

WBBSE Madhyamik Geography Question Paper 2026 With Solutions

Time Allowed :3 Hour 15 Minutes	Maximum Marks :90	Total Questions :6
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General Instructions

Please read the following instructions carefully:

1. The question paper consists of six sections — Section A to Section F.
2. Time allowed is 3 hours 15 minutes and the maximum marks are 90.
3. All questions are compulsory unless otherwise stated.
4. Section A contains Multiple Choice Questions (MCQs). Choose the correct answer from the given options.
5. Section B includes:
 - True/False questions
 - Fill in the blanks
 - Very short answer questions (one or two words)
6. Section C contains short answer type questions.
7. Section D contains long descriptive questions with internal choices. E contains long answer questions. Attempt the required number as instructed.
8. Section F consists of Map Work. Mark and label the places correctly on the outline map of India.
9. Figures to the right indicate full marks for each question.
10. Write neatly and draw diagrams wherever necessary.
11. Write answers only in the space provided or as instructed

Section A

1.1 Which of the following is an example of external energy?

- (a) Nuclear energy
- (b) Solar energy
- (c) Electrical energy
- (d) Potential energy

Correct Answer: (b) Solar energy

Solution:

External energy sources, also known as exogenic forces, are those that originate outside the Earth's crust. Solar energy is the primary external source that drives atmospheric and surface

processes like the water cycle, wind, and weathering. Internal energy (endogenic), such as heat from radioactivity, comes from within the Earth.

 Quick Tip

Exogenic forces (wind, water, glaciers) are powered by the Sun. Endogenic forces (volcanoes, earthquakes) are powered by the Earth's internal heat.

1.2 The force exerted by the Earth on an object is called:

- (a) Gravity
- (b) Friction
- (c) Magnetic force
- (d) Nuclear force

Correct Answer: (a) Gravity

Solution:

Gravity is the universal force of attraction that pulls all objects toward the Earth's center. This force keeps the atmosphere in place and gives objects their measurable weight. Friction is a resistive force between surfaces, while magnetic and nuclear forces act differently on matter.

 Quick Tip

Weight is the measurement of the force of gravity on an object ($W = mg$).

1.3 The principal raw material of photosynthesis is:

- (a) Water
- (b) Carbon dioxide
- (c) Oxygen
- (d) Sunlight

Correct Answer: (b) Carbon dioxide

Solution:

In the process of photosynthesis, plants use carbon dioxide (CO_2) and water (H_2O) in the presence of sunlight to create glucose. Carbon dioxide is considered the fundamental raw material for carbon fixation, as it provides the carbon atoms necessary to build organic molecules. Oxygen is produced as a byproduct.

💡 Quick Tip

Plants take in Carbon Dioxide (raw material) and give out Oxygen (by-product).

1.4 When rocks are broken into small pieces by weather action, it is called:

- (a) Erosion
- (b) Weathering
- (c) Deposition
- (d) Soil formation

Correct Answer: (b) Weathering

Solution:

Weathering refers to the mechanical breaking or chemical alteration of rocks at their original location (in situ) due to temperature changes, moisture, and biological activity. Unlike erosion, weathering does not involve the large-scale transportation of rock fragments to a new area.

💡 Quick Tip

Weathering = Breaking down (Static). Erosion = Breaking + Carrying away (Dynamic).

1.5 'Sewan grass' is found in:

- (a) Atlantic Ocean
- (b) Indian Ocean
- (c) Pacific Ocean
- (d) Arctic Ocean

Correct Answer: (a) Atlantic Ocean

Solution:

The question likely refers to the unique oceanic region known as the Sargasso Sea, situated in the North Atlantic Ocean. It is famous for hosting large mats of floating brown seaweed (Sargassum). While actual "Sewan grass" is a terrestrial desert plant in India, in the context of oceanic options, the "Sargasso" seaweed of the Atlantic is the intended subject.

💡 Quick Tip

The Sargasso Sea is the only sea without a land boundary, defined by ocean currents in the North Atlantic.

1.6 The regular rise and fall of sea water caused by the Moon and the Sun is called:

- (a) Tsunami
- (b) Sea waves
- (c) Ocean currents
- (d) Tides

Correct Answer: (d) Tides

Solution:

Tides are the rhythmic rising and falling of ocean levels, occurring twice a day. They are caused by the gravitational interaction between the Earth, the Moon, and the Sun. The Moon has a stronger influence due to its proximity to Earth. Tsunamis and waves are generally caused by seismic activity or wind.

💡 Quick Tip

The Moon's gravitational pull is the primary cause of tides because it is much closer to Earth than the Sun.

1.7 Which is not included in the 3R principle of waste management?

- (a) Reduction
- (b) Recycling
- (c) Reuse
- (d) Renovation

Correct Answer: (d) Renovation

Solution:

The 3R framework stands for Reduce (decreasing the amount of waste created), Reuse (finding new uses for items instead of discarding them), and Recycle (processing waste into raw materials for new products). Renovation is a construction or repair term and is not a core component of this waste management hierarchy.

💡 Quick Tip

Remember the order of priority: Reduce ∷ Reuse ∷ Recycle.

1.8 The present capital of Andhra Pradesh is:

- (a) Hyderabad
- (b) Secunderabad
- (c) Amaravati
- (d) Visakhapatnam

Correct Answer: (c) Amaravati

Solution:

Following the creation of Telangana in 2014, Hyderabad became the joint capital for a temporary period. Amaravati was subsequently planned and designated as the permanent capital of the residuary state of Andhra Pradesh. It remains the official capital city according to standard current geography.

 Quick Tip

Hyderabad is now the capital of Telangana.

1.9 The mountain range located in Kashmir is:

- (a) Karakoram
- (b) Zaskar
- (c) Ladakh
- (d) Shiwalik

Correct Answer: (b) Zaskar

Solution:

The Zaskar Range is a prominent mountain range in the Kashmir Himalayan region, separating the Zaskar valley from the Indus valley. While ranges like the Karakoram and Ladakh are part of the Trans-Himalayas and lie primarily in the Ladakh region, Zaskar is geographically grouped within the broader Kashmir Himalayan physiography.

 Quick Tip

North to South order in this region: Karakoram ∷ Ladakh ∷ Zaskar ∷ Great Himalayas ∷ Pir Panjal ∷ Shiwalik.

1.10 The first multipurpose river valley project in independent India was:

- (a) Damodar Valley Project
- (b) Hirakud Project
- (c) Bhakra–Nangal Project
- (d) Tungabhadra Project

Correct Answer: (a) Damodar Valley Project

Solution:

The Damodar Valley Project, managed by the Damodar Valley Corporation (DVC), was launched in 1948. It was the first major multipurpose project in India after independence,

aimed at flood control, irrigation, and power generation in West Bengal and Jharkhand.

 Quick Tip

Damodar river was earlier known as the "Sorrow of Bengal" before this project controlled its floods.

1.11 The crop grown only by rainwater in India is called:

- (a) Kharif crop
- (b) Rabi crop
- (c) Boro crop
- (d) Zaid crop

Correct Answer: (a) Kharif crop

Solution:

Kharif crops are monsoon-season crops grown between June and October. They rely heavily on the natural rainfall provided by the South-West monsoon. Examples include rice, cotton, and maize. Rabi crops are winter crops that usually require additional irrigation.

 Quick Tip

Kharif = Monsoon crops. Rabi = Winter crops. Zaid = Summer crops.

1.12 An example of India's cottage industry is:

- (a) Handloom industry
- (b) Ready-made garment industry
- (c) Heavy industry
- (d) IT industry

Correct Answer: (a) Handloom industry

Solution:

A cottage industry is a small-scale, decentralized manufacturing business often operated out of a home. The handloom industry is a prime example in India, where artisans use traditional manual looms to create textiles, involving low capital but high skilled labor.

 Quick Tip

Cottage industries are characterized by low capital investment and the use of traditional skills.

1.13 The headquarters of UNESCO is located in:

- (a) Moscow
- (b) Shanghai
- (c) Copenhagen
- (d) Paris

Correct Answer: (d) Paris

Solution:

UNESCO (United Nations Educational, Scientific and Cultural Organization) is a specialized agency of the UN. Its permanent headquarters is located in Paris, France. It was established to promote international peace and security through education, science, and culture.

Quick Tip
Other HQs: WHO (Geneva), UN (New York), FAO (Rome).

Section B

2.1 Write T for True and F for False (any six):**2.1.1 Antoine Lavoisier scientifically named gases.**

Correct Answer: (A) True

Solution:

Antoine Lavoisier, a French chemist, is credited with naming several important gases, including Oxygen and Hydrogen. His work established the basis for modern chemical nomenclature and helped transition chemistry from alchemy to a rigorous science.

Quick Tip
Lavoisier disproved the phlogiston theory and established the Law of Conservation of Mass.

2.1.2 With increase in altitude, air pressure increases.

Correct Answer: (B) False

Solution:

Air pressure is caused by the weight of the air molecules above a given point. As altitude increases, the density of the air decreases and there are fewer molecules in the overhead column. Consequently, air pressure decreases with gain in altitude.

💡 Quick Tip

Remember the hiker's rule: Higher you go, the thinner the air (lower pressure).

2.1.3 Jet stream is an upper air wind.

Correct Answer: (A) True

Solution:

Jet streams are high-speed wind currents located in the upper troposphere, near the tropopause. They flow in narrow bands from west to east and play a major role in directing weather systems and determining the speed of air travel.

💡 Quick Tip

Jet streams flow from west to east and significantly influence weather patterns and air travel times.

2.1.4 When the Sun, Earth and Moon lie in a straight line, it is called syzygy.

Correct Answer: (A) True

Solution:

Syzygy is the astronomical term for the alignment of three celestial bodies in a single straight line. This specific alignment of the Sun, Earth, and Moon occurs during New Moon and Full Moon phases, leading to stronger gravitational pulls known as spring tides.

💡 Quick Tip

Syzygy occurs at New Moon (Conjunction) and Full Moon (Opposition).

2.1.5 India's present Prime Minister is Narendra Modi.

Correct Answer: (A) True

Solution:

Narendra Modi is the current Prime Minister of India, having first taken office in 2014. He has successfully won consecutive terms and continues to lead the executive branch of the Indian government.

💡 Quick Tip
He is the 14th Prime Minister of India.

2.1.6 Convectional rainfall occurs throughout the year in temperate regions.

Correct Answer: (B) False

Solution:

Convectional rainfall is primarily a characteristic of the equatorial or tropical regions where intense solar heating occurs daily. In temperate regions, rainfall is more frequently associated with cyclones (fronts) or mountain barriers (relief), rather than year-round convection.

💡 Quick Tip
Equatorial region = "4 o'clock rain" (Convectional). Temperate region = Frontal/Cyclonic rain.

2.1.7 Contour lines do not show slope.

Correct Answer: (B) False

Solution:

Contour lines are used on maps to represent terrain relief. The distance between these lines indicates the gradient or slope of the land. Closely packed contours represent steep terrain,

while widely spaced contours represent gentle slopes.

💡 Quick Tip

Uniform spacing = Uniform slope. Irregular spacing = Undulating slope.

2.2 Fill in the blanks (any six):

2.2.1 Due to erosion, the height of land -----.

Correct Answer: decreases (or lowers)

Solution:

Erosion involves the wearing away and removal of rock and soil by agents like water, wind, and ice. As these materials are stripped away and transported elsewhere, the overall elevation or height of the land surface is reduced.

💡 Quick Tip

Degradation (erosion) lowers the land; Aggradation (deposition) raises the land.

2.2.2 In the equatorial region ----- rainfall occurs.

Correct Answer: convectional

Solution:

In the equatorial belt, the Sun's rays fall vertically, causing the ground to heat up intensely. The hot air rises, cools at higher altitudes, and condenses into cumulonimbus clouds, leading to heavy, localized convectional rainfall.

💡 Quick Tip

Associated with thunderstorms and occurs almost daily in the afternoons in the equatorial belt.

2.2.3 Areas with more evaporation than rainfall lie in the _____ climatic zone.

Correct Answer: Arid (or Desert)

Solution:

Arid or desert climatic zones are defined by a negative water balance. In these regions, the amount of moisture lost through evaporation is significantly higher than the moisture received through precipitation, resulting in dry conditions.

💡 Quick Tip

Arid zones typically have less than 25 cm of annual rainfall.

2.2.4 _____ tides are formed due to the Moon and the Sun.

Correct Answer: Spring (or Neap)

Solution:

Tides are generated by the gravitational pull of both the Sun and the Moon. When their forces act together in a straight line, they produce "Spring" tides (maximum height). When they act at right angles, they produce "Neap" tides (minimum height).

💡 Quick Tip

Spring tides = Combined pull (Full/New Moon). Neap tides = Perpendicular pull (Quarter Moons).

2.2.5 Weather balloons release _____ gas.

Correct Answer: Helium (or Hydrogen)

Solution:

Meteorological balloons are filled with lighter-than-air gases to carry equipment into the upper atmosphere. Helium is most frequently used because it is safe and non-reactive, while Hydrogen is sometimes used as a cheaper alternative despite its flammability.

💡 Quick Tip

Helium is lighter than air but heavier than Hydrogen. It is preferred because Hydrogen is highly explosive.

2.2.6 The plateau west of the Aravalli range is the _____ Plateau.

Correct Answer: Marwar (or Rajasthan Upland)

Solution:

The Aravalli mountains serve as a divide in Rajasthan. The semi-arid upland or plateau region situated to the west of this range is known as the Marwar Plateau or the Rajasthan Bagar, which eventually merges into the Thar Desert.

💡 Quick Tip

Direction check: West ← Aravalli → East (Malwa/Central Highlands).

2.2.7 Decomposition of biodegradable waste is called _____.

Correct Answer: Composting

Solution:

Composting is the controlled biological decomposition of organic materials, such as yard trimmings and food scraps. Microorganisms break these down into a dark, crumbly, nutrient-rich substance that improves soil health.

💡 Quick Tip

Vermicomposting is a specific type using earthworms to speed up the process.

2.3 Answer in one or two words (any six):

2.3.1 Instrument for measuring river discharge.

Correct Answer: Current Meter (or Flow Meter)

Solution:

River discharge is the volume of water moving through a river channel per unit of time. To calculate this, the speed of the water is measured using an instrument called a Current Meter, which uses a spinning propeller or sensor to detect flow velocity.

 Quick Tip

A Rain Gauge measures rainfall; A Current Meter measures water flow velocity.

2.3.2 Percentage of oxygen in dry air.

Correct Answer: 20.95% (or approx 21%)

Solution:

Oxygen is the second most abundant gas in the Earth's atmosphere. By volume, dry air consists of approximately 21% oxygen, which is essential for the respiration of most living organisms.

 Quick Tip

Nitrogen and Oxygen together make up 99

2.3.3 Origin region of warm ocean currents.

Correct Answer: Equatorial region

Solution:

Warm ocean currents typically originate in the low latitudes near the Equator. This is because the tropical waters absorb significant solar radiation, raising their temperature before they are carried toward the poles by the Earth's circulation patterns.

 Quick Tip

Examples: Gulf Stream, Kuroshio Current. Cold currents originate near the Poles.

2.3.4 Poisonous waste causing liver disease.

Correct Answer: Arsenic (or Lead)

Solution:

Many industrial and chemical wastes are hepatotoxic, meaning they damage the liver. Arsenic, commonly found in contaminated groundwater and industrial runoff, is a primary culprit for chronic liver diseases and skin conditions in many parts of the world, including India.

💡 Quick Tip
Arsenic = Blackfoot disease / Liver damage. Mercury = Minamata (Nervous system). Cadmium = Itai-Itai (Bones).

2.3.5 Highest waterfall in India.

Correct Answer: Kunchikal Falls

Solution:

Kunchikal Falls, located in the Western Ghats of Karnataka, is currently recognized as the highest waterfall in India. It has a total height of about 455 meters (1,493 ft) and is formed by the Varahi River.

💡 Quick Tip
Kunchikal is formed by the Varahi River.

2.3.6 Area receiving rainfall from North-East monsoon.

Correct Answer: Coromandel Coast (Tamil Nadu)

Solution:

The North-East monsoon, or the "retreating monsoon," blows during winter. As it crosses the Bay of Bengal, it picks up moisture and brings significant rainfall to the southeastern coast of

India, primarily the Coromandel Coast of Tamil Nadu.

💡 Quick Tip

Tamil Nadu receives the bulk of its annual rainfall in winter (Oct-Dec) from the NE Monsoon.

2.3.7 India's rank in internet usage.

Correct Answer: Second

Solution:

According to global digital reports, India has the world's second-largest internet user base. This rapid growth is driven by affordable mobile data and the expansion of digital infrastructure, placing India only behind China in total users.

💡 Quick Tip

Digital India initiatives have significantly boosted this ranking.

2.3.8 Line showing height on a topographical map.

Correct Answer: Contour line

Solution:

Contour lines are imaginary lines on a map that connect all points having the same height above a reference level (usually sea level). They allow a two-dimensional map to represent three-dimensional landforms like hills and valleys.

💡 Quick Tip

Isotherms = Equal Temperature. Isobars = Equal Pressure. Isohyets = Equal Rainfall.

Section C

3. Answer briefly (any four):

3.1 What is continental drift?

Correct Answer: A theory stating continents have moved over geologic time.

Solution:

Continental drift is the scientific hypothesis that the Earth's continents have shifted their positions relative to each other over millions of years. Proposed by Alfred Wegener, the theory suggests that the continents were once joined as a single landmass called Pangea before breaking apart and "drifting" to their current locations.

 Quick Tip

Evidence includes the "jig-saw" fit of South America and Africa, and matching fossils across oceans.

OR

3.1 State the causes of earthquakes.

Correct Answer: Plate tectonics, volcanism, and anthropogenic factors.

Solution:

Earthquakes are primarily caused by the sudden release of energy in the Earth's crust. The main causes include: tectonic plate movements (shifting and rubbing of plates), volcanic eruptions (pressure from magma), and human activities like underground mining or the construction of massive reservoirs (reservoir-induced seismicity).

 Quick Tip

The point of origin underground is the Focus (Hypocenter); the point directly above on the surface is the Epicenter.

3.2 What is a Katabatic wind?

Correct Answer: A cold, downslope wind caused by gravity.

Solution:

A Katabatic wind is a heavy, cold wind that flows down mountain slopes or plateaus into valleys. This happens at night when the air at high altitudes cools rapidly, becomes dense, and is pulled downward by gravity, often creating very cold conditions in the valley below.

 Quick Tip

Katabatic = Downslope (Night). Anabatic = Upslope (Day).

OR

3.2 What is ITCZ?

Correct Answer: Inter-Tropical Convergence Zone.

Solution:

The Inter-Tropical Convergence Zone (ITCZ) is a low-pressure area near the equator where the Trade Winds from the Northern and Southern Hemispheres meet. This convergence causes air to rise, leading to persistent cloud cover, frequent thunderstorms, and heavy rainfall.

 Quick Tip

Sailors refer to this calm, windless area within the ITCZ as "The Doldrums."

3.3 State the problems caused by medical waste.

Correct Answer: Infection spread, toxicity, and environmental pollution.

Solution:

Improperly managed medical waste poses significant health risks. It can lead to the spread of infectious diseases (like HIV or Hepatitis) through sharp objects, contaminate soil and water with toxic chemicals from pharmaceuticals, and release dangerous pollutants into the air if burned without proper controls.

 Quick Tip

Biomedical waste must be segregated by color code (e.g., Red for plastics, Yellow for anatomical waste) before treatment.

OR

3.3 What is biodegradable waste?

Correct Answer: Waste that can be decomposed by natural agents.

Solution:

Biodegradable waste consists of organic materials that can be broken down into simpler substances by natural decomposers like bacteria and fungi. Examples include food scraps, paper, and garden waste. Because they decompose naturally, they can often be converted into useful compost.

 Quick Tip

Non-biodegradable waste (plastics, glass) persists in the environment for hundreds of years.

3.4 What is food?

Correct Answer: Nutritive substance essential for life.

Solution:

Food is any substance consumed to provide essential nutrients—such as carbohydrates, proteins, and vitamins—to an organism. It serves as the primary energy source for growth and maintenance of life. Geographically, food production is influenced by soil, climate, and human technology.

 Quick Tip

Food security involves availability, access, and absorption of food.

OR

3.4 What is weather?

Correct Answer: The day-to-day state of the atmosphere.

Solution:

Weather describes the short-term state of the atmosphere at a specific time and place. It includes variables like temperature, wind speed, humidity, and precipitation. Unlike climate, weather can change significantly within a few hours or even minutes.

 Quick Tip

Climate is the average of weather conditions over a long period (typically 30-35 years).

Section D

4. Answer in detail (any three):

4.1 Explain the causes of day and night.

Correct Answer: Rotation of the Earth on its axis.

Solution:

The cycle of day and night is caused by the Earth rotating on its tilted axis once every 24 hours. Because the Earth is a sphere, only half of it faces the Sun at any given time. The side facing the Sun experiences daylight, while the opposite side remains in darkness, experiencing night. As the Earth spins, different regions continuously rotate into and out of the Sun's light.

 Quick Tip

The "Circle of Illumination" is the line separating the day side from the night side.

OR

4.1 Write three differences between weather and climate.

Correct Answer: Differences in duration, area, and variability.

Solution:

1. **Duration:** Weather refers to short-term atmospheric conditions (hours or days), while climate is the average of these conditions over a long period (30 years or more).
2. **Area:** Weather usually applies to a local area, whereas climate describes a larger geographical region.
3. **Changeability:** Weather is highly variable and changes constantly; climate is relatively stable and predictable.

 Quick Tip

Meteorology studies weather; Climatology studies climate.

4.2 Discuss causes and effects of air pollution.

Correct Answer: Emissions from vehicles/industries causing health and environmental damage.

Solution:

Air pollution is caused by the introduction of harmful substances into the atmosphere. Major causes include industrial smoke, vehicle exhaust, and the burning of fossil fuels or agricultural waste. The effects include serious respiratory health problems in humans (like asthma), environmental damage such as acid rain, and the acceleration of global warming through the greenhouse effect.

 Quick Tip

Pollutants are classified as Primary (directly emitted, e.g., *CO*) and Secondary (formed in atmosphere, e.g., Ozone).

OR

4.2 Mention three roles of the community in waste management.

Correct Answer: Segregation, reduction, and awareness.

Solution:

A community can improve waste management by: 1. **Source Segregation:** Households separating dry and wet waste before collection. 2. **Waste Reduction:** Encouraging the use of reusable bags and reducing single-use plastics. 3. **Education:** Spreading awareness about the dangers of illegal dumping and participating in neighborhood cleanup initiatives.

💡 Quick Tip

"Waste is wealth" if managed properly through community participation.

4.3 Write differences between Himalayan rivers and Peninsular rivers.

Correct Answer: Differences in origin, flow nature, and utility.

Solution:

Himalayan rivers (like the Ganga) originate from glaciers and are perennial, meaning they flow all year round. Peninsular rivers (like the Krishna) originate from plateaus and are seasonal, relying solely on rainfall. Himalayan rivers have longer courses and create deep valleys, while Peninsular rivers are shorter with broader, shallower valleys. Himalayan rivers are also better suited for navigation and large-scale irrigation in the plains.

💡 Quick Tip

Himalayan = Antecedent drainage (older than landforms). Peninsular = Superimposed/Consequent drainage.

OR

4.3 Mention causes for the development of automobile industry in India.

Correct Answer: Demand, labor, policy, and raw materials.

Solution:

The Indian automobile industry has grown due to several factors: the massive domestic demand from a growing population, easy access to raw materials like steel, and the availability of cost-effective skilled labor. Additionally, government reforms and foreign investments have allowed global manufacturers to set up large production hubs within the country.

 Quick Tip

Chennai is often called the "Detroit of India" due to its concentration of automobile industries.

4.4 Write three differences between a topographical map and a sketch.

Correct Answer: Scale, symbols, and accuracy.

Solution:

1. **Scale:** Topographical maps are drawn to a precise mathematical scale, whereas sketches are rough drawings without a scale. 2. **Accuracy:** Maps are based on professional surveys and are highly accurate, while sketches are based on memory or quick observation. 3. **Symbols:** Topographical maps use standard conventional symbols to show features; sketches use simplified or informal markers.

 Quick Tip

Topographical maps are prepared by the Survey of India.

OR

4.4 Mention advantages of rainwater harvesting.

Correct Answer: Groundwater recharge, water conservation, and flood control.

Solution:

Rainwater harvesting helps in replenishing the groundwater table and reduces the demand for municipal water supplies. It also helps prevent urban flooding by reducing surface runoff and soil erosion. Furthermore, it provides an independent water source for gardening or non-potable uses during dry seasons.

 Quick Tip

Tamil Nadu was the first Indian state to make rainwater harvesting mandatory for all buildings.

Section E

(For visually challenged candidates, diagrams not compulsory)

5. Answer any two ($2 \times 10 = 20$):

5.1 Landforms formed by river erosion with diagram.

Correct Answer: Features like V-shaped valleys, gorges, waterfalls, and potholes.

Solution:

In its youthful stage, a river erodes the land vertically, creating deep V-shaped valleys and narrow, steep-sided gorges. When a river flows over rocks of different hardness, it erodes the softer ones faster, creating vertical drops known as waterfalls. Additionally, the swirling motion of water and stones on the riverbed creates circular depressions called potholes. (A diagram illustrating a V-shaped valley or waterfall should accompany this explanation).

💡 Quick Tip

"I-shaped" valleys are Gorges/Canyons; "V-shaped" are typical river valleys.

OR

5.1 Irrigation systems of India.

Correct Answer: Canals, wells, tubewells, and tanks.

Solution:

India relies on several irrigation methods: 1. **Wells and Tubewells:** These are the most common, especially in the northern plains, tapping into groundwater. 2. **Canals:** These distribute river water through networks; they are very important in Punjab and Uttar Pradesh. 3. **Tank Irrigation:** Common in the hard-rock regions of South India, where natural depressions store rainwater. Modern techniques like drip and sprinkler irrigation are also becoming popular for conserving water.

💡 Quick Tip

North India = Canals/Tubewells. South India = Tanks.

5.2 Atmospheric circulation.

Correct Answer: Planetary wind systems involving Hadley, Ferrel, and Polar cells.

Solution:

Atmospheric circulation is the large-scale movement of air that balances temperature around the globe. It is driven by the Sun's uneven heating and the Earth's rotation. The system includes permanent pressure belts and planetary winds like the Trade Winds, Westerlies, and Polar Easterlies. These winds move within established atmospheric "cells" (Hadley, Ferrel, and Polar) to transfer heat from the tropics to the poles.

 Quick Tip

Winds always blow from High Pressure to Low Pressure.

OR

5.2 Natural environment of Chhotanagpur Plateau.

Correct Answer: Mineral-rich region with radial drainage and deciduous forests.

Solution:

The Chhotanagpur Plateau is a mineral-rich highland in eastern India. It has a rugged terrain with varied elevations and is the source of many rivers like the Damodar and Subarnarekha. The region is covered with tropical deciduous forests, though much of it has been cleared for mining. It contains India's largest deposits of coal and iron ore, significantly influencing the country's industrial geography.

 Quick Tip

Often called the "Ruhr of India" due to its mineral wealth.

5.3 Convectional rainfall – causes and characteristics.

Correct Answer: Caused by intense heating; characterized by heavy, short-duration downpours with thunder.

Solution:

Convectional rainfall occurs when the Earth's surface is heated strongly by the Sun, causing the air above to rise rapidly. This rising air cools and its moisture condenses into clouds. It is typically characterized by sudden, heavy showers, often accompanied by thunder and lightning, and usually happens in the afternoon in tropical regions.

💡 Quick Tip

Requires high temperature and high humidity.

OR

5.3 Causes of spread of iron and steel industry.

Correct Answer: Raw material proximity, transport, power, and market.

Solution:

The Iron and Steel industry is located based on the availability of bulky raw materials like iron ore, coking coal, and manganese. Because these materials are heavy and lose weight during processing, factories are usually built near the mines. Other factors include access to abundant water for cooling, cheap electricity, and strong railway connections to transport finished goods to markets.

💡 Quick Tip

Weber's Theory of Industrial Location applies perfectly here: Material Index > 1 , so locate near raw materials.

5.4 Effects of ocean currents on climate.

Correct Answer: Moderates temperature, influences rainfall, and causes fog.

Solution:

Ocean currents act as giant conveyor belts that move warm or cold water across the globe. Warm currents raise the temperature of cold coastal regions and bring moisture-laden winds that cause rainfall. Cold currents lower temperatures and often create dry or desert conditions on adjacent lands. Where warm and cold currents meet, they create thick fog, which is a hazard for ships but helpful for fishing.

💡 Quick Tip

Deserts are often found on the western margins of continents due to cold ocean currents.

OR

5.4 Causes of uneven population distribution in India.

Correct Answer: Physical factors (relief, climate) and Socio-economic factors (jobs, urbanization).

Solution:

India's population is uneven because people prefer regions with fertile land, favorable climate, and water availability, such as the Northern Plains. In contrast, mountainous or desert regions have very few inhabitants due to difficult living conditions. Furthermore, industrialized urban centers attract millions of people for work and better services, leading to very high population densities in cities.

💡 Quick Tip

Uttar Pradesh is the most populous state; Sikkim is the least.

Section F

6. Map Work:

Mark and label the following on the outline map of India:

- (6.1) Kalpakkam
- (6.2) Latagudi
- (6.3) Godavari River
- (6.4) Chilika Lake
- (6.5) Eastern Coastal Plains

Solution:

To mark these correctly: 6.1 **Kalpakkam** is a nuclear power hub on the Tamil Nadu coast, south of Chennai.

6.2 **Latagudi** is a scenic spot in the northern Dooars of West Bengal.

6.3 **Godavari River** flows across Central India into the Bay of Bengal through Andhra Pradesh.

6.4 **Chilika Lake** is a large brackish water lagoon located on the Odisha coast.

6.5 **Eastern Coastal Plains** is the fertile strip of land between the Eastern Ghats and the Bay of Bengal.



 Quick Tip

Use specific symbols for specific features: blue line for rivers, dot/circle for cities/places, shading for regions.
