

R.C. Reddy IAS Study Circle
UPSC CSE PRELIMS 2025 TEST SERIES
SECTIONAL TEST - 02
INDIA & WORLD GEOGRAPHY

Q1 . A

- **Nallamala Hills** – Located in the northern part of the Rayalaseema region, extending into Andhra Pradesh.
- **Palkonda Range** – Located just south of the Nallamala Hills, in the Rayalaseema region of Andhra Pradesh.
- **Javadi Hills** – Located to the south of the Palkonda Range, in the eastern part of Tamil Nadu.
- **Shevroy Hills** – Located further south of the Javadi Hills, in the eastern part of Tamil Nadu.



Q2

Ans: B

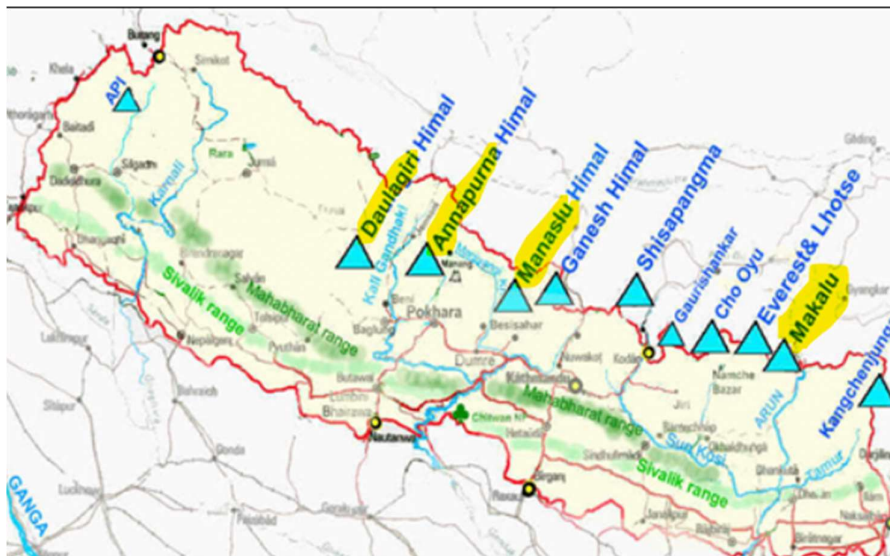
Exp:



Q3

Ans: C

Exp:



Q4

Ans: A

Exp:

- **Po River** –Drains into the Adriatic Sea, not the Black Sea.
- **Volga River** –Drains into the Caspian Sea, not the Black Sea.
- **Danube River** –**Drains into the Black Sea, primarily through Romania.**
- **Rhone River** –Drains into the Mediterranean Sea, not the Black Sea.
- **Dnieper River** –**Drains into the Black Sea, primarily through Ukraine.**



Q5

Ans: D

Exp:

Peru is entirely located in the Southern Hemisphere:

- Peru is a country in South America, on the central western coast, facing the Pacific Ocean.
- Peru's northernmost point is about 3.3 kilometers (2.1 miles) south of the equator.



Q6

Ans: B:

Exp:

The Niger River Basin, home to approximately 100 million people, is a vital, complex asset for West and Central Africa. It is the continent's third longest river, traversing nine countries—Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger, and Nigeria.



Q7

Ans: B

Exp:



Q8

Ans: D

Exp:



Q9

Ans: D

Exp:

Kirkuk – Iraq

- Kirkuk is a city in northern Iraq, known for its oil reserves.

Irbid – Jordan

- Irbid is a major city in northern Jordan, near the border with Syria.

Tripoli – Lebanon

- Tripoli is a coastal city in northern Lebanon, second-largest after Beirut.

Homs – Syria

- Homs is a major city in western Syria, known for its historical significance.

Q10

Ans: B

Exp:

- The Tropic of Cancer does pass through the southern Gulf of Mexico, near the Yucatan Peninsula (Mexico).
- The Tropic of Cancer is located well south of the Mediterranean Sea and does not pass through it.
- The Tropic of Cancer does cross the Red Sea, near the Egypt-Saudi Arabia border.
- The Tropic of Cancer does not pass through the Bay of Bengal, though it crosses northern India and Bangladesh, slightly inland.



Q11

Ans: C

Exp:

- **Australia tops the list of iron ore production by country.** It is the leading producer of iron ore in the world. The nation produces about 37.6% of total world production. It doubles its closest rival, Brazil. Australia also has nearly 48 billion tons of crude iron ore reserves, the largest globally. Iron ore is the country's largest export, and its major markets are China, Japan, South Korea, Taiwan, and Vietnam.
- **Brazil is the second-largest producer of iron ore.** Brazil produces 16.7% of total world production. China, the United States, India, and Malaysia are the main markets for iron ore from Brazil. Iron ore in Brazil is abundant in the state of Para, which produces nearly 190 tons every year, followed closely by the state of Minas Gerais. Vale, a Rio de Janeiro-based mining company, is the main iron miner in Brazil.
- **Despite being a major importer of iron ore, China is also the third-highest iron ore producer.** That's because it consumes more tons of iron ore than any country. China supplements its domestic iron ore with imports from other countries to sustain its demand in the steel industry and other related fields. It has nearly 20 billion tons of crude oil reserves. Areas in China rich in iron ore include Hebei, Inner Mongolia, Liaoning, and Shanxi.
- **India is Asia's second-largest producer of iron ore and the fourth-largest producer worldwide.** It accounts for 9.6% of the total iron ore produced around the globe. India exports its resources to Japan and South Korea despite using iron ore in its steel industries.
- **Russia is the fifth largest iron ore-producing country in the world. It is the leading producer of iron in Europe.** The nation is expected to increase its iron ore production given its extensive iron ore reserves, which hold an estimated 25 billion metric tons. Russia is among the leading exporters of iron, with its main markets being China, Ukraine, Germany, Slovakia, and Turkey.

Q12

Ans: A

Exp:

- **Chile, the world's leading copper producer.** Tied for second place was Peru and Democratic Republic of the Congo. **The world's third-largest copper producer from mines is China. Pair 1 is correctly matched.**
- **China's zinc mines produced approximately 4.2 million metric tons of zinc.** Accordingly, China is the world's largest producer of the base metal zinc. Peru and Australia were the second and third-largest zinc mining countries in the world. **Pair 2 is incorrectly matched.**
- **South Africa is the world's largest producer of manganese.** The country also holds the largest reserves of manganese at 640 million metric tons (MT). **Pair 3 is incorrectly matched.**
- **China is the world's largest silicon producer, with a production volume estimated at six million metric tons.** The second largest producer of this metalloid in the world was Russia, which produced 640,000 metric tons in the same year. **Pair 4 is incorrectly matched.**

Q13

Ans: D

Exp:

The present installed nuclear power capacity in the country is 6780 MW comprising of 22 operational nuclear power reactors.

Important Nuclear Power plants

- Kaiga - Karnataka
- Kakrapar - Gujarat
- Kudankulam -Tamil Nadu
- Kalpakkam - Tamil Nadu
- Narora - Uttar Pradesh
- Rawatbhata - Rajasthan
- Tarapur – Maharashtra

Q14

Ans: A

Exp:

- Coalbed Methane (CBM) is natural gas contained in coal.
- It consists primarily of methane, the gas we use for home heating, gas-fired electrical generation and industrial fuel.
- CBM commonly is referred to as an "unconventional" form of natural gas. (Statement I is correct) because it is primarily stored through adsorption to the coal itself rather than in the pore space of the rock, like most "conventional" gas. (statement II is correct and is the correct explanation of statement I). The gas is released in response to a drop in pressure in the coal.
- Coal Bed Methane (CBM), an unconventional source of natural gas, is now considered as an alternative source for augmenting India's energy resource.
- India has the fifth largest proven coal reserves in the world and thus holds significant prospects for exploration and exploitation of CBM.

Q15

Ans: A

Exp:

- The months of October and November are known for retreating monsoons. By the middle of September, the southwest monsoon becomes weak as a low-pressure trough of the Ganga plain starts moving southward in response to the southward march of the Sun. Retreating monsoon season is marked by clear skies and a rise in temperature. The land is still moist. Owing to the conditions of high temperature and humidity, the weather becomes rather oppressive. This is commonly known as the 'October heat'. Statements 1 and 2 are correct.
- In the second half of October, the mercury begins to fall rapidly, particularly in northern India. In the first half of October, major parts of the country experience an average temperature ranging between

25°C to 28°C. Rajasthan, Gujarat, and the coastal plains of East coast experience temperatures of about 28°C. As the monsoon starts retreating towards the south, the pressure gradient becomes low. (During the retreating monsoon, the low-pressure trough moves southward, not northward, as the monsoon withdraws.) Statement 3 is incorrect.

- It is during the retreating monsoon season in India that the southeastern coast receives a lot of rainfall. Tropical cyclones also occur during this time. The state of Tamil Nadu receives almost half of its annual rainfall during this time. This is called the winter monsoon or the northeast monsoon. Statement 4 is correct.

Q16

Ans: C

Exp:

- Coral reefs are underwater structures that are made up of colonies of tiny animals called coral polyps. These structures are found in shallow, warm, and clear waters, typically in tropical and subtropical regions.
- Coral polyps are small, soft-bodied organisms that are related to jellyfish and sea anemones. They have a hard external skeleton made of calcium carbonate, which forms the base of the reef. As new generations of coral polyps grow and reproduce, they add to the existing skeleton, slowly creating the complex and intricate structures that we see as coral reefs.

Fringing reefs: A fringing reef is a coralline platform lying close to the shore extending outwards from the mainland.

- It is sometimes separated from the shore by a shallow lagoon. It is widest when fringing a protruding headland but completely absent when facing the mouth of a stream. The outer edge grows rapidly because of the splashing waves that continuously renew the supply of fresh food. **Statement 1 is correct.**

Barrier reefs

- A barrier reef is separated from the coast by a much wider and deeper channel or lagoon. The reef is partially submerged. Where it lies above the water level and sand can accumulate on it, a little vegetation is possible. **Statement 2 is correct.**
- The barrier reefs have narrow gaps at several places to allow the water from the enclosed lagoon to return to the open ocean. Such gaps are very useful for shipping and provide the only entrances for ships to enter or leave the lagoon.
- The best-known barrier reef is the Great Barrier Reef off the coast of Queensland Australia.

Q17

Ans: A

Exp:

During the active phase of the monsoon, thick cloud cover and continuous rainfall stabilize the atmosphere, reducing the temperature gradient between the surface and upper atmosphere, which in turn limits the conditions necessary for lightning generation.

- **Lightning Formation:** Lightning occurs due to the separation of electrical charges within a thunderstorm cloud. This separation is driven by strong updrafts and downdrafts within the cloud, which create significant temperature and moisture gradients.
- **Monsoon Season Characteristics:** During the active monsoon season, there is often widespread cloud cover. This relatively uniform cloud cover tends to reduce the temperature differences between the surface and the upper atmosphere.
- **Reduced Temperature Differences:** Reduced temperature differences weaken the updrafts and downdrafts within the cloud, which in turn weakens the charge separation process. This ultimately leads to a decrease in the frequency of lightning strikes.

While other factors like moisture content and wind can influence lightning activity, the reduction in temperature differences due to continuous cloud cover is a significant factor in the observed decrease in lightning during the active monsoon season.

Q18

Ans: D

Exp:

- The Penganga River originates from the Buldhana range of Maharashtra. It joins Wardha and the combined stream of them and Wainganga meets the Pranahita river. Pranhita finally joins the Godavari River. Thus, Penganga is a tributary of Godavari. **Pair 1 is correctly matched.**
- The Mahanadi is one of the major east-flowing peninsular rivers in India, originating in the Dhamtari district of Chhattisgarh and draining into the Bay of Bengal. The Seonath is the longest tributary of Mahanadi which rises in the midst of numerous small groups of hills in Rajnandgaon district of Chhattisgarh. Pair 2 is correctly matched.
- Barakar River originates from a place called Padma situated in the district of Hazaribagh in the state of Jharkhand. Barakar River runs down from west to east direction diagonally to the northernmost part of the Chota Nagpur table pours across 225 kilometers of the area and later merges into Damodar situated near Dishergarh of the district of Bardhaman in West Bengal. **Pair 3 is correctly matched.**
- A major tributary of the Cauvery River is the Bhavani River. The river is two hundred and seventeen kilometers long and flows through the states of Kerala and Tamil Nadu. **Pair 4 is correctly matched.**

Q19

Ans: A

Exp:

Rivers	Origin State
1. Myntdu	Meghalaya
2. Tizu	Nagaland
3. Gumti	Tripura

Myntdu – Meghalaya. Piar 1 is incorrect.

- The Myntdu River originates in Meghalaya and flows through the Jaintia Hills region.

Tizu – Nagaland. Pair 2 is incorrect.

- The Tizu River originates in Nagaland and flows eastward, eventually joining the Chindwin River in Myanmar.

Gumti – Tripura. Pair 3 is correct.

- The Gumti River originates in Tripura and is an important river for the state.

Q20

Ans: D

Exp:

- Indian Ocean Dipole (IOD), sometimes referred to as the Indian Nino, plays out in the relatively smaller area of the Indian Ocean between the Indonesian and Malaysian coastline in the east and the African coastline near Somalia in the west. One side of the ocean, along the equator, gets warmer than the other. **IOD is said to be positive when the western side of the Indian Ocean, near the Somalia coast, becomes warmer than the eastern Indian Ocean. It is negative when the western Indian Ocean is cooler.**
- The air circulation in the Indian Ocean basin moves from west to east, that is from the African coast towards the Indonesian islands, near the surface, and in the opposite direction at the upper levels. That means the surface waters in the Indian Ocean get pushed from west to east. In a normal year, warmer waters in the western Pacific near Indonesia cross over into the Indian Ocean and make that part of the Indian Ocean slightly warmer. That causes the air to rise and helps the prevailing air circulation.
- In the years when the air circulation becomes stronger, warmer surface waters from the African coast are pushed towards the Indonesian islands, making that region warmer than usual. This caused hotter air to rise and the cycle reinforced itself. This is the state of negative IOD. The opposite case involves air circulation becoming slightly weaker than normal. In some rare cases, the air circulation even reverses direction. The consequence is that the African coast becomes warmer while the Indonesian coastline gets cooler.
- **A positive IOD event is often seen developing at times of an El Nino, while a negative IOD is sometimes associated with La Nina.** During El Nino, the Pacific side of Indonesia is cooler than normal because the Indian Ocean side also gets cooler. That helps the development of a positive IOD. **Statement 1 is correct.**
- **A positive IOD helps rainfall along the African coastline and also over the Indian sub-continent while suppressing rainfall over Indonesia, Southeast Asia, and Australia.** The impacts are opposite during a negative IOD event because **Negative IOD can lead to increased rainfall and atmospheric convection over the eastern Indian Ocean, Indonesia, and northern Australia.** **Statement 2 is correct.**

Q21

Ans: A

Exp:

The air is set in motion due to the differences in atmospheric pressure. The air in motion is called wind. The wind blows from high pressure to low pressure. The wind at the surface experiences friction. In addition, rotation of the earth also affects the wind movement. The force exerted by the rotation of the earth is known as the Coriolis force. **Thus, the horizontal winds near the earth surface respond to the combined effect of three forces - the pressure gradient force, the frictional force and the Coriolis force.** Statement 1 is correct.

Pressure Gradient Force: The differences in atmospheric pressure produces a force. **The rate of change of pressure with respect to distance is the pressure gradient.** **The pressure gradient is strong where the isobars are close to each other and is weak where the isobars are apart.** Statement 2 is incorrect.

Coriolis Force: The rotation of the earth about its axis affects the direction of the wind. This force is called the Coriolis force after the French physicist who described it in 1844. It deflects the wind to the right direction in the northern hemisphere and to the left in the southern hemisphere.

- The deflection is more when the wind velocity is high. The Coriolis force is directly proportional to the angle of latitude. It is maximum at the poles and is absent at the equator.
- **The Coriolis force acts perpendicular to the pressure gradient force.** The pressure gradient force is perpendicular to an isobar. The higher the pressure gradient force, the more is the velocity of the wind and the larger is the deflection in the direction of wind. **Statement 3 is correct.**
- As a result of these two forces operating perpendicular to each other, in the low-pressure areas the wind blows around it.
- At the equator, the Coriolis force is zero and the wind blows perpendicular to the isobars. The low pressure gets filled instead of getting intensified. That is the reason why tropical cyclones are not formed near the equator.
- The velocity and direction of the wind are the net result of the wind generating forces. The winds in the upper atmosphere, 2-3 km above the surface, are free from frictional effect of the surface and are controlled mainly by the pressure gradient and the Coriolis force.
- When isobars are straight and **when there is no friction, the pressure gradient force is balanced by the Coriolis force and the resultant wind blows parallel to the isobar.** This wind is known as the geostrophic wind. **Statement 4 is correct.**
- The wind circulation around a low is called cyclonic circulation. Around a high it is called anti cyclonic circulation.

Q22

Ans: A

Exp:

- Normally, temperature decreases with an increase in elevation. It is called the normal lapse rate. **At times, the situation is reversed and the normal lapse rate is inverted. It is called the inversion of temperature.**
- **A long winter night with clear skies and still air is an ideal situation for inversion.** The heat of the day is radiated off during the night, and by early morning hours, the earth is cooler than the air above. During the day, the sun heats the ground, which in turn heats the air in contact with it. This creates instability in the lower atmosphere, causing air to rise and mix with the surrounding air.

- However, on long winter nights with clear skies and still air, the ground loses heat rapidly through radiation, cooling the air in contact with it. This cooler air is denser than the warmer air above it, creating a stable layer of air close to the ground.
- As the night progresses, the ground continues to cool, and the stable layer of cool air near the ground becomes thicker. The cool air acts as a lid, trapping any warmer air above it, which prevents it from mixing with the cool air below.
- This creates a temperature inversion, where the temperature increases with height, and the coldest air is at the surface.
- The clear skies and still air is critical for the development and maintenance of a temperature inversion. Clear skies allow for the maximum amount of radiative cooling of the ground and the air near the surface. **Statements 1 and 2 are correct.**
- Still air prevents the mixing of warm and cool air, allowing the stable layer of cool air near the ground to become thicker and more pronounced.
- Over polar areas, temperature inversion is normal throughout the year. Surface inversion promotes stability in the lower layers of the atmosphere. Smoke and dust particles get collected beneath the inversion layer and spread horizontally to fill the lower strata of the atmosphere.
- Dense fogs in the mornings are common occurrences, especially during the winter season. This inversion commonly lasts for a few hours until the sun comes up and begins to warm the earth.
- The inversion takes place in hills and mountains due to air drainage. Cold air in the hills and mountains, produced during the night, flows under the influence of gravity. Being heavy and dense, the cold air acts almost like water and moves down the slope to pile up deeply in pockets and valley bottoms with warm air above. Statement 3 is correct.
- This is called air drainage. It protects plants from frost damages.

Q23

Ans: C

Exp:

The Cool Temperate Eastern Margin (Laurentian) Climate is an intermediate type of climate between the British and the Siberian type of climate. Statement 3 is correct.

- It has features of both the maritime and the continental climates. The Laurentian type of climate is found only in two regions. Statement 1 is correct.

North American region:

- One is north-eastern North America, including eastern Canada, north-east U.S.A., (i.e. Maritime Provinces and the New England states), and Newfoundland.

Asiatic region:

- Eastern coastlands of Asia, including eastern Siberia, North China, Manchuria, Korea and northern Japan.
- In the southern hemisphere, this climatic type is absent because only a small section of the southern continents extends south of the latitude of 40° S. Statement 2 is correct.

Climatic Conditions:

- The Laurentian type of climate has cold, dry winters and warm, wet summers.
- Winter temperatures may be well below freezing point and snow falls to quite a depth. Summers are as warm as the tropics (21° - 27°C) and if it were not for the cooling effects of the off-shore cold currents from the Arctic, the summer might be even hotter.
- Though rain falls throughout the year, there is a distinct summer maximum from the easterly winds from the oceans. Of the annual precipitation of 30 to 60 inches, two-thirds come in the summer. Winter is dry and cold because the winds are dry Westerlies that blow out from the continental interiors.

Q24

Ans: D

Exp:

- The moon's gravitational pull mostly and to a lesser extent the sun's gravitational pull, are the major causes for the occurrence of tides.
- Another factor is centrifugal force, which is the force that acts to counterbalance gravity.
- Together, the gravitational pull and the centrifugal force are responsible for creating the two major tidal bulges on the Earth.
- On the side of the earth facing the moon, a tidal bulge occurs while on the opposite side through the gravitational attraction of the moon.
- The 'tide-generating force is the difference between these two forces, i.e. the gravitational attraction of the moon and the centrifugal force.
- On the surface of the earth, nearest the moon, the pull or the attractive force of the moon is greater than the centrifugal force, and so there is a net force causing a bulge towards the moon.
- On the opposite side of the earth, the attractive force is less, as it is farther away from the moon, the centrifugal force is dominant. Hence, there is a net force away from the moon. It creates a second bulge away from the moon.
- **On the surface of the earth, the horizontal tide-generating forces are more important than the vertical forces in generating the tidal bulges.** Statement 2 is correct.
- **Spring tides:** The position of both the sun and the moon in relation to the earth has a direct bearing on tide height. **When the sun, the moon, and the earth are in a straight line, the height of the tide will be higher. These are called spring tides and they occur twice a month, one on the full moon period and another during the new moon period.** Statement 1 is correct.
- **Neap tides:** **Normally, there is a seven-day interval between the spring tides and neap tides.** Statement 3 is correct.
- At this time the sun and moon are at right angles to each other and the forces of the sun and moon tend to counteract one another. The Moon's attraction, though more than twice as strong as the sun's, is diminished by the counteracting force of the sun's gravitational pull.

Q25

Ans: C

Exp:

- **Extratropical cyclones, sometimes called mid-latitude cyclones or wave cyclones generally develop beyond the tropics and are associated with frontogenesis.** The passage of the front cause abrupt changes in the weather conditions over the area in the middle and high latitudes.

- Extratropical cyclones form along the polar front. Initially, the front is stationary. In the northern hemisphere, warm air blows from the south, and cold air from the north of the front.
- **When the pressure drops along the front, the warm air moves northwards and the cold air moves towards, the south setting in motion an anticlockwise cyclonic circulation. The cyclonic circulation leads to a well-developed extratropical cyclone, with a warm front and a cold front.**
- The processes of wind circulation both at the surface and aloft are closely interlinked. The extratropical cyclone differs from the tropical cyclone in a number of ways. **The extra tropical cyclones have a clear frontal system which is not present in the tropical cyclones.**
- The extratropical cyclones cover a larger area and can originate over the land and sea. Whereas tropical cyclones originate only over the seas and on reaching the land they dissipate.
- **The extratropical cyclone affects a much larger area as compared to the tropical cyclone. The wind velocity in a tropical cyclone is much higher and it is more destructive.** Statement 1 is correct.
- **The extra tropical cyclones move from west to east but tropical cyclones, move from east to west.** Statement 2 is correct.

Q26

Ans: A

Exp:

A lake is an inland body of standing water that may be fresh, brackish, or saltish. Lakes are among the most widely distributed of all topographic features for they are found at all latitudes and altitudes in India.

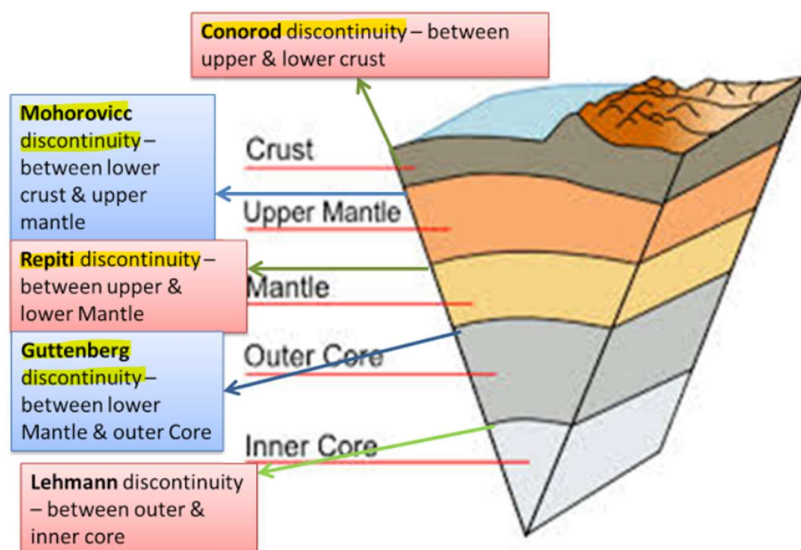
- Wular lake is the largest lake in the Kashmir valley, which greatly influences the flow of the Jhelum and other rivers, occupies a structural depression having occurred there.
- **Wular Lake was formed due to tectonic activity involving subsidence (sinking of the earth's crust), not faulting.** Statement 1 is incorrect.
- **Kolleru Lake in Andhra Pradesh is a freshwater lake, not a saltwater lake. It is one of the largest freshwater lakes in India.** Statement 2 is incorrect.
- **Lonar lake is a lake of lagoon in Buldhana district of Maharashtra state. It was created due to a meteorite.** Statement 3 is correct.

Q27

Ans: C

Exp:

Only Pair 4 is incorrectly matched.



Q28

Ans: B

Exp:

Puerto Williams – Chile. Pair 1 is correctly matched.

- Puerto Williams is a small town on Navarino Island in Chile.
- It is the southernmost settlement in the world, located near Cape Horn.

Danakil Depression – Ethiopia. Pair 2 is incorrectly matched.

- The Danakil Depression is a geological depression in northeastern Ethiopia.
- Known for extreme heat, salt flats, and volcanic activity, it is one of the hottest places on Earth.

Khuzestan – Iran. Pair 3 is incorrectly matched.

- Khuzestan is a province in southwestern Iran.
- It is rich in oil reserves and has been in the news due to conflicts and protests over water scarcity and ethnic tensions.

En Esur – Israel. Pair 4 is correctly matched.

- En Esur is an archaeological site in Israel, discovered as an ancient city dating back to the Bronze Age.
- It is considered one of the largest ancient settlements in the region.

Q29

Ans: D

Exp:

Mangrove Forest	Region
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1. <i>Ramnad</i>	<i>Tamil Nadu</i>
2. <i>Dumas-Ubharat</i>	<i>Gujarat</i>
3. <i>Malwan</i>	<i>Maharashtra</i>
4. <i>Kannur</i>	<i>Kerala</i>



Q30

Ans: C

Exp:

- The Western Ghats act as an orographic barrier along the west coast of India. When moisture-laden southwest monsoon winds from the Arabian Sea strike the Ghats, they often lack sufficient energy to rise over the mountains.
- As a result, the winds get deflected around the barrier, creating off-shore vortices (circular wind patterns) over the sea.
- These vortices enhance heavy to very heavy rainfall along the west coast, especially in regions like Konkan and Malabar.

Q31

Ans: A

Exp:

Name	Nature of wind	Place
<u>Chinook (Snow eaters)</u>	<u>Hot, dry wind</u>	<u>The Rockies mountains</u>

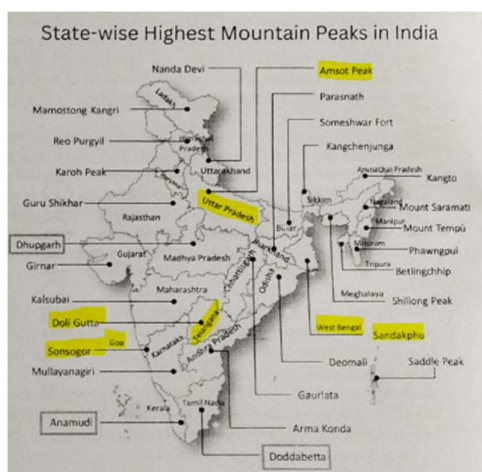
<u>Foehn</u>	<u>Hot, dry wind</u>	<u>The Alps. Only row 3 is correct.</u>
Khamsin	Hot, dry wind	Egypt
<u>Sirocco</u>	<u>Hot, moist wind</u>	<u>Sahara to the Mediterranean Sea</u>
Solano	Hot, moist wind	Sahara to the Iberian Peninsula
Harmattan (Guinea Doctor)	Hot, dry wind	West Africa
<u>Bora</u>	<u>Cold, dry wind</u>	<u>Blows from Hungary to North Italy</u>
Mistral	Cold wind	The Alps and France
Punas	Cold dry wind	The western side of Andes Mountain
Blizzard	Cold wind	Tundra region
Purga	Cold wind	Russia
Levanter	Cold wind	Spain
Norwester	Hot wind	New Zealand
Santa Ana	Hot wind	South California
Karaburun (black storm)	Hot dusty wind	Central Asia
Calima	Dust-laden dry wind	Saharan Air Layer across the Canary Islands

Elephanta	Moist wind in monsoon	Malabar coast
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Q32

Ans: D

Exp:



Q33

Ans: A

Exp:

- Alluvial soils are widespread in the northern plains and the river valleys. **These soils cover about 40 percent of the total area of the country.** They are depositional soils, transported and deposited by rivers and streams. **Statement 1 is incorrect.**
- The alluvial soils vary in nature from sandy loam to clay.** **Statement 2 is correct.**
- They are generally rich in potash but poor in phosphorous.** **Statement 2 is correct.**
- In the Upper and Middle Ganga plain, two different types of alluvial soils have developed, viz. Khadar and Bhangar. Khadar is the new alluvium and is deposited by floods annually, which enriches the soil by depositing fine silts.
- Bhangar represents a system of older alluvium, deposited away from the flood plains. Both the Khadar and Bhangar soils contain calcareous concretions (Kankars). These soils are loamier and more clayey in the lower and middle Ganga plain and the Brahmaputra valley.

Q34

Ans: C

Exp:

As the monsoon winds approach the Indian subcontinent, their southwesterly direction is modified by the relief and thermal low pressure over northwest India. The monsoon approaches the landmass in two branches: the Arabian Sea branch and the Bay of Bengal branch.

The monsoon winds originating over the Arabian Sea splits into three branches.

- It's one branch is obstructed by the Western Ghats. They bring heavy rainfall in the windward side of the Sahyadris and western coastal plains.
- **Another branch of the Arabian sea monsoon strikes the coast north of Mumbai. Moving along the Narmada and Tapi river valleys, these winds cause rainfall in extensive areas of central India. Statement 1 is correct.**
- A third branch of this monsoon wind strikes the Saurashtra Peninsula and the Kachchh. It then passes over west Rajasthan and along the Aravalli, causing only a scanty rainfall. In Punjab and Haryana, it too joins the Bay of Bengal branch. These two branches, reinforced by each other, cause rains in the western Himalayas.
- **The Bay of Bengal branch strikes the coast of Myanmar and part of southeast Bangladesh.** But the Arakan Hills along the coast of Myanmar deflect a big portion of this branch toward the Indian subcontinent. The monsoon, therefore, enters West Bengal and Bangladesh from the south and southeast instead of from the south-westerly direction. **Statement 2 is correct.**

Q35

Ans: C

Exp:

Earthquake focus depth is an important factor in shaping the characteristics of the waves and the damage they inflict. The focal depth can be deep (from 300 to 700 km), intermediate (60 to 300 km) or shallow (less than 60 km).

- **Deep focus earthquakes are rarely destructive because the wave amplitude is greatly attenuated by the time it reaches the surface.**
- **Shallow focus earthquakes are more common and are extremely damaging because of their close proximity to the surface.** Statement 1 is correct.

The main seismic belts are as under:

- **Circum-Pacific Belt:** **The Belt includes the coastal margins of North America, South America and East Asia. These are as represent the eastern and western margins of the Pacific Ocean respectively, and account for about 65 per cent of the total earthquakes of the world.**
- The western marginal zones are represented by the Rockies and the Andes Mountain chains. These are also the zones of convergent plate boundaries where the Pacific oceanic plate is subducted below the American plates.
- The eastern marginal zones are represented by the island arcs of Kamchatka, Sakhalin, Japan and Philippines. The earthquakes are caused due to collision of the Pacific and the Asiatic plates and the consequent volcanic activity. Japan records about 1500 seismic shocks every year.

- **Mid-Continental Belt:** The Mid-Continental Belt includes the Alpine mountains and their off shoots in Europe, Mediterranean Sea, northern Africa, eastern Africa and the Himalayas. The Mid-Continental Belt extends through Sulaiman and Kirthar zones in the west, the Himalayas in the north and Myanmar in the east. This belt represents the weaker zone of Fold Mountains. About 21 per cent of the total seismic events are recorded in this belt. **Statement 2 is incorrect.**
- **Mid-Atlantic Ridge Belt:** The Mid-Atlantic Ridge Belt includes the Mid-Atlantic ridge and several islands near the ridge. It records moderate earthquakes which are caused due to the moving of plates in the opposite directions. Thus, the seafloor spreading and the fissure type of volcanic eruptions cause earthquakes of moderate intensity in this region.

Q36

Ans: B

Exp:

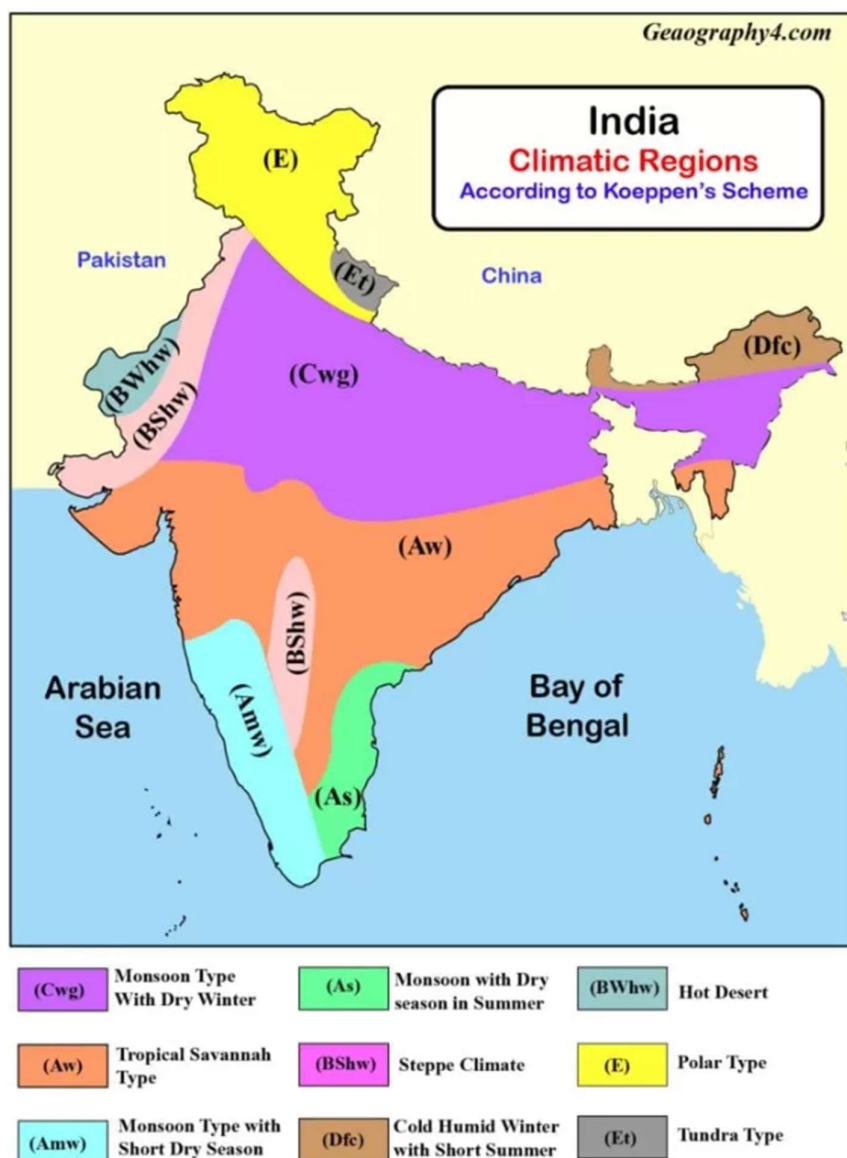
A climatic region has a homogeneous climatic condition which is the result of a combination of factors Temperature and rainfall are two important elements that are considered to be decisive in all the schemes of climatic classification. The classification of climate, however, is a complex exercise. There are different schemes of classification of climate.

Koeppen based his scheme of Climatic classification on monthly values of temperature and precipitation. He identified five major climatic types, namely:

- Tropical climates, where the mean monthly temperature throughout the year is over 18°C.
- (Dry climates, where precipitation is very low in comparison to temperature, and hence, dry. If dryness is less, it is semiarid (S); if it is more, the climate is arid(W).
- Warm temperate climates, where the mean temperature of the coldest month is between 18°C and minus 3°C.
- Cool temperate climates, where the mean temperature of the warmest month is over 10°C, and the mean temperature of the coldest month is under minus 3°C.
- Ice climates, where the mean temperature of the warmest month is under 10°C.

Each type is further subdivided into sub-types on the basis of seasonal variations in the distributional pattern of rainfall and temperature. Koeppen used letter symbols to denote climatic types. He used S for semi-arid and W for arid and the following small letters to define sub-types: f (sufficient precipitation), m (rain forest despite a dry monsoon season), w (dry season in winter), h (dry and hot), c (less than four months with mean temperature over 10°C), and g (Gangetic plain).

Koeppen divided India into nine climatic regions. **Statement 1 is incorrect.**



The details of Indian climatic regions based on this classification are given in the below table:

Type of Climate	Areas
Amw Monsoon with short dry season	West coast of India south of Goa
As - Monsoon with dry summer	Coromandel coast of Tamil Nadu
Aw - Tropical savannah	Most of the Peninsular plateaus, south of the Tropic of Cancer
Bwhw - Semi-arid steppe climate	North-western Gujarat, some parts of western Rajasthan and Punjab
Bwhw - Hot desert	Extreme western Rajasthan
Cwg - Monsoon with dry winter	Ganga plain, eastern Rajasthan, northern Madhya Pradesh, most of North-east India
Dfc - Cold humid winter with short summer	Arunachal Pradesh
E - Polar type	Jammu and Kashmir, Himachal Pradesh and Uttarakhand

Climatic Regions of India According to Koeppen's Scheme

Statement 2 is correct.

Q37

Ans: B

Exp:

El-Nino is a complex weather system that appears once every three to seven years, bringing drought, floods, and other weather extremes to different parts of the world.

The system involves oceanic and atmospheric phenomena with the appearance of warm currents off the coast of Peru in the Eastern Pacific and affects weather in many places including India. El-Nino is merely an extension of the warm equatorial current which gets replaced temporarily by the cold Peruvian current or Humbolt current. **This current increases the temperature of the water on the Peruvian coast by 10°C.** Statement 1 is correct.

This results in:

- the distortion of equatorial atmospheric circulation
- irregularities in the evaporation of seawater
- **reduction in the number of plankton which further reduces the number of fish in the sea.** Statement 2 is incorrect.

The word El-Nino means 'Child Christ' because this current appears around Christmas in December. December is a summer month in Peru (Southern Hemisphere).

El-Nino is used in India for forecasting long-range monsoon rainfall.

Trade winds coming from South America normally blow westward towards Asia during Southwest Monsoon. Warming of the Pacific Ocean results in the weakening of these winds. **Therefore, moisture and heat content get limited and result in the reduction and uneven distribution of rainfall across the Indian subcontinent.** Statement 3 is correct.

Q38

Ans: A

Exp:

The flow of water through well-defined channels is known as 'drainage' and the network of such channels is called a 'drainage system'. The drainage pattern of an area is determined by the geological time period, nature and structure of rocks, topography, slope, amount of water flowing, and periodicity of the flow. Some of the important drainage patterns are:

- **Dendritic:** **The drainage pattern resembling the branches of a tree is known as "dendritic," the examples of which are the rivers of the northern plain. It develops where the river channel follows the slope of the terrain.** Statement 1 is incorrect.
- **Radial:** **When the rivers originate from a hill and flow in all directions, the drainage pattern is known as "radial." The rivers originating from the Amarkantak range present a good example of it.** Statement 2 is correct but Statement 3 is incorrect.
- **Trellis:** When the primary tributaries of rivers flow parallel to each other and secondary tributaries join them at right angles, the pattern is known as a "trellis." **It develops where hard and soft rocks**

exist parallel to each other. The right bank tributaries of the Brahmaputra River make a trellis pattern, while the left bank tributaries exhibit a dendritic pattern.

- **Centripetal:** When the rivers discharge their waters from all directions into a lake or depression, the pattern is known as "centripetal." It is the reverse of radial and occurs in areas of karst topography.

Q39

Ans: D

Exp:

Biodiversity Heritage Sites are areas that are unique, ecologically fragile ecosystems having a rich biodiversity.

Under Biological Diversity Act (BDA) 2002, the State Governments are empowered to notify BHS, in consultation with local bodies', of areas of biodiversity importance as Biodiversity Heritage Sites. Statement 1 is incorrect.

First BHS of India:

- Nallur Tamarind Grove in Bengaluru, Karnataka was the first Biodiversity Heritage Site of India, declared in 2007. Statement 2 is incorrect.

According to the National Biodiversity Authority, India has a total of 45 Biodiversity Heritage Sites as of February 2024.

Last Five Additions to BHS:

- Haldir Char Island West Bengal (May 2023)
- Birampur-Baguran Jalpai West Bengal (May 2023)
- Tungkyong Dho Sikkim (June 2023)
- Gandhamardan Hill Odisha (March 2023)
- Gupteswar Forest Odisha (Feb 2024)

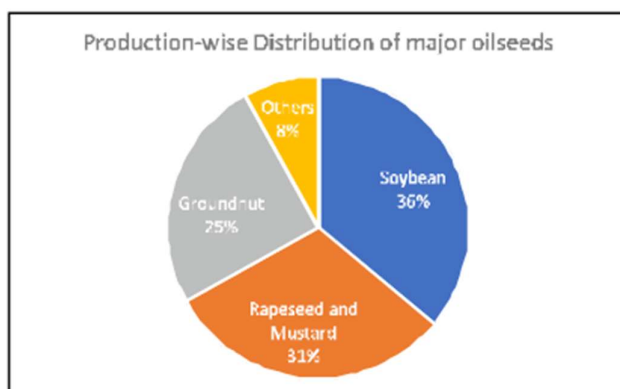
Q40

Ans: D

Exp:

Oilseeds Production:

- Oilseeds cultivation is undertaken across the country in about 30.24 million hectares, largely under rainfed areas covering 69% of the total area and producing around 41.36 million tons of oilseeds.
- Nine oilseeds are the major source of vegetable oil in the country, among which Soybean (36%), Rapeseed & Mustard (31%) and Groundnut (25%) contributes to more than 92% of total oilseeds production in the country. Both statements 1 and 3 are correct.



- However, in terms of vegetable oil production Mustard, Soybean and Groundnut contributes 29.13%, 18.03% and 17.53% respectively. Statement 4 is correct.
- Rajasthan, Madhya Pradesh, Gujarat and Maharashtra are the major oilseeds producing states contributing more than 77% of oilseeds production in the country. Statement 2 is correct.
- During 2022-23, Area, production and yield was 30.24 million ha, 41.36 million tonnes and 1368 kg/ha respectively. The highest ever production of oilseeds was achieved during 2022-23.

Q41

Ans: D

Exp:

Sirte Basin - Natural Gas - Libya:

- The Sirte Basin is one of the largest and most significant oil and natural gas fields in Libya. It lies along the northern coast of Libya and is a key source of Libya's natural gas production, with vast reserves.

Itabira - Iron Ore - Brazil:

- Itabira is a major mining center in Brazil, located in the Minas Gerais state, which is known for its rich deposits of iron ore. Brazil is one of the largest producers and exporters of iron ore globally, and Itabira contributes significantly to the country's production.

Morococha - Copper - Peru:

- Morococha is a mining town in Peru, a country that is one of the world's top producers of copper. Morococha is a key copper mining center, and Peru is renowned for its vast mineral resources, particularly copper, which is one of the country's main exports.

Potosi - Tin - Bolivia:

- Potosi, located in Bolivia, was historically one of the richest sources of tin in the world. During colonial times, it was known for the Potosi silver mines, but tin production has been central to the region's economy for many years. Bolivia remains one of the top tin producers globally, with Potosi being a major contributor.

Q42

Ans: A

Exp:

<i>Mineral</i>	<i>State with Highest reserves</i>
1. Lignite	Tamil Nadu
2. Limestone	Karnataka
3. Mica	Andhra Pradesh
4. Nickel	Odisha

Lignite:

- **Tamil Nadu is the state with the highest reserves of lignite in India. The state has significant lignite deposits in the Neyveli region, which is one of the largest lignite mining areas in India.**
- Lignite is used primarily for power generation and is an important energy source in the region. The Neyveli Lignite Corporation is a key player in this sector.

Limestone

- **Karnataka holds the largest reserves of limestone in India, accounting for 24% of the total limestone resources in the country (as of April 1, 2020).**
- Karnataka's limestone is mainly found in areas like Bagalkot, Mysuru, and Chitradurga. The state is a major producer of cement due to its extensive limestone deposits.
- Other states like Rajasthan and Madhya Pradesh also have significant limestone reserves, but Karnataka is the top state in terms of reserves.
- **However, Rajasthan is the highest producer of limestone in India.**

Mica:

- **Andhra Pradesh has the largest reserves of mica in India and is also the largest producer of mica.**
- The main mica-producing areas are Nellore and Khammam. Mica is an important mineral used in electronics, paint, and other industries.
- India has the world's largest mica reserves, and Andhra Pradesh holds a significant share of the country's production.

Nickel:

- **Odisha is one of the key states in India with large reserves of nickel, particularly in regions like Kundarki and Bicharpur.**
- Odisha has extensive mineral deposits and is a major producer of various minerals like iron ore, coal, and nickel.
- Nickel is an important metal used in various industries, including the production of stainless steel and other alloys.

Q43

Ans: D

Exp:

Bauxite - Australia

- Australia is the world's largest producer of bauxite, the primary ore for aluminum production. It has vast bauxite reserves, especially in the regions of Western Australia and Queensland.
- Other major producers include China, Guinea, and Brazil.
- **Top producing countries: Australia, Guinea, Brazil, China, India.**

Coal - China

- China is the world's largest producer of coal, accounting for approximately 50% of the global coal production. It has significant coal reserves, particularly in provinces like Shanxi, Inner Mongolia, and Sichuan.
- Other major producers include India, United States, and Indonesia.
- **Top producing countries: China, India, United States, Indonesia, Australia.**

Cobalt - Congo

- The Democratic Republic of Congo (DRC) is the top producer of cobalt, responsible for over 70% of global cobalt production. Cobalt is primarily sourced from the Copperbelt region of the DRC.
- Other significant producers of cobalt include Russia, Australia, and Philippines.
- **Top producing countries: Democratic Republic of Congo, Russia, Australia, Philippines, Canada.**

Crude Oil - USA

- The United States is the largest producer of crude oil, primarily due to the booming shale oil industry, particularly in regions like Texas, North Dakota, and New Mexico.
- Other major oil producers include Saudi Arabia, Russia, Iraq, and Canada.
- **Top producing countries: United States, Saudi Arabia, Russia, Canada, Iraq.**

Q44

Ans: B

Exp:

A delta is a landform that forms from the deposition of sediment carried by a river as the flow exits its mouth and enters slower-moving or standing water.

- This deposition occurs where the velocity of the river decreases significantly upon meeting a body of water such as a lake, sea, or ocean, causing the river to drop sediments that create the delta.

Types of Deltas:

The Mississippi has a **bird's-foot delta**, with several main branches like the foot of a bird extending into the Gulf of Mexico. The Nile, Ganges and Mekong have the **fan-shaped arcuate deltas** with numerous distributaries. Some other rivers such as the Amazon, Ob and Vistula have their deltas partly submerged in coastal waters to form **estuarine deltas**. A few rivers like the Ebro of Spain have tooth-like projections at their mouths. These are known as **cusate deltas**.

The following summarizes the conditions favorable for the formation of deltas.

- Active vertical and lateral erosion in the upper course of the river to provide extensive sediments to be eventually deposited as deltas. Statement 1 is incorrect.
- The coast should be sheltered preferably tideless. Statement 2 is correct.
- The sea adjoining the delta should be shallow or else the load will disappear in the deep waters. Statement 3 is correct.
- There should be no large lakes in the river course to 'filter off' the sediments.
- There should be no strong current running at right angles to the river mouth, washing away the sediments. Statement 4 is incorrect.

Q45

Ans: A

Exp:

F. MAJOR FINDINGS OF LAND USE STATISTICS AT A GLANCE: 2022-23

Table A: Part I: Land Use Pattern as per Nine-Fold Classification All India

Classification of land		(thousand Hectares)
	Reporting area for land utilization statistics (1 to 9)	306650
1	Forests	72021
2	Area put to non-agricultural uses	27845
3	Barren & unculturable land	16554
4	Permanent pastures & other grazing lands	10248
5	Land under Misc. tree Crops	2992
6	Culturable Wasteland	11659
7	Fallow Land Other than Current Fallows	11128
8	Current Fallow	13498
9	Net Area Sown	140705

Q46

Ans: B

Exp:

- **Deflation:** Wind lifts and removes loose particles from the surface, creating desert pavements.
- **Abrasion:** Wind-driven sand particles wear down rock surfaces, forming features like yardangs.
- **Attrition:** Windborne particles collide, becoming smaller and smoother over time.

These processes are typical in arid and semi-arid regions where wind plays a dominant role in shaping the landscape.

Q47

Ans: C

Exp:

Lake Titicaca

Formed by: Earth Movement

- Lake Titicaca is a tectonic lake formed due to the movement of tectonic plates. It was created by faulting and folding processes in the Andes Mountains, making it a classic example of a lake formed by earth movement.

Located in: South America

- Lake Titicaca is situated on the border between Peru and Bolivia in the Andes Mountains, South America.

Lake Ullswater

Formed by: Glaciation

- Lake Ullswater was formed during the last Ice Age through glacial erosion. The movement of glaciers carved out the valley, creating the lake basin. This makes it a glacial lake.

Located in: Europe

- Ullswater is located in the Lake District of England, United Kingdom, Europe.

Lake Toba

Formed by: Volcanic Activity

- Lake Toba is a volcanic caldera lake formed by a massive eruption around 74,000 years ago. The eruption created a large depression, which later filled with water.

Located in: Asia

- Lake Toba is located in North Sumatra, Indonesia, Asia.

Q48

Ans: D

Exp:

Submerged coasts result from rising sea levels or subsidence of land. They often have steep cliffs, fjords, and rocky terrains due to past erosion before submergence. Statement 1 is correct.

- Example: Norwegian Fjords and parts of the western coast of India.

Emerged coasts are formed by a fall in sea level or land uplift, exposing previously submerged areas.

- They are characterized by broad, flat plains and accumulated sediments. Statement 2 is correct.
- Example: The Eastern Coastal Plains of India.

Estuaries, Kayals (backwaters), Creeks, and Croves are features typical of submerged coasts formed due to sea-level rise leading to partial submergence of river valleys. Statement 3 is correct.

- Example: Kerala backwaters (Kayals), Western coast estuaries like Narmada and Tapi.

Sand dunes, marshy lands, and lagoons (like Chilika Lake) are typical features of emerged coasts where sediments accumulate due to a fall in sea level. Statement 4 is correct.

- Example: Eastern coast of India, Tamil Nadu's marshy lands, Odisha's Chilika Lake.

Q49

Ans: A

Exp:

- **High-pressure belts around 20° and 30° N. and S. experience high temperatures and low humidity, leading to high evaporation and minimal precipitation.** Statement 1 is incorrect.
- This results in high salinity in regions like the Red Sea and the Persian Gulf, not due to humidity but because of evaporation exceeding precipitation.
- The phrasing "high humidity" makes this statement incorrect.

Baltic Sea has very low salinity due to:

- **Heavy freshwater inflow from rivers.**
- **Limited connection with open oceans.**

Caspian Sea, though a landlocked water body, has higher salinity due to:

- Lesser freshwater inflow relative to its size.
- High evaporation rates.

Q50

Ans: D

Exp:

The Planetary Winds

- **Planetary winds like trade winds and westerlies play a major role in driving surface ocean currents.**
- **Example:** Trade winds drive the North Equatorial Current, while westerlies drive the North Atlantic Drift.

Temperature Difference

- **Temperature differences cause variations in water density. Warm water expands and rises, while cold water contracts and sinks, creating convection currents.**
- **Example:** Gulf Stream carries warm water from the tropics towards Europe.

Variation in Salinity

- **Differences in salinity affect water density, which influences thermohaline circulation. Higher salinity increases water density, causing sinking and driving deep ocean currents.**

- **Example:** Mediterranean Outflow Water (high salinity) sinks and flows into the Atlantic.

Earth's Rotation

- *The Coriolis Effect due to Earth's rotation influences the direction of ocean currents, causing them to deflect right in the Northern Hemisphere and left in the Southern Hemisphere.*

Presence of Landmass

- *Landmasses obstruct and redirect ocean currents, shaping gyres (large circular current systems).*
- **Example:** The Gulf Stream is redirected by the North American coastline.

Q51

Ans: B

Exp:

- *Nimbostratus clouds are thick, dark, and low-level clouds associated with continuous, steady rainfall or snowfall.* Statement 1 is incorrect.
- The prefix "Nimbo-" indicates precipitation.

Thunderstorms are associated with Cumulonimbus clouds, not Nimbostratus. Statement 2 is incorrect.

- Cumulonimbus clouds are large, towering clouds associated with thunderstorms, heavy rainfall, lightning, and sometimes hail or tornadoes.
- They extend through multiple cloud levels, from low to high altitudes.
- *Cirrus clouds are high-altitude clouds typically above 20,000 feet (6,000 meters). They are thin, wispy clouds made of ice crystals.*
- *Altostratus clouds are mid-level clouds generally found between 6,500 and 20,000 feet (2,000 to 6,000 meters).* Statement 3 is correct.

Q52

Ans: A

Exp:

Sub-tropical high-pressure belts (around 30°N and 30°S) are known as the Horse Latitudes.

- *Air here descends, leading to dry conditions and minimal rainfall.*
- *The winds are often calm and light because the descending air suppresses convection and surface winds.* Statement 1 is incorrect.

Temperate low-pressure belts (around 60°N and 60°S) are also called the polar front zones.

- *These zones experience convergence of warm westerlies from lower latitudes and cold polar easterlies, causing cyclonic activity and storm systems.* Statement 2 is incorrect.

South-westerlies (in the Northern Hemisphere) and north-westerlies (in the Southern Hemisphere) are responsible for moving warm ocean currents like the Gulf Stream and Kuroshio Current towards the western coasts of temperate regions. Statement 3 is correct.

- This leads to milder winters and influences maritime climates in places like Western Europe.

Q53

Ans: C

Exp:

As a cyclone approaches, there is typically a fall in barometric pressure, the sky becomes dull and overcast, the air feels oppressive due to high humidity, and strong winds are commonly associated with the cyclone. Statement 1 is correct.

In the Northern Hemisphere, winds in an anticyclone blow clockwise.

In the Southern Hemisphere, winds in an anticyclone blow counterclockwise (which is the same as anticlockwise). Statement 2 is correct.

Q54

Ans: B

Exp:

Sudan Climate is characterized by distinct dry and wet seasons, typically found in regions like West Africa and the Sahel, not in Hungary.

- Pustaz refers to regions of Hungary and may not be suitable for this classification. Row 1 is incorrect.

Mediterranean Climate features rainy winters with on-shore westerlies and is found in regions like Central Chile, as well as parts of Southern California, Mediterranean Basin, and parts of South Africa and Australia. Row 2 is correct.

Steppe Climate is characterized by dry conditions and extreme temperatures with little rainfall.

- Campos refers to the Brazilian Highlands, which do not fit the typical Steppe Climate classification. The Campos is more associated with a tropical climate. Row 3 is incorrect.

Warm Temperate Eastern Margin climates are characterized by warm, moist summers and cool, dry winters, typically found in places like the Southeastern USA. Row 4 is correct.

Q55

Ans: B

Exp:

Tundra – Lithosol:

- Tundra soils are often lithosols, characterized by thin, rocky soil with minimal organic content due to low biological activity and extreme cold. Pair 1 is incorrect.

Taiga – Podzols:

- The Taiga (boreal forest) is dominated by podzols, acidic soils with a leached, nutrient-poor upper layer due to coniferous forest litter and cold conditions. **Pair 2 is correct.**

Steppe – Chernozem:

- Steppe regions (temperate grasslands) are known for chernozem (black soil), rich in humus and highly fertile, ideal for agriculture. **Pair 3 is correct.**

Near Equator – Latosol:

- **Latosol is typical of equatorial regions with intense weathering and leaching, leading to nutrient-poor, iron-rich soil common in rainforests.** Pair 4 is incorrect.

Q56

Ans: D

Exp:

Zoji La Pass:

- **It is located in the Great Himalayas (Greater Himalayan Range).**
- **It lies on the Srinagar-Kargil-Leh Highway (NH-1) and serves as a crucial link between Kashmir Valley and Ladakh.**
- The pass connects the Kashmir Valley with the Dras and Suru Valleys to the northeast and the Indus Valley to the east.

Banihal Pass:

- **Banihal Pass is situated in the Pir Panjal Range in Jammu and Kashmir.**
- It separates the Vale of Kashmir from the outer Himalayas.
- The Jawahar Tunnel, an important link between Jammu and Srinagar, is located here.

Photu La

- **Photu La is a high mountain pass in the Zaskar Range, Ladakh region.**
- It lies on the Kargil-Leh highway and is one of the highest motorable passes in the region.

Khardung La:

- **Khardung La is located in the Ladakh Range, near Leh.**
- It serves as the gateway to the Shyok and Nubra Valleys.
- Known for being one of the highest motorable passes in the world.

Q57

Ans: A

Exp:

- Duars are indeed alluvial floodplains located south of the outer foothills of the Himalayas. They lie in the foothill regions of the Eastern Himalayas, particularly in the Terai region. **Statement 1 is correct.**
- Duars are primarily found in West Bengal and Assam, not Uttarakhand and Himachal Pradesh. Statement 2 is incorrect.
- While Duars have fertile soil, they are more suitable for crops like tea, not apple cultivation. Apple cultivation is more common in colder regions like Himachal Pradesh and Uttarakhand. **Statement 3 is incorrect.**

Q58

Ans: B

Exp:

- The Bhabar is indeed a narrow belt ranging between 8-10 km wide, lying parallel to the Shiwalik foothills. It is characterized by coarse sediments and boulders deposited by streams descending from the Himalayas. **Statement 1 is correct.**
- In the Tarai belt, rivers re-emerge but do not have a properly demarcated channel. The rivers spread out, making the region marshy and swampy, ideal for agriculture but prone to waterlogging. **Statement 2 is incorrect.**

Q59

Ans: A

Exp:

- The Luni River is an example of inland drainage as it does not reach the sea but ends in the salt marshes of the Rann of Kutch. Inland drainage rivers typically flow into lakes or end in deserts, with no outlet to the ocean.
- Other options (Tungabhadra, Mahi, Sabarmati) are all rivers that flow to the sea or other major water bodies, so they are not inland drainage rivers.

Q60

Ans: C

Exp:

Mountain Peak	Associated Island
1. Saddle Peak	North Andaman
2. Mount Diavolo	Middle Andaman
3. Mount Koyob	South Andaman
4. Mount Thuiller	Great Nicobar

Q61

Ans: B

Exp:

- The Indus River originates from the Bokhar Chu Glacier, located in the Tibetan Plateau in Tibet. Statement 1 is correct.
- The Chenab River is the largest tributary of the Indus River. It originates from the confluence of the Chandra and Bhaga rivers in the Himalayas. The Chenab joins the Indus River in the Punjab region of Pakistan. Statement 2 is incorrect.
- The Son River is a south bank tributary of the Ganga. It originates in the Amarkantak Plateau in Madhya Pradesh and flows eastward through Madhya Pradesh and Uttar Pradesh before joining the Ganga River near Patna in Bihar. Statement 3 is correct.
- The Brahmaputra River originates from the Chemayungdung Glacier in Tibet, near the Mansarovar Lake, which is situated in the Kailash Range. The Brahmaputra is one of the largest rivers in the world. Statement 4 is incorrect.

Q62

Ans: B

Exp:

Dhandhar River is a monsoon-fed river located near Lalpur in the Jamnagar district of Gujarat, India.

Flow Direction:

- The Dhandhar River is a west-flowing river.
- It drains into the Arabian Sea.

Baitarni – This river flows towards the east.

Kalinadi – This river flows towards the west and drains into the Arabian Sea.

Subarnarekha – This river flows eastward into the Bay of Bengal, so it is east-flowing.

Brahmani – The Brahmani is another east-flowing river that drains into the Bay of Bengal.

The east-flowing rivers from the list are:

- Baitarni
- Subarnarekha
- Brahmani

Q63

Ans: D

Exp:

Tropical Evergreen Forests:

- These forests are found in the western slope of the Western Ghats, hills of the northeastern region and the Andaman and Nicobar Islands. Statement 1 is correct.
- They are found in warm and humid areas with an annual precipitation of over 200 cm and mean annual temperature above 22°C. Statement 2 is correct.
- Tropical evergreen forests are well stratified, with layers closer to the ground and are covered with shrubs and creepers, with short structured trees followed by tall variety of trees. In these forests, trees reach great heights up to 60 m or above.
- There is no definite time for trees to shed their leaves, flowering and fruition. As such these forests appear green all the year round. Statement 3 is correct.
- Species found in these forests include rosewood, mahogany, aini, ebony, etc.

Q64

Ans: A

Exp:

Type of forest	Species found
1. Semi evergreen Forests	White cedar, hollock and Kail
2. Moist Deciduous Forests	Teak, Sal and Sandalwood
3. Dry Deciduous Forests	Tendu, Palas and Amaltas
4. Tropical Thorn Forests	White date palm, babool and Khejri

Q65

Ans: C

Exp:

Ravines are particularly prominent in the Chambal River Basin, located in the central part of India. The Chambal River, along with its tributaries, has carved deep ravines and gorges in the region, contributing to a landscape that is known for its rugged terrain. **This area, particularly in Madhya Pradesh and Rajasthan, is often referred to as the Chambal Ravine area.**

Q66

Ans: A

Exp:

Laterite Soil

- Laterite has been derived from the Latin word 'Later' which means brick. The laterite soils develop in areas with high temperature and high rainfall. Statement 1 is correct.
- These are the result of intense leaching due to tropical rains. With rain, lime and silica are leached away, and soils rich in iron oxide and aluminium compound are left behind. Humus content of the soil is removed fast by bacteria that thrives well in high temperature.

- These soils are poor in organic matter, nitrogen, phosphate and calcium while iron oxide and potash are in excess. Hence, laterites are not suitable for cultivation; however, application of manures and fertilizers are required for making the soils fertile for cultivation. **Statement 2 is incorrect.**
- Red laterite soils in Tamil Nadu, Andhra Pradesh and Kerala are more suitable for tree crops like cashewnut. Statement 3 is correct.
- Laterite soils are widely cut as bricks for use in house construction. These soils have mainly developed in the higher areas of the Peninsular plateau. The laterite soils are commonly found in Karnataka, Kerala, Tamil Nadu, Madhya Pradesh and the hilly areas of Orissa and Assam.

Q67

Ans: A

Exp:

Chlorine, in the form of chloride ions (Cl^-), is the most abundant dissolved ion in seawater, making up about 55% of the total dissolved salts. It is followed by sodium (Na^+), which contributes around 30.6%, and then magnesium (Mg^{2+}), calcium (Ca^{2+}), and potassium (K^+) in smaller proportions. Chloride ions play a crucial role in forming sodium chloride (common salt), which dominates the salinity of seawater.

Table 7.1. Major Constituents of Seawater

<i>Ion</i>	<i>Percent</i>
Chloride (Cl^-)	55.04
Sodium (Na^+)	30.61
Sulfate (SO_4^{2-})	7.68
Magnesium (Mg^{++})	3.69
Calcium (Ca^{++})	1.16
Potassium (K^+)	1.10
	99.28

There are a number of ways to calculate the percentage of an ion in a solution. The numbers here are weight percents, or grams of each ion per 100 grams of salt.

Q68

Ans: A

Exp:

The elements of the Earth's crust, arranged in descending order of their abundance, are:

- **Oxygen (O)** – The most abundant element, constituting about 46.6% of the Earth's crust by weight.
- **Silicon (Si)** – The second most abundant, making up about 27.7% of the crust.
- **Aluminium (Al)** – Third, at approximately 8.1%.
- **Iron (Fe)** – Fourth, at around 5%.

Q69

Ans: C

Exp:

Saturn has the least density among all the planets. Statement 1 is correct.

- Saturn is the least dense planet in the solar system, with a density less than water ($\sim 0.687 \text{ g/cm}^3$), which means it would float in water.

Saturn has the highest number of satellites (146), followed by Jupiter (95), Uranus (27) and Neptune (14). Statement 2 is incorrect.

Mercury and Venus have no satellites. Statement 3 is correct.

- Both Mercury and Venus lack any natural satellites, making them unique among the planets.

Earth rotates from west to east on its axis. Statement 4 is incorrect.

- Earth rotates from west to east, which is why the Sun appears to rise in the east and set in the west.

Q70

Ans: D

Exp:

1. **Hydrogen and helium from Earth's atmosphere stripped off by solar winds**

- The primordial atmosphere, dominated by hydrogen and helium, was stripped off by intense solar winds. This was the first stage of atmospheric evolution.

2. **Gases and water vapor were released from the interior of Earth**

- As the Earth's surface cooled, volcanic eruptions released gases like water vapor (H_2O), carbon dioxide (CO_2), and nitrogen (N_2). This contributed to the formation of the secondary atmosphere.

3. **Continuous volcanic eruptions**

- Volcanic activity further contributed to the release of gases and shaped the Earth's secondary atmosphere.

4. **Dissolution of CO_2 in rainwater**

- Over time, cooling led to condensation of water vapor, forming liquid water. Rainwater dissolved CO_2 from the atmosphere, reducing its concentration and forming early oceans.

Q71

Ans: B

Exp:

The P-waves are similar to sound waves. Statement 1 is correct.

- P-waves (Primary waves) are longitudinal waves, meaning they compress and expand the material through which they travel, similar to sound waves. These waves travel through solids, liquids, and gases.

S-waves can travel only through solid materials. Statement 2 is correct.

- S-waves (Secondary or Shear waves) are transverse waves, meaning they cause particles to move perpendicular to the direction of wave propagation. **Since liquids and gases cannot support shear stress, S-waves cannot travel through them and are restricted to solid materials.**

The shadow zone of S-wave is much larger than that of P-waves. Statement 3 is incorrect.

- **The shadow zone of P-waves (caused by refraction due to the liquid outer core) lies between 105° and 145° from the earthquake source, making it smaller compared to the shadow zone of S-waves.**
- The S-wave shadow zone is much larger, covering the area beyond 105° on both sides of the Earth, as S-waves cannot travel through the liquid outer core.

Q72

Ans: D

Exp:

Feldspar

- Silicon and oxygen are common elements in all types of feldspar and sodium, potassium, calcium, aluminium etc. are found in specific feldspar variety. Half of the earth's crust is composed of feldspar. It has light cream to salmon pink color. **It is used in ceramics and glass making. Pair 1 is correctly matched.**

Quartz

- It is one of the most important components of sand and granite. It consists of silica. It is a hard mineral virtually insoluble in water. **It is white or colorless and used in radio and radar.** It is one of the most important components of granite. **Pair 2 is correctly matched.**

Mica

- It comprises of potassium, aluminium, magnesium, iron, silica etc. It forms 4 per cent of the earth's crust. It is commonly found in igneous and metamorphic rocks. **It is used in electrical instruments. Pair 3 is correctly matched.**

Olivine

- Magnesium, iron and silica are major elements of olivine. **It is used in jewellery.** It is usually a greenish crystal, often found in basaltic rocks. **Pair 4 is correctly matched.**

Q73

Ans: C

Exp:

MASS MOVEMENTS

- These movements transfer the mass of rock debris down the slopes under the direct influence of gravity. That means, air, water or ice do not carry debris with them from place to place but on the other hand the debris may carry with it air, water or ice.
- The movements of mass may range from slow to rapid, affecting shallow to deep columns of materials and include creep, flow, slide and fall.
- **Gravity exerts its force on all matter, both bedrock and the products of weathering. So, weathering is not a pre-requisite for mass movement though it aids mass movements.** Mass movements are very active over weathered slopes rather than over unweathered materials. **Statement 1 is incorrect.**
- **Mass movements are aided by gravity and no geomorphic agent like running water, glaciers, wind, waves and currents participate in the process of mass movements. That means mass movements do not come under erosion though there is a shift (aided by gravity) of materials from one place to another.** Statement 2 is incorrect.
- Materials over the slopes have their own resistance to disturbing forces and will yield only when force is greater than the shearing resistance of the materials. Weak unconsolidated materials, thinly bedded rocks, faults, steeply dipping beds, vertical cliffs or steep slopes, abundant precipitation and torrential rains and scarcity of vegetation etc., favor mass movements.

Q74

Ans: C

Exp:

Biological Activity

- The vegetative cover and organisms that occupy the parent materials from the beginning and also at later stages help in adding organic matter, moisture retention, nitrogen etc. **Dead plants provide humus, the finely divided organic matter of the soil.** Some organic acids which form during humification aid in decomposing the minerals of the soil parent materials.
- **Intensity of bacterial activity shows up differences between soils of cold and warm climates.**
- **Humus accumulates in cold climates as bacterial growth is slow. With undecomposed organic matter because of low bacterial activity, layers of peat develop in sub-arctic and tundra climates.** Statement 1 is correct.
- **In humid tropical and equatorial climates, bacterial growth and action is intense and dead vegetation is rapidly oxidized leaving very low humus content in the soil.** Statement 2 is correct.
- **Further, bacteria and other soil organisms take gaseous nitrogen from the air and convert it into a chemical form that can be used by plants. This process is known as nitrogen fixation.** Rhizobium, a type of bacteria, lives in the root nodules of leguminous plants and fixes nitrogen beneficial to the host plant. The influence of large animals like ants, termites, earthworms, rodents etc., is mechanical, but it is nevertheless important in soil formation as they rework the soil up and

down. In case of earthworms, as they feed on soil, the texture and chemistry of the soil that comes out of their body changes.

Q75

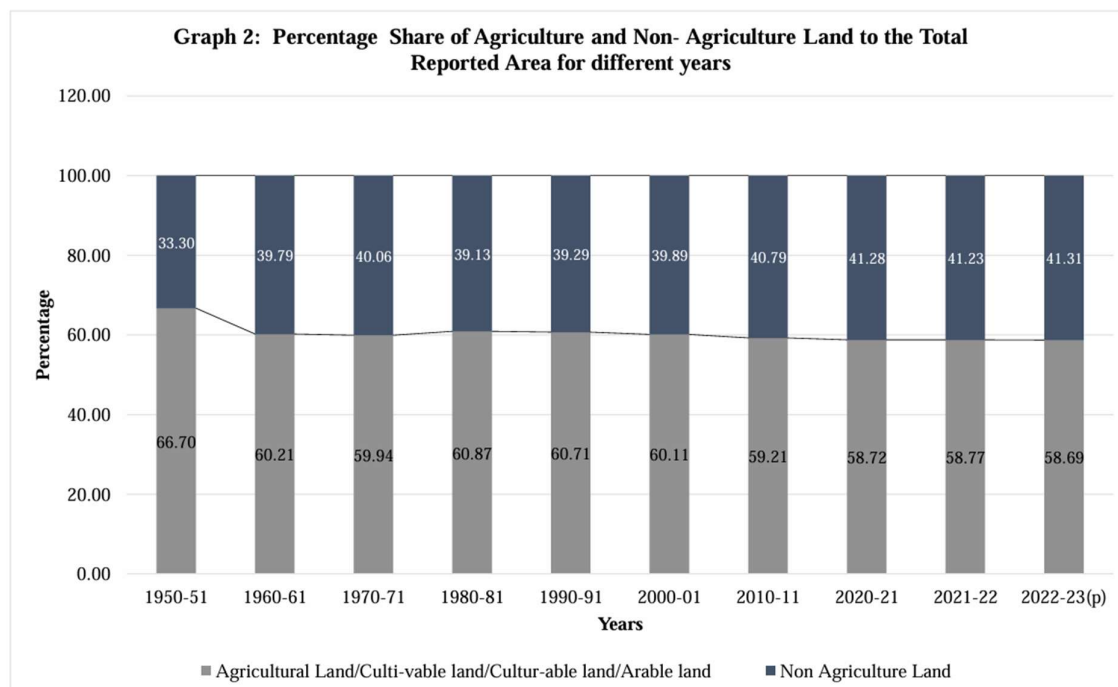
Ans: A

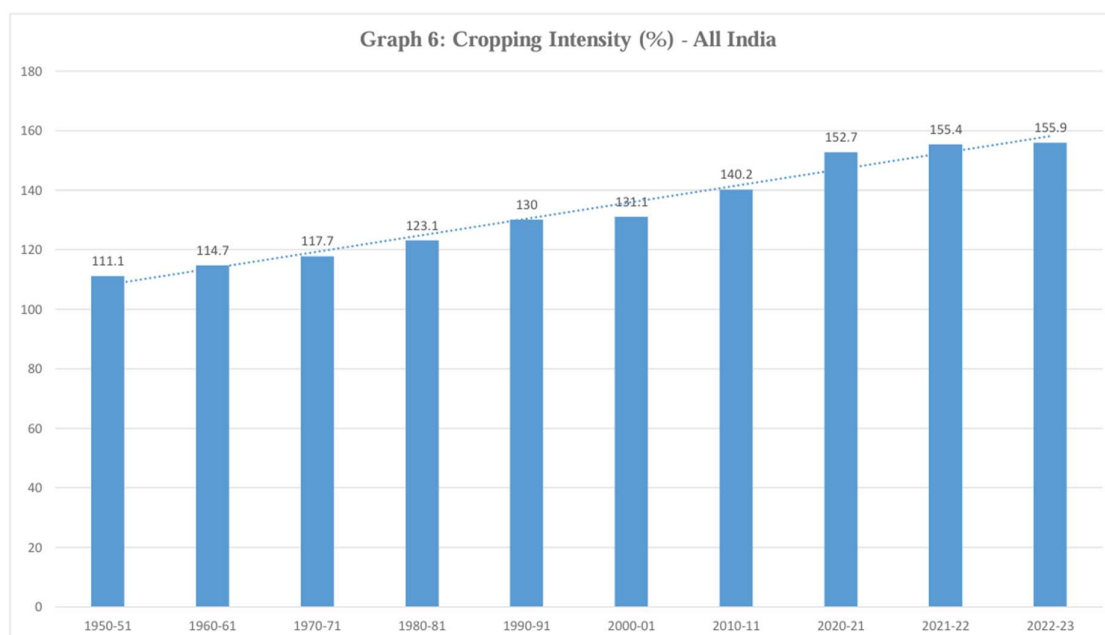
Exp:

Area of agriculture land during 1950-51 was 66.70% of Reporting Area, which is reduced to 58.69%. This decrease in Agriculture Land may be attributed to growing demand for increasing population, urbanization, industrialization.

Despite this decreasing trend of agriculture land, surplus production of foodgrains is being recorded which can be attributed to growing crop intensity rate.

Cropping intensity during 2022-23 has reported 155.9 % and the same was 111.1 % during 1950-51. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.





Q76

Ans: B

Exp:

Dust Particles

- Atmosphere has a sufficient capacity to keep small solid particles, which may originate from different sources and include sea salts, fine soil, smoke-soot, ash, pollen, dust and disintegrated particles of meteors.
- Dust particles are generally concentrated in the lower layers of the atmosphere; yet, convectional air currents may transport them to great heights.
- The higher concentration of dust particles is found in subtropical and temperate regions due to dry winds in comparison to equatorial and polar regions. Statement 1 is incorrect.
- Dust and salt particles act as hygroscopic nuclei around which water vapour condenses to produce clouds. Statement 2 is correct.

Q77

Ans: D

Exp:

Thickness of the troposphere is greatest at the equator. Statement 1 is correct.

- The troposphere is thickest at the equator because the air near the equator is warmer, causing it to expand. This results in a greater thickness compared to the poles, where the air is cooler and denser.

Stratosphere contains the ozone layer which absorbs UV radiation. Statement 2 is correct.

- The stratosphere contains the ozone layer, which absorbs a significant portion of the UV radiation from the sun, protecting life on Earth from harmful effects.

Thermosphere contains the electrically charged particles which are responsible for radio transmission. Statement 3 is correct.

- The thermosphere contains electrically charged particles (ions), and it is in this layer that the ionosphere is found. The ionosphere plays a crucial role in radio transmission as it can reflect radio waves back to Earth's surface, enabling long-distance communication.

Q78

Ans: C

Exp:

- Share of irrigated area and area irrigated more than once from gross irrigated area during 2022-23 is 64.85% and 35.15% respectively. The union territory Chandigarh and Andaman & Nicobar Island contain 100% irrigated area.
- Jharkhand has maximum percentage share of net irrigated area and area irrigated more than once from gross irrigated area during 2022-23.
- Percentage share of net irrigated area & area irrigated more than once to the gross irrigated area during 1950-51 was 92.42% and 7.58% respectively, which is increased to 64.85% and 35.15% in 2022-23.
- Share of net irrigated area to net sown area is maximum for Punjab** and minimum for union territory; Andaman & Nicobar Islands in 2022-23. The entire area sown in Delhi and Ladakh is irrigated. **Statement 1 is correct.**

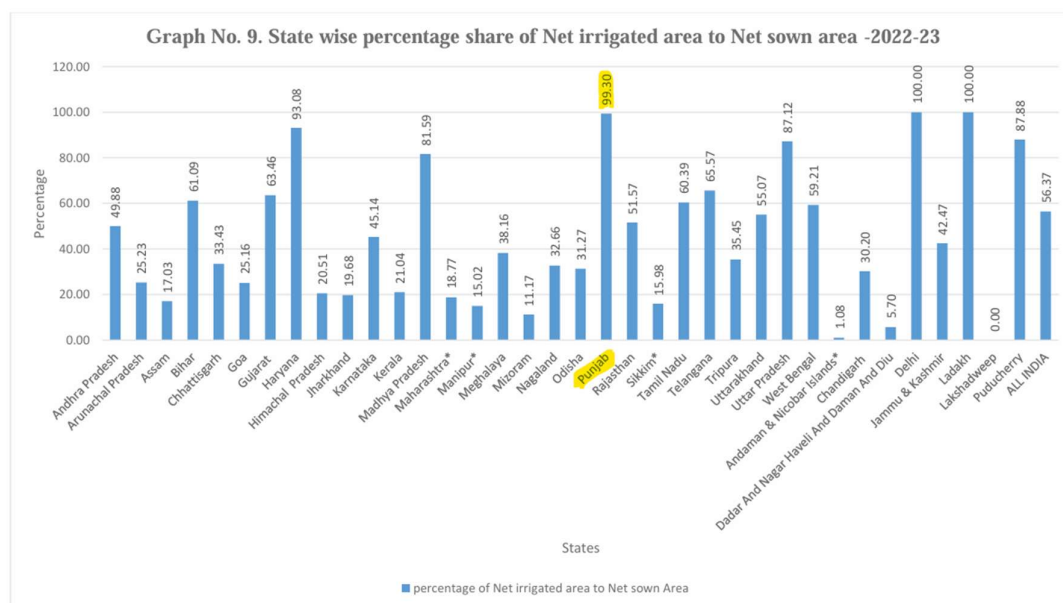


Table B: Part II: Source-Wise Irrigated Area All India

Irrigated Area (in thousand Hectares)		
1	Government Canals	17959
2	Private Canals	165
3	Total Canals (1+2)	18124
4	Tanks	2235
5	Tube-wells	39134
6	Other wells	10672
7	Other Sources	9147
	Net Irrigated Area (3+4+5+6+7)	79312
	Gross Irrigated Area	122294
	% of Gross Irrigated Area over Gross Cropped Area	55.8
	% of Net Irrigated Area over Net Area Sown	56.4

Statement 2 is correct.

Q79

Ans: A

Exp:

Distribution of Temperature:

In general, the effect of the latitude on temperature is well pronounced on the map, as the isotherms are generally parallel to the latitude. Statement 1 is correct.

The deviation from this general trend is more pronounced in January than in July, especially in the northern hemisphere.

In the northern hemisphere the land surface area is much larger than in the southern hemisphere. Hence, the effects of land mass and the ocean currents are well pronounced.

In January the isotherms deviate to the north over the ocean and to the south over the continent. Statement 2 is incorrect.

- This can be seen on the North Atlantic Ocean. The presence of warm ocean currents, Gulf Stream and North Atlantic drift, make the Northern Atlantic Ocean warmer and the isotherms bend towards the north. Over the land the temperature decreases sharply and the isotherms bend towards south in Europe.

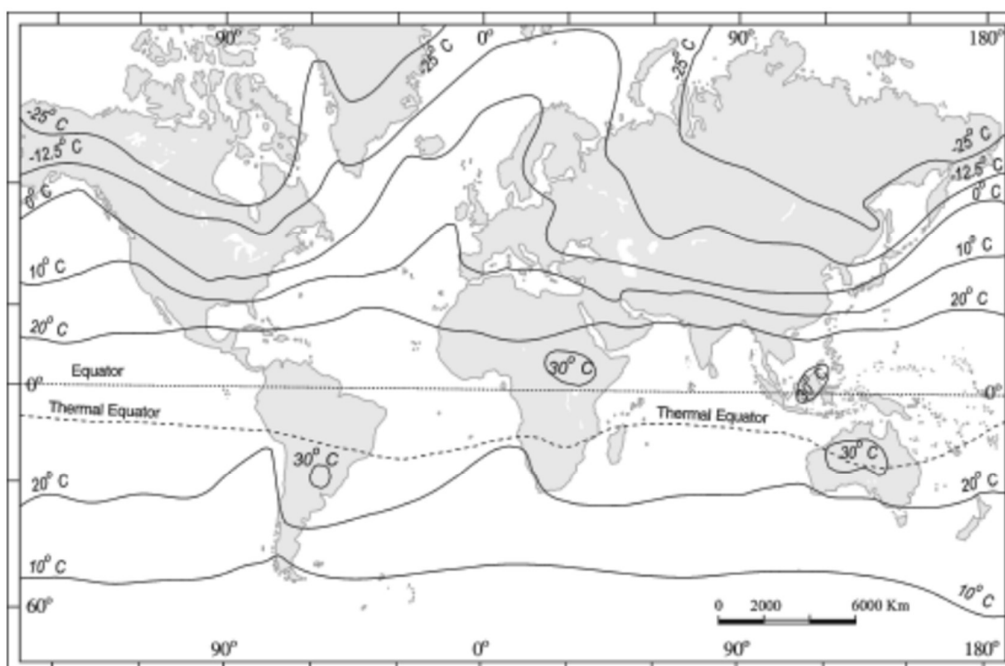


Figure 9.4 (a) : The distribution of surface air temperature in the month of January

Q80

Ans: A

Exp:

Statement I is correct: In the northern hemisphere, the highest temperatures are experienced at subtropics rather than the equator.

- In the northern hemisphere, areas in the subtropics (such as deserts) experience some of the highest temperatures due to factors like clear skies, dry air, and low cloud cover. While the equator does receive more direct sunlight year-round, subtropical regions can experience extreme heating during certain seasons due to specific climatic and geographical conditions.

Statement II is correct: Subtropical areas tend to have less cloud cover than equatorial areas.

- Subtropical areas (especially deserts and semi-arid regions) generally experience less cloud cover than the equatorial regions. This is because equatorial regions are typically affected by rising air, leading to more cloud formation and rainfall (due to convection). In contrast, subtropical regions, particularly deserts, are dominated by descending air that reduces cloud formation, allowing for clear skies and increased solar heating.

Conclusion:

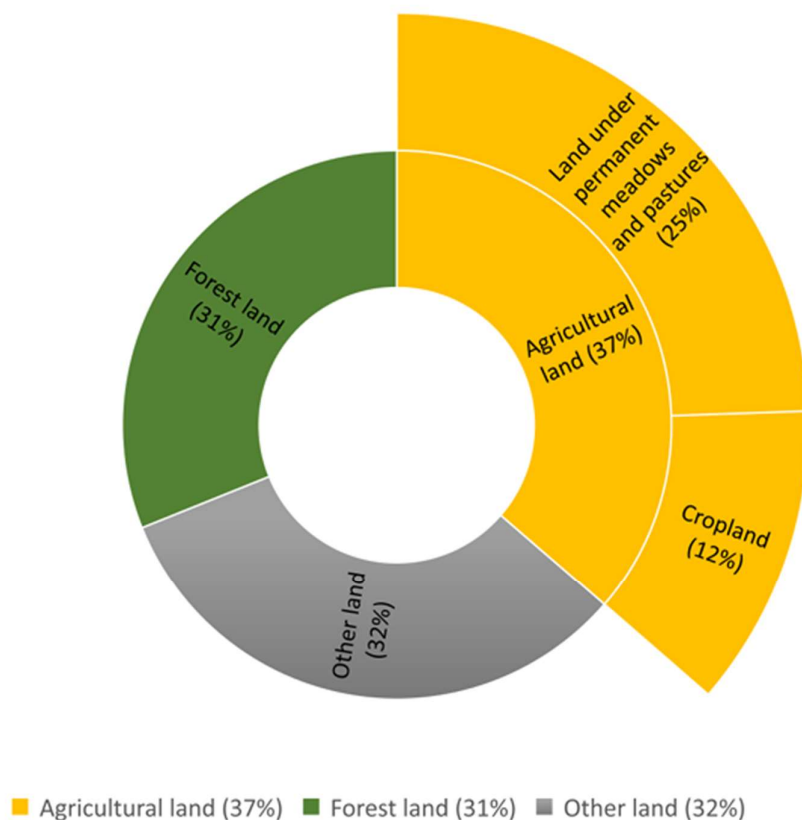
- Statement I is correct because subtropical regions do experience higher temperatures due to factors like less cloud cover and higher solar insolation in certain seasons.
- **Statement II explains why subtropical regions experience more intense heating: the lack of cloud cover allows for more solar radiation to reach the surface, contributing to higher temperatures.**

Q81

Ans: D

Exp:

Figure 1: Global land area composition in 2019



Source: FAO, 2021a.

Q82

Ans: B

Exp:

The Earth's water is distributed across various reservoirs. In ascending order of their quantity (from least to most), the typical ranking is:

- Streams and Rivers (5) - These contain a relatively small portion of Earth's fresh water.
- Soil Moisture (3) - This reservoir holds more water than rivers but is still quite limited.
- Lakes (4) - Larger bodies of water such as lakes contain more water than soil moisture.

- Groundwater (2) - This is a significantly larger reservoir, containing much more water than lakes.
- Ice caps and glaciers (1) - This is by far the largest reservoir of fresh water on Earth, containing more than all other reservoirs combined.

Thus, the correct ascending order of water reservoirs is:

Streams and Rivers (5) < Soil Moisture (3) < Lakes (4) < Groundwater (2) < Ice Caps and Glaciers (1).

<i>Reservoir</i>	<i>Volume (Million Cubic km)</i>	<i>Percentage of the Total</i>
Oceans	1,370	97.25
Ice Caps and Glaciers	29	2.05
Groundwater	9.5	0.68
Lakes	0.125	0.01
Soil Moisture	0.065	0.005
Atmosphere	0.013	0.001
Streams and Rivers	0.0017	0.0001
Biosphere	0.0006	0.00004

Q83

Ans: C

Exp:

In the northern hemisphere, cold currents can be found on the east coast in the higher latitudes.

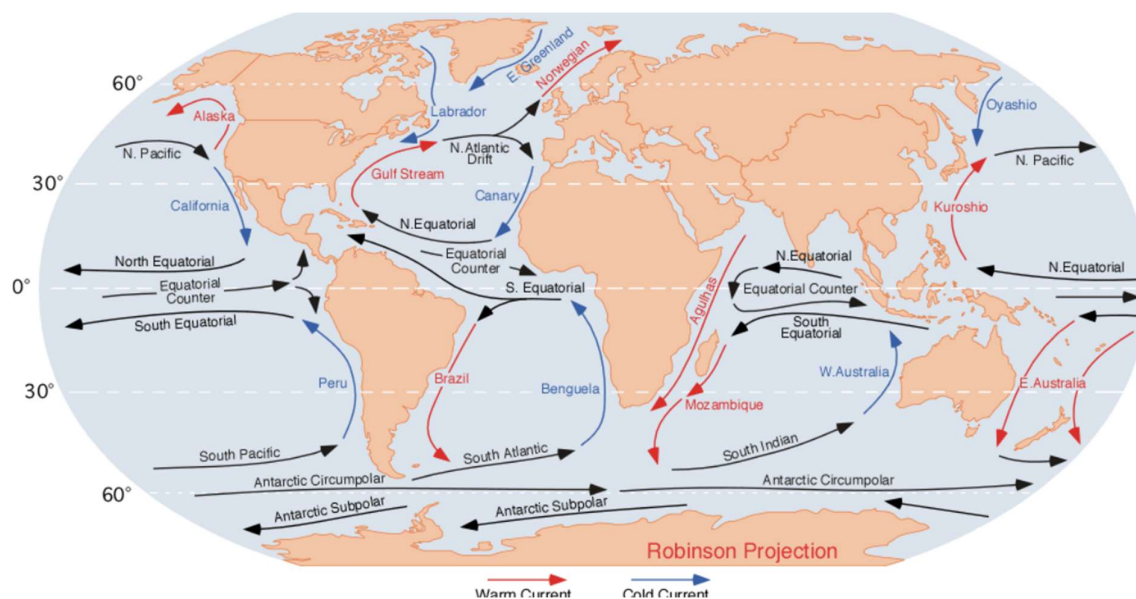
- In the Northern Hemisphere, cold ocean currents, such as the Labrador and California currents, are generally found along the eastern coasts in higher latitudes. Statement 1 is correct.

Warm currents are usually observed on the east coast of continents in the low and middle latitudes and this is true in both hemispheres.

- In the low and middle latitudes, warm ocean currents, like the Gulf Stream and the Kuroshio Current, are found on the eastern coasts of continents in both the Northern and Southern Hemispheres. Statement 2 is correct.

Ocean currents are strongest near the surface and become slower as the depth increases.

- Ocean currents are typically strongest at the surface, due to wind patterns and other surface-level factors. As the depth increases, the current speed generally decreases. Statement 3 is correct.



Q84

Ans: A

Exp:

Statement I is correct - The best fishing grounds of the world exist where the warm and cold currents mix.

- The areas where warm and cold ocean currents meet, such as the upwelling zones, are rich in nutrients and support abundant marine life, making them some of the best fishing grounds in the world.

Statement II is correct – The mixing of warm and cold currents helps to replenish the oxygen and favor the growth of planktons.

- The mixing of warm and cold currents promotes upwelling, which brings nutrient-rich waters from the deep to the surface. **These nutrients help stimulate plankton growth, and plankton (primary food for fish population) are essential in supporting marine ecosystems.** The mixing also replenishes oxygen in the surface layers.

Both statements are correct, and Statement II explains why the best fishing grounds exist where warm and cold currents meet.

Q85

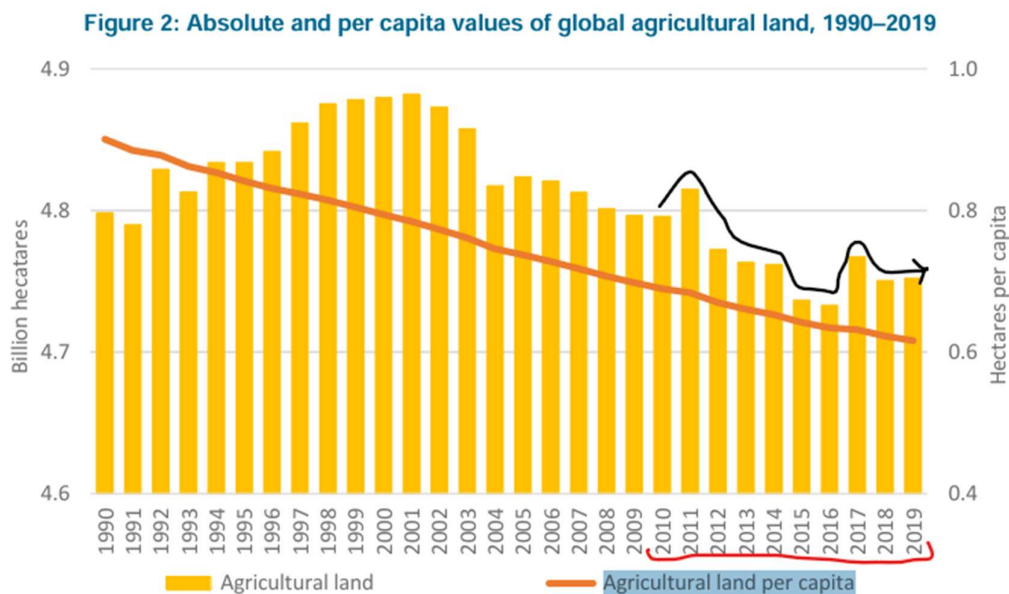
Ans: B

Exp:

According to the Food and Agriculture Organization (FAO), the total agricultural land area has experienced a slight decrease over recent decades. Specifically, between 1990 and 2019, there was a 1% decline in

agricultural land, indicating that the share of agricultural land has not been constantly increasing during the 2010-2019 period. (See graph). Statement 1 is incorrect.

The FAO reports that world per capita agricultural land was 0.6 hectares in 2019, having decreased by 30% since 1990. This decline is attributed to population growth outpacing the expansion of agricultural land, leading to a consistent decrease in per capita agricultural land during the specified period. Statement 2 is correct.



Source: FAO, 2021a and 2021c.

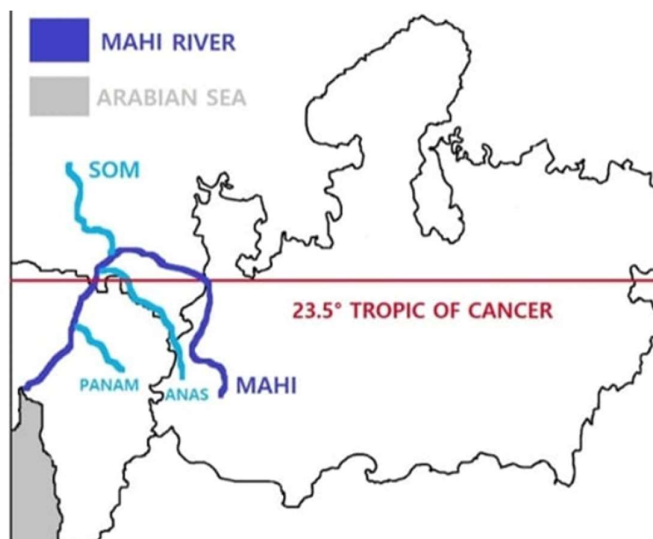
Q86

Ans: D

Exp:



Zaire River



Q87

Ans: D

Exp:

<i>Mines</i>	<i>Related Minerals</i>
1. Rakha Mines	Copper
2. Zawar Mines	Zinc
3. Bailadila Mines	Iron Ore
4. Jadu Goda Mines	Uranium

Q88

Ans: A

Exp:

Here is the arrangement of the given peaks/mountains from west to east in Central India:

- **Rajpipla Mountains** – Located in the western part of Madhya Pradesh and Gujarat, it is the westernmost in the given list.
- **Gawligarh** – This range lies to the east of Rajpipla and is located in Madhya Pradesh.

- **Mahadeo** – Located further east from Gawligarh, it is another range in Madhya Pradesh.
- **Maikala** – Situated in Madhya Pradesh, Maikala lies east of Mahadeo.
- **Amarkantak** – This is located in the eastern part of Madhya Pradesh, marking the easternmost point of the list.

Q89

Ans: C

Exp:

Arabica Coffee:

- **Altitude:** Arabica coffee plants thrive at higher altitudes, generally between 600 and 2,000 meters above sea level.
- **Temperature:** They prefer cooler, more temperate climates with an average temperature range of 15-20°C. Arabica beans are often considered superior in quality due to their more refined flavors and aromatic profiles. Statement 1 is correct.
- **Characteristics:** Arabica coffee is grown in regions that have a well-defined wet and dry season, which is crucial for the development of the beans. The cooler temperatures help slow down the maturation of the coffee cherries, enhancing the flavors.

Robusta Coffee:

- **Altitude:** Robusta is usually grown at lower altitudes (up to about 800 meters above sea level) compared to Arabica.
- **Temperature:** It thrives in a hot, humid tropical climate, generally between 24-30°C, and can withstand harsher conditions. Statement 2 is correct.
- **Characteristics:** Robusta coffee is known for its higher caffeine content and stronger, more bitter taste. It is also more resistant to pests and diseases, which makes it a more robust (hence the name) crop to grow in less favorable conditions.

Key Coffee Growing Regions in India:

Karnataka:

- Karnataka is the largest coffee-growing state in India, producing both Arabica and Robusta. The Coorg, Chikmangalur, and Kodagu regions are particularly famous for Arabica coffee, grown at high altitudes. The Bababudangiri Hills, also in Karnataka, are renowned for being one of the first places where coffee was cultivated in India.

Kerala:

- Kerala is another major producer of coffee, particularly in the Wayanad and Idukki districts. Here, both Arabica and Robusta are cultivated, but Robusta coffee is more dominant in the lower altitudes.

Tamil Nadu:

- Tamil Nadu's Nilgiri Hills (Blue Mountains) is known for its Arabica coffee, grown at altitudes around 1,000 meters. The Nilgiri coffee is considered one of the finest in India, often having a mild and aromatic flavor.

Q90

Ans: B

Exp:

<i>Beach</i>	<i>Located in</i>
1. <i>Radhanagar Beach</i>	<i>Andaman and Nicobar Islands</i>
2. <i>Bangaram Beach</i>	<i>Lakshadweep</i>
3. <i>Kovalam Beach</i>	<i>Tamil Nadu</i>
4. <i>Golden Beach</i>	<i>Odisha</i>



Q91

Ans: C

Exp:

The Isthmus of Kra, located in southern Thailand, connects the Malay Peninsula to mainland Asia. It is nicknamed "The Devil's Neck" because of its narrow terrain, which poses significant challenges to navigation between the Gulf of Thailand and the Andaman Sea.

Other Options:

- **Isthmus of Panama:** Known for the Panama Canal connecting the Atlantic and Pacific Oceans.
- **Isthmus of Tehuantepec:** The narrowest part of Mexico between the Gulf of Mexico and the Pacific Ocean.
- **Isthmus of Corinth:** Found in Greece, known for the Corinth Canal connecting the Aegean and Ionian Seas.

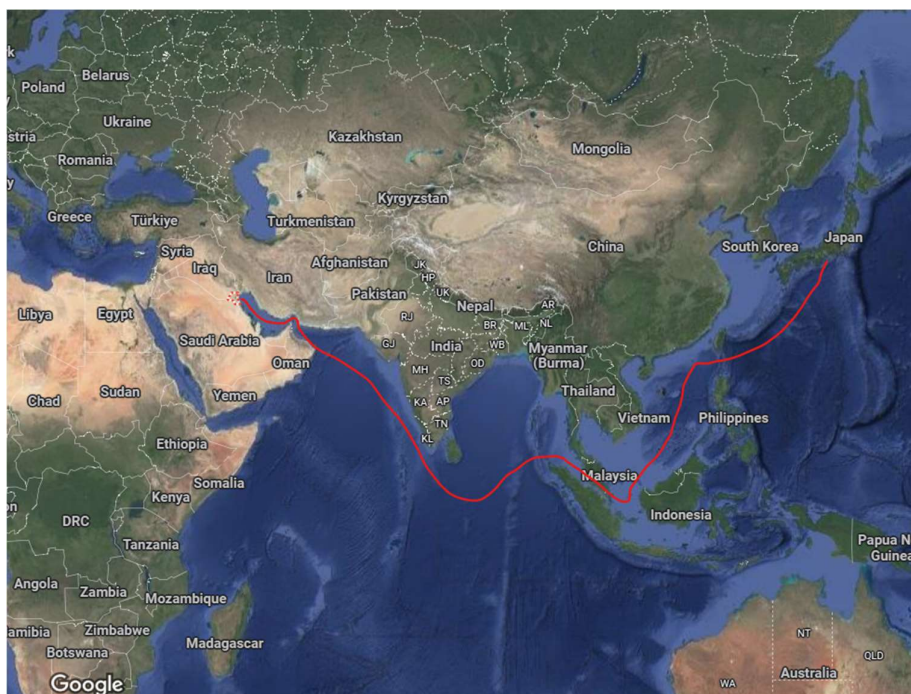
Q92

Ans: B

Exp:

A ship traveling from Kuwait to Japan with crude oil will navigate through the following sequence of water bodies:

- **Strait of Hormuz:** Located between the Persian Gulf and the Gulf of Oman, this is the first major water body for ships departing from Kuwait.
- **Malacca Strait:** The narrow waterway connecting the Andaman Sea to the South China Sea, commonly used for maritime routes to East Asia.
- **South China Sea:** A crucial maritime region connecting Southeast Asia to East Asia.
- **Philippine Sea:** Located to the east of the Philippines, this sea leads ships to the Pacific route heading towards Japan.



Q93

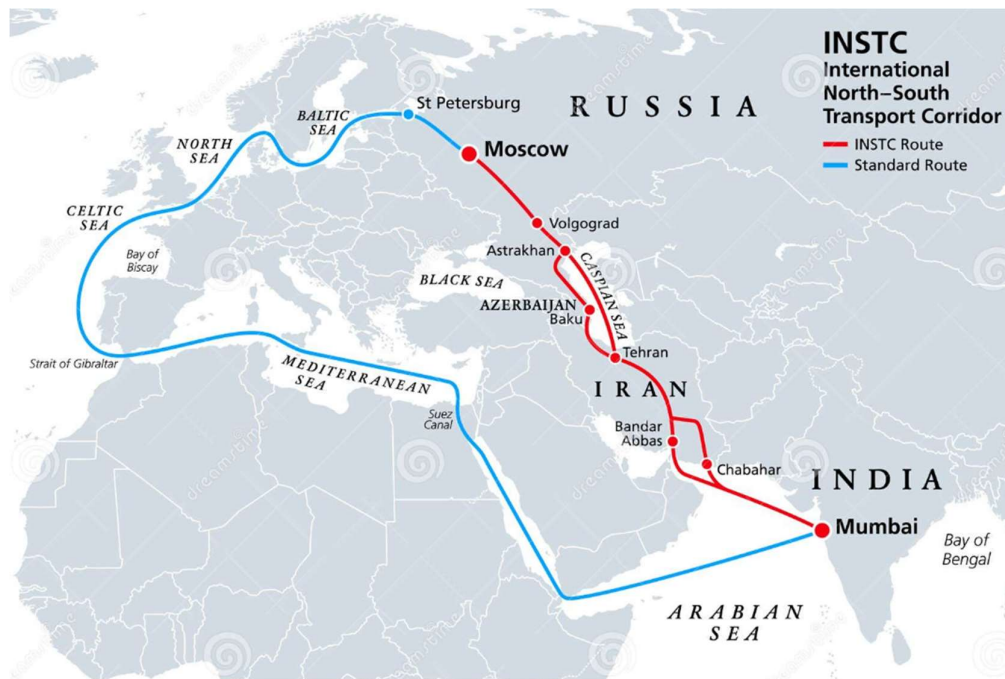
Ans: B:

Exp:

The International North-South Transport Corridor (INSTC) is a multi-modal trade route connecting South Asia, Central Asia, the Persian Gulf, and Europe. Among the given options:

- **Red Sea - Not part of the INSTC.** The Red Sea is associated with the Suez Canal route, not the INSTC.

- Caspian Sea - Part of the INSTC. It plays a key role in connecting Central Asian countries to Russia and Europe via sea routes.
- Aral Sea - Not part of the INSTC. The Aral Sea is a landlocked body of water with no significant role in this transport corridor.
- Persian Gulf - Part of the INSTC. It is a critical gateway for trade between South Asia, the Middle East, and Central Asia.



Q94

Ans: C

Exp:

No Central Asian Country shares boundary with India.

- None of the five Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) share a border with India. Statement (a) is correct.

Aral Sea is situated between Uzbekistan and Kazakhstan. Statement (b) is correct.

The Aral Sea lies between southern Kazakhstan and northwestern Uzbekistan.

- Turkmenistan and Kazakhstan share coastlines with the Caspian Sea.
- However, Uzbekistan is landlocked and does not have a boundary with the Caspian Sea. Statement (c) is incorrect.

Among five Central Asian countries, Kazakhstan shares the longest boundary with Russia. Statement (d) is correct.

- Kazakhstan shares the longest land border with Russia, spanning over 7,500 kilometers.



Q95

Ans: D

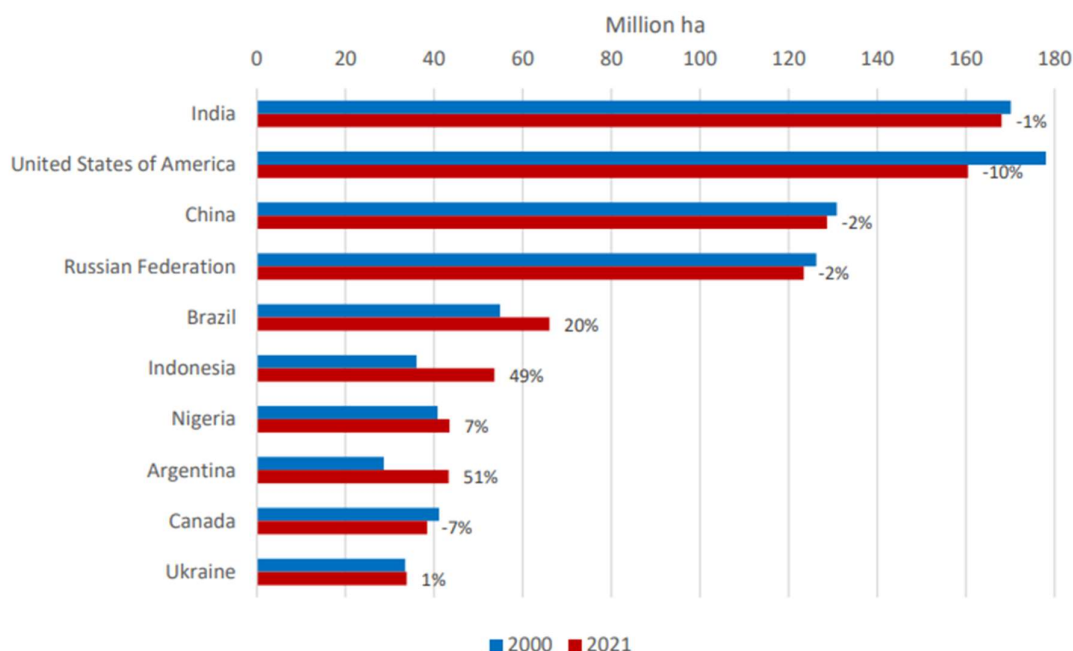
Exp:

In 2021, India had the largest total cropland area, with 168 million ha. It was closely followed by the United States of America (160 million ha), China (128 million ha), the Russian Federation (123 million

ha) and Brazil (66 million ha). The remaining highest-ranking countries (Indonesia, Nigeria, Argentina, Canada and Ukraine) had values between 30 and 60 million ha.

- The top ten countries with the largest extent of cropland exhibited diverse trends between 2000 and 2021.
- In India, China, the Russian Federation and Ukraine, the cropland area remained relatively stable with little variation. Statement 1 is correct.
- The United States of America experienced a 10 percent decrease in cropland area. Statement 2 is correct.
- Canada saw a 7 percent decline in cropland area, while Nigeria witnessed a similar percentage increase.
- On the other hand, significant increases in cropland area were observed in Argentina (+51 percent), Indonesia (+49 percent) and Brazil (+20 percent). Statement 3 is correct.
- In Argentina and Brazil, these substantial increases were mainly driven by the expansion of temporary crops, whereas the area of permanent crops exhibited more limited growth (+7 percent in Argentina) or even a decrease (-18 percent in Brazil). The opposite occurred in Indonesia, where the significant expansion of permanent crops (with the area dedicated to them increasing by 76 percent to 27 million hectares) played a crucial role in driving the changes in land use. The expansion of oil palm plantations has been a major contributing factor to this growth.

Figure 7: Cropland area and change between 2000 and 2021, top countries



Source: FAO. 2023. Land Use. In: FAOSTAT. Rome. [Cited July 2023].

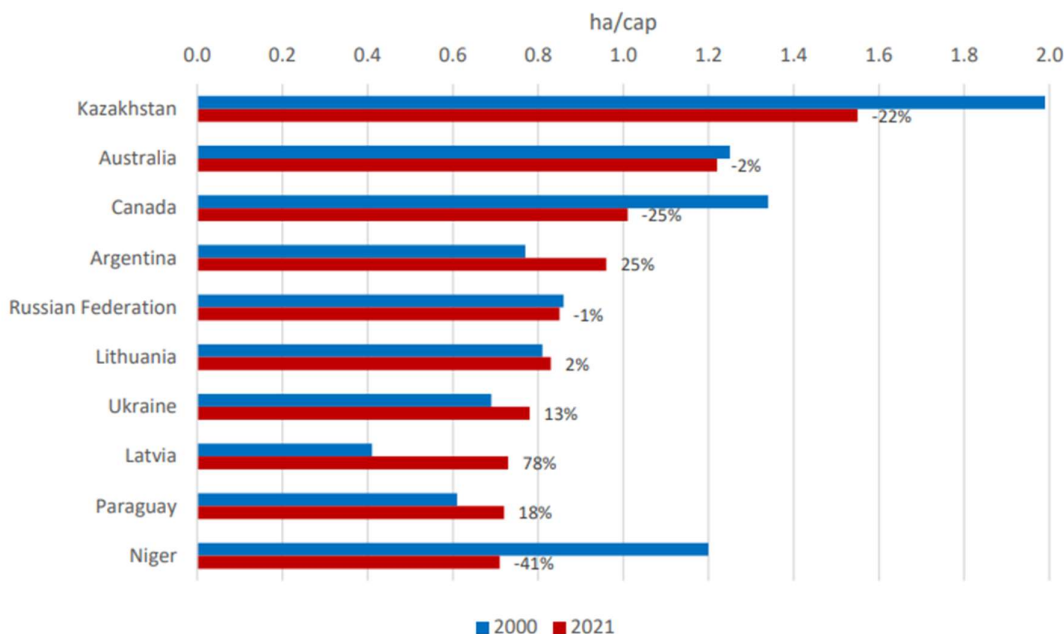
Q96

Ans: A

Exp:

- In 2021, only four countries had approximately 1 hectare or more of cropland per capita.
- Kazakhstan stood out with a value of 1.6 ha/cap, which was eight times the global average of 0.2 ha/cap.
- Australia followed closely with 1.2 ha/cap, while Canada and Argentina had approximately 1.0 ha/cap. The other top-ranking countries had values ranging from 0.7 to 0.9 ha/cap.
- Since 2000, Kazakhstan and the Niger have witnessed a significant reduction in cropland area per capita (–22 percent and –41 percent, respectively) due to larger increases in their respective populations.

Figure 8: Cropland area per capita, top countries (2021)



Source: FAO. 2023. Land Use. In: FAOSTAT. Rome. [Cited July 2023].

Q97

Ans: A

Exp:

Table C: Part III: Area Under Crops

Area under crops (in thousand Hectares)	
Total Foodgrains	136309
Total Cereals & Millets	180781
Rice	49527
Wheat	34994
Total Pulses	27528
Total Condiments and Spices	4598
Total Fruits & Vegetables	12024
Total Food Crops	160244
Total Oilseeds	33181
Sugarcane	6794
Cotton	13009
Total non-food crops	59113
Total Cropped Area	219357

Q98

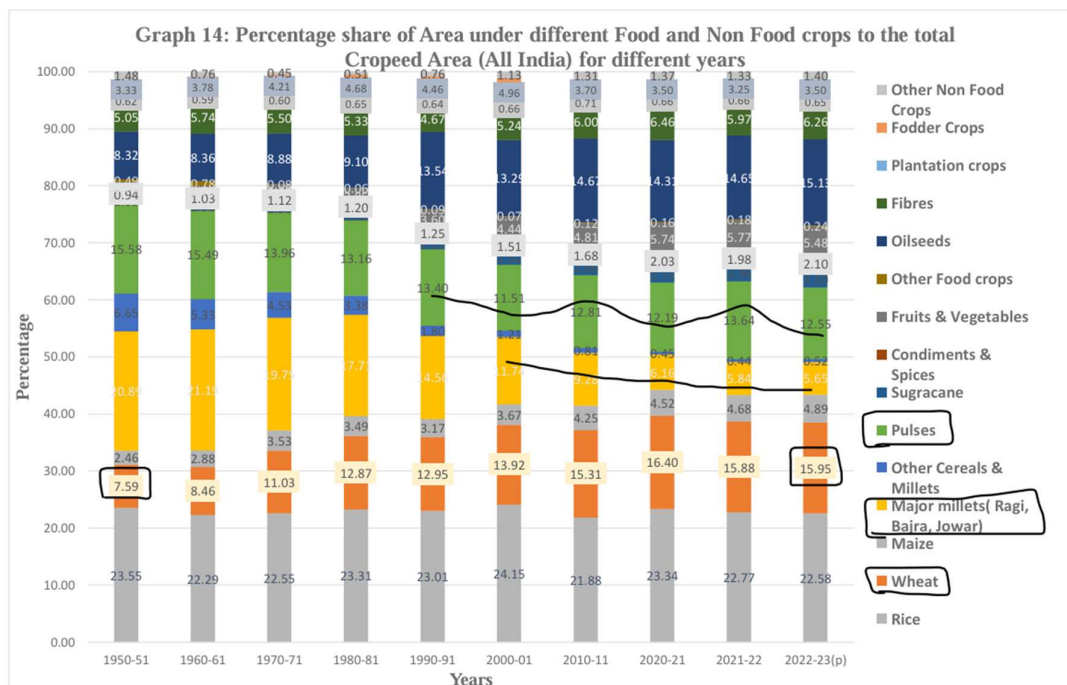
Ans: A

Exp:

Area of Millets to the total cropped area during 1950-51 was 6.65%, which is decreased up to 0.52% in 2022-23. Also, in 2021-22 it was 5.84 and in 2022-23 it was 5.65 hence it decreased marginally. Statement 1 is incorrect.

As from the graph below. Statement 2 is incorrect.

In 1950-51 are under wheat crop was 7.59% of the total cropped area which increased to 15.95 of the total cropped area in 2022-23. Statement 3 is correct.



Q99

Ans: B

Exp:

Air masses are not typically formed in the tropical region due to the following reasons:

- **Lack of Temperature Contrast:** In the tropics, temperatures are uniformly high throughout the year, which prevents the temperature differences needed for air mass formation.
- **Constant Warmth:** The tropical region experiences consistent warmth, leading to convection (rising air), rather than the cooling and sinking of air required to form stable air masses.
- **Frequent Convection:** The dominance of rising warm air and thunderstorms in the tropics prevents the formation of stable, uniform air masses.

Thus, air masses are not formed in the tropical region.

Q100

Ans: B

Exp:

Fronts:

- **Definition:** Front is a three-dimensional boundary zone between two converging air masses with contrasting physical properties like temperature, humidity etc.

- **Formation:** Commonly formed in the middle and higher latitudes (40°- 65° latitudes) where warm and moist subtropical air masses come in contact with cold and dry polar air masses.
- **Frontogenesis:** Process of formation of a front is known as Frontogenesis and it involves convergence of two distinct air masses.
- **Fronotolysis:** Dissipation/ weakening of the front is known as Frontolysis where one of the air masses overrides another.
- In the northern hemisphere, Frontogenesis happens in an anticlockwise direction (clockwise in the southern hemisphere) due to the Coriolis Effect.
- It is the reason for the formation of temperate cyclones in mid-latitudes.

Types of Fronts:

Types of Fronts Based on the Mechanism of Frontogenesis:

Stationary Front: Air masses are not moving against each other; Wind motion is parallel to the front.

Cold Front: Transition zone where an advancing cold dry air mass violently displaces a warm moist air mass; Cold air advances toward warm air; steeper.

- Cumulonimbus clouds are formed resulting in heavy rainfall. Statement 1 is incorrect.
- Example: In the USA, Thunderstorms and tornadoes are common features in warm sectors of a cold front. Statement 3 is correct.

Warm Front: Warm air advances toward cold air and makes a gradual front; less steep.

- Causes moderate to gentle precipitation over a large area. Statement 2 is incorrect.

Occluded Front: When a cold air mass overtakes a warm air mass and goes underneath it. Warm air mass is lifted entirely off the land surface

For further clarifications and feedback feel free to
write to us at **"testseriesrcr@gmail.com"**
