malabar Coast:** The southern section, located primarily in Kerala, known for its long sand spits and scenic backwater lagoons.

| The Eastern Coastal Plain

The Eastern Coastal Plain is a wide, level expanse situated between the Eastern Ghats and the Bay of Bengal. It is noticeably wider and more level than its western counterpart. It is divided into two primary sections:

- **The Northern Circar:** The northern portion, stretching between the deltas of the Mahanadi and Krishna rivers.
- **The Coromandel Coast:** The southern stretch, extending down to Kanyakumari along the Tamil Nadu littoral.

This plain features massive, highly fertile deltas formed by major east-flowing rivers, including the Mahanadi, Godavari, Krishna, and Kaveri. A notable feature of this coast is **Chilika Lake** in Odisha, which is the largest saltwater lagoon in India.

F. The Islands

| The Andaman and Nicobar Islands

The Andaman and Nicobar Islands are an elongated chain of islands located in the Bay of Bengal, stretching from north to south. They are larger in size, more numerous, and more widely scattered than the western island groups. Geologically, this archipelago represents the elevated, sub-marine peaks of an underwater mountain

range, which is an extension of the Purvachal system. The chain is divided into two primary groups: the **Andaman Islands** in the north and the **Nicobar Islands** in the south, separated by the Ten Degree Channel. The administrative capital is **Port Blair**. The islands feature a hot, equatorial climate and thick forest cover, and they host India's only active volcano on Barren Island.

The Lakshadweep Islands

The Lakshadweep Islands are a compact cluster of small islands situated in the Arabian Sea off the Malabar Coast of Kerala. Unlike the volcanic islands of the east, Lakshadweep consists entirely of **coral islands**, built up over generations from the calcium carbonate skeletons of tiny marine organisms called coral polyps. These islands cover a small total land area of just 32 square kilometers. The administrative headquarters is located on **Kavaratti Island**. The group features beautiful, shallow lagoons and diverse marine life, including an uninhabited wildlife sanctuary on Pitti Island.

Important Terms and Definitions

Plate Tectonics

The scientific theory explaining the large-scale movements of the Earth's lithospheric plates over the semi-molten asthenosphere due to internal convection currents.

Gondwana Land

An ancient, massive southern supercontinent that existed before fracturing into the modern landmasses of India, Australia, Africa, South America, and Antarctica.

Geosyncline

A massive, shallow mobile depression or trough in the Earth's crust where thick layers of marine sediments accumulate over long geological periods.

Doab

A highly fertile tract of land situated between two converging rivers (derived from the Persian words 'do' meaning two and 'ab' meaning water).

Barchan

A crescent-shaped sand dune formed by wind action, featuring a gentle windward slope and a steep leeward face, with its tips pointing downwind.

Core Comparative Revision Frameworks

Himalayan Fold Mountains vs. The Ancient Peninsular Plateau

To ensure precise, point-wise retention for board examinations, students must carefully evaluate the deep structural contrasts between the dynamic northern mountain wall and the stable southern crystalline shield:

FEATURE	THE HIMALAYAN MOUNTAIN ARC	THE PENINSULAR STRUCTURAL SHIELD
Geological Age	Young fold mountains formed recently in geological time.	One of the oldest landmasses on Earth, rooted in Gondwana Land.
Topography	Highly rugged terrain with soaring, sharp peaks and deep, steep-sided V-shaped valleys.	Gentle terrain with highly weathered, rounded hills and shallow valleys.
Composition	Composed primarily of marine sedimentary and highly compressed metamorphic rocks.	Composed of ancient crystalline, igneous, and metamorphic rocks.
Stability	Tectonically highly unstable; an active seismic zone prone to frequent earthquakes.	Tectonically highly rigid, stable, and rarely affected by major structural disturbances.
River Systems	Fed by glaciers, giving rise to long, perennial rivers with high erosive power.	Fed by seasonal rainfall, resulting in shorter, rain-fed rivers.

Bhabar versus Terai (Foot-hill Zones)

FEATURE	BHABAR BELT	TERAI REGION
Porosity	Extremely high due to loose accumulations of heavy pebbles and gravel.	Low surface porosity, creating wet and highly waterlogged conditions.
Hydrography	Descending rivers sink completely into the gravel and disappear from the surface.	Underground streams re-emerge at the surface, forming marshy conditions.
Vegetation	Sparse vegetation cover due to the lack of retained surface soil water.	Dense sub-tropical forest cover characterized by rich biodiversity.

High-Yield Exam Question Bank

Very Short Answer Questions (1 Mark Each)

Q1: What exactly is the driving force behind the movement of the lithospheric plates according to the Theory of Plate Tectonics?

Ans: The fundamental driving force is the continuous generation of thermal convection currents operating deep within the Earth's semi-molten mantle.

Q2: Name the three parallel latitudinal ranges that collectively constitute the Himalayan mountain system.

Ans: The three ranges are the Himadri (Greater Himalayas), the Himachal (Lesser Himalayas), and the Shiwaliks (Outer Himalayas).

Q3: Define the geomorphological term 'Dun' with an appropriate regional example.

Ans: A Dun is a longitudinal valley formed between the Lesser Himalayas and the outer Shiwalik range. Examples include Dehra Dun, Kotli Dun, and Patli Dun.

Q4: What is the structural difference between Bhangar and Khadar alluvial soils?

Ans: Bhangar is older alluvium that sits above modern floodplains and contains calcareous Kankar nodules. Khadar is newer, highly fertile alluvium that is renewed annually by seasonal floodwaters.

Q5: Which specific single river serves as the sole large, integrated fluid network operating inside the Indian Desert?

Ans: The Luni River is the only large river system that flows through the arid environment of the Indian Desert.

Q6: State the precise geographic location and the geological origin of the Lakshadweep Island group.

Ans: The Lakshadweep Islands are located in the Arabian Sea off the Malabar Coast of Kerala. They are of coral origin, built up from the calcium carbonate skeletons of coral polyps.

Q7: Identify the highest mountain peak situated within the Western Ghats along with its precise elevation.

Ans: The highest peak is Anaimudi, which stands at an elevation of 2,695 meters in Kerala.

Q8: What is the geographical extent and regional composition of the Purvachal hills?

Ans: The Purvachal comprises the eastern extension of the Himalayas beyond the Dihang Gorge. It runs along India's northeastern border and includes the Patkai, Naga, Manipur, and Mizo hills.

Q9: Explain why the Khadar region is considered ideal for intensive agricultural operations.

Ans: The Khadar region is ideal because its soils are renewed annually with fresh, nutrient-rich alluvial deposits brought down by seasonal floods.

Q10: Which specific structural fault separates the Meghalaya Plateau from the main Peninsular Deccan shield?

Ans: The Malda Fault Gap separates the Meghalaya Plateau from the main Peninsular shield.

Multiple Choice Questions (High-Yield Section)

Q1: From a structural perspective, the majestic Himalayan Mountains are classified by geologists as:

- a) Relict or Residual volcanic mountain chains
- b) Young, structurally complex fold mountain systems
- c) Horst and graben block mountain structures
- d) Ancient, highly eroded shield basements

Correct Answer: b) Young, structurally complex fold mountain systems

Q2: Which latitudinal range of the Himalayas is composed of ancient core granite?

- a) The outer Shiwalik foothills
- b) The compressed Himachal range
- c) The continuous Himadri range
- d) The southern Purvachal hills

Correct Answer: c) The continuous Himadri range

Q3: Calcareous clay deposits found within the older, elevated Bhangar alluvial soils are locally called:

- a) Barchans
- b) Kankar
- c) Doabs
- d) Terai

Correct Answer: b) Kankar

Q4: The Western Ghats and the Eastern Ghats converge to form a major upland knot at the:

- a) Cardamom Hills
- b) Annamalai Hills
- c) Nilgiri Hills
- d) Palni Hills

Correct Answer: c) Nilgiri Hills

Q5: The northern portion of the Eastern Coastal Plain is designated as the:

- a) Coromandel Coast
- b) Konkan Coast
- c) Northern Circar
- d) Malabar Coast

Correct Answer: c) Northern Circar

Chapter Conclusion

India's physical diversity is a testament to the dynamic geological forces that have shaped our planet over millions of years. The six major physiographic divisions—the Himalayas, Northern Plains, Peninsular Plateau, Indian Desert, Coastal Plains, and Islands—each contribute uniquely to the country's economic, cultural, and ecological landscape. The Himalayas act as a climatic barrier and source of rivers. The Northern Plains serve as the agricultural heartland. The Peninsular Plateau is rich in mineral resources. Understanding these physical features helps us appreciate India's strategic advantages and natural beauty. This knowledge forms the foundation for further studies in geography and environmental science.