

1. Consider the following:

1. Khadar
2. Bhabar
3. Bhangar
4. Terai

Arrange the relief features of the Northern plains from south to north.

- (a) 1-3-4-2
 (b) 2-4-3-1
 (c) 3-2-1-4
 (d) 4-2-1-3

EXPLANATION:

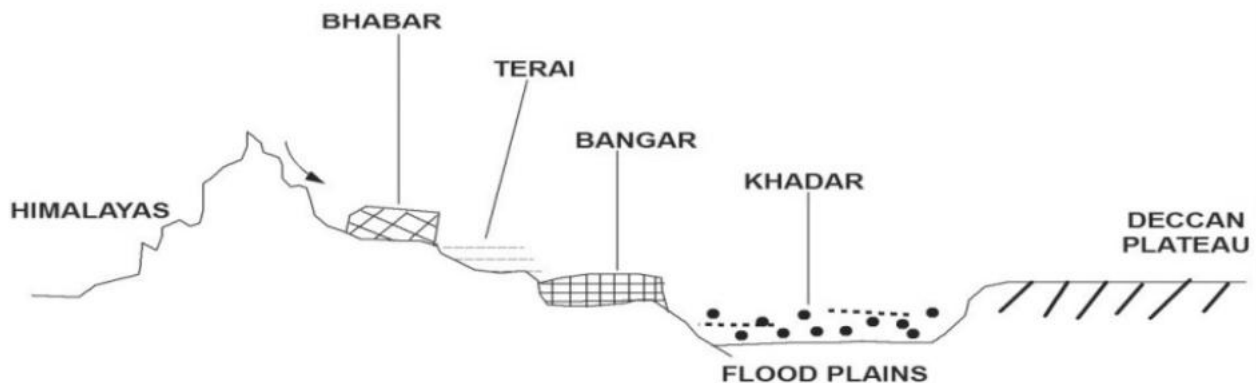
The Northern Plains extend from west to east, between the Himalayas in the north and Great Indian Plateau in the South. The plain extends from the arid and semi-arid areas of Rajasthan in the west to the Brahmaputra valley in the east.

According to the variations in relief features, the Northern plains can be divided into four regions.

- **Bhabar Belt:** The Bhabar belt is about 7-15 Km wide, a narrow belt adjacent to the foothills of the Himalayas. It is made up of porous, rocky soils and pebbles that get deposited at the foot of the Himalayas due to the breakoff slope. This material is made of debris washed down from higher ranges. Due to the very high porosity of this belt, water seeps down, and the streams are lost and start flowing underground.
- **Terai Belt:** The Terai belt is a 15-30 Km wide marshy tract that lies next to the Bhabar running parallel to it. Due to the bedrock, the streams lost in Bhabar reappear in Terai. Thus, the water table is very high, making the land marshy. Consequently, the Terai belt is moist and thickly forested and is home to a variety of wildlife.
- **Bhangar Belt:** This is the largest part of the Northern plains, made up of old alluvium and forms an alluvial terrace above flood plains. The soil is made up of old alluvium and in the drier parts, it has calcareous deposits called kankar.
- **Khadar Belt:** The Khadar belt is found along all rivers in the flood plains. Soil is made up of new alluvium, which gets deposited every year due to floods.
- **Delta Plain:** The deltaic plain has a huge amount of new alluvium and is mostly in the form of Khadar. It covers about 1.9 lakh square kilometres of area in the lower reaches of the Ganga river. It is an area of deposition as the river flows in this tract sluggishly. The deltaic plain mainly consists of old mud, new mud and marsh.

Therefore, the order from South to North is Khadar (1) → Bhangar (3) → Terai (4) → Bhabar (2)

So, Option (a) is correct.



ADDITIONAL INFORMATION:

NORTHERN PLAIN	
Parts	The Great Northern Plain can be divided into four parts: ➤ Western plain, ➤ North Central plain, ➤ Eastern plain, and ➤ Brahmaputra plain
Western Plain	➤ This region includes the Rajasthan desert and the Bangar region lying to the west of the Aravalli ranges. ➤ The desert is partly rocky and partly sandy. Some geographers believed that in the ancient period, the perennial streams - Saraswati and Drishadvati - flowed through this region. ➤ This region includes the fertile area of Bikaner. River Luni flows through this Bangar region and falls into the Rann of Kutch. The famous saltwater lake of Sambhar is situated in this part of the plain.
North Central Plain	➤ This plain extends over Punjab, Haryana, and Uttar Pradesh. The part of this plain extending into Punjab and Haryana has been formed by the alluvium brought by the rivers Satluj, Beas, and Ravi. It is a very fertile area. ➤ The part of this plain lying in Uttar Pradesh is made up of the deposits laid down by the rivers like Ganga, Yamuna, Ramganga, Gomati, Ghagra, and Gandak. ➤ This plain part is highly fertile and has been the cradle of Indian civilisation and culture.
Eastern Plain	➤ This part of the great plains covers the middle and the lower Ganga valley, lying in the states of Bihar and West Bengal. Ganga flows through the middle of this plain in Bihar. Ghagra, Kosi, and Gandak join Ganga from the north, while Son joins from the South. ➤ On entering West Bengal, the plain widens further, extending from the foothills of the Himalayas up to the Bay of Bengal. ➤ The southern part of the plain is the delta region. Ganga is divided into several distributaries in the delta region. Hooghly is the best example of a distributary of the Ganga. ➤ This part of the plain is indeed very fertile and rainier.
Brahmaputra Plain	➤ The northeastern part of the Great Indian Plain extends into Assam. This plain was formed by the alluvium deposition brought down by the River Brahmaputra and its tributaries. The Brahmaputra is highly prone to devastating floods at regular intervals. ➤ After the floods, the River generally changes its course. This process has led to the formation of various islands in the River. Majuli (1250 square kilometres) in the Brahmaputra River is the world's largest river island. ➤ This part is also very fertile. It is surrounded by hills on three sides. Bangladesh is situated on this plain, and the delta is jointly formed by the Ganga and the Brahmaputra and their distributaries.

2. Consider the following Statements with respect to the River Mahi:

1. This River cuts the tropic of cancer twice.
2. The River originates from the Aravalli range.
3. It drains into the Arabian Sea through the Gulf of Kutch.
4. The River pass through the city of Vadodara.

How many of the statements given above is/are correct?

- (a) Only one
- (b) Only two**
- (c) Only three
- (d) All four

EXPLANATION:

Mahi River is one of the major west flowing interstate River of India, draining into the Gulf of Khambhat.

So, Statement 3 is not correct.

➤ River Mahi cuts the Tropic of Cancer twice. **So, Statement 1 is correct.**



- It is bounded by the Aravalli hills on the north and the north-west, by the Malwa Plateau on the east, by the Vindhya on the South and by the Gulf of Khambhat on the west. Mahi is one of the major interstate west-flowing rivers of India.
- River Mahi originates from the northern slopes of Vindhya at an altitude of 500 m near village Bhopawar, Sardarpur tehsil in Dhar district of Madhya Pradesh. **So, Statement 2 is not correct.**
- Vadodara is the only important urban centre in the Mahi river basin. There are not many industries in the basin. Some of the industries are cotton textile, paper, newsprint, drugs and pharmaceuticals. Most of these industries are located at Tatlam. **So, Statement 4 is correct.**

ADDITIONAL INFORMATION:

RIVER MAHI	
About	➤ Mahi is one of the major inter-state west-flowing rivers of India. ➤ Initially, the River flows northwards through Dhar and Jhabua districts of Madhya Pradesh and then turns left and passes through the Ratlam district of Madhya Pradesh. ➤ Then, turning north-west, it enters the Banswara district of Rajasthan and flows in south-west directions and thereafter enters the Panch Mahals district of Gujarat state. ➤ Then the River continuously flows in the same direction through Kheda district of Gujarat and finally falls into the Gulf of Khambhat in Arabian Sea. ➤ This River is comprised of several tributaries on both the banks viz., out of which the main tributaries are Som, Anas, Panam and others. • Som is a right bank tributary of Mahi river. Som river rises near Som on the eastern slopes of Aravalli hills in Rajasthan at an elevation of 600 m above mean sea level. • Anas is a left bank tributary of Mahi river. Anas river rises near Kalmora on the northern slopes of Vindhya in Jhabua district of Madhya Pradesh at an elevation of 450 m above mean sea level. • Panam is another left bank tributary of Mahi river. Panam river rises near Bhadra on the northern slopes of Vindhya near Jhabua district of Madhya Pradesh at an elevation of about 300 m above mean sea level.

3. Consider the following statements with respect to the Meiteis and the Kuki community of Northeast India:

1. Both of them are categorised as the Scheduled tribes.
 2. Both communities are spread across the northeastern States, Bangladesh, and Myanmar.
- Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only**
- (c) Both 1 and 2
- (d) Neither 1 nor 2

EXPLANATION:

Recently, Meiteis and Kukis are in news for their ongoing ethnic violence.

Manipur, like much of the rest of northeast, is a mosaic of various communities which have a history of distrust towards each other.

- Meiteis comprise a little more than half of the population while the tribals, Kukis and Nagas, are nearly 40%, 25% Kukis and 15% Nagas. Most of the Meiteis live in the Imphal valley while the tribals live in the hill districts.
- Meiteis are predominantly Hindus, but also follow their ancient animist beliefs and practices. 8% of the Meiteis are Muslims called Meitei Pangals. Most of Kukis and Nagas are Christians. Kukis are spread all over the northeast and Myanmar.
- Meitei community has been demanding for scheduled tribe category. Currently, the Nagas and Kukis are recognised as "Scheduled Tribes" under the Indian constitution, recognising their disadvantaged socio-economic status. The Meitei, however, are not. **So, Statement 1 is not correct.**

Meiteis, the largest community in Manipur, account for about 53% of the State's total population of 2.85 million (2011 census). Also known as Meitei or Manipuri, the community is spread across the other northeastern States, Bangladesh, and Myanmar.

The Kukis are an ethnic group including multiple tribes originally inhabiting the Northeastern States of India, including Manipur, Mizoram and Assam; parts of Burma (now Myanmar), and Sylhet district and Chittagong hill tracts of Bangladesh.

Thus, both communities are spread across the northeastern States, Bangladesh, and Myanmar. **So, Statement 2 is correct.**

ADDITIONAL INFORMATION:

MEITEIS, KUKIS AND NAGAS	
Meiteis	➤ The Meitei, the dominant population of Manipur, in northeastern India, is concentrated mostly around the Imphal valley. ➤ More than 80 per cent of present-day Meiteis are followers of Vaishnavism, a form of Hinduism, but a small portion (less than 10 per cent) of the population, known as Meitei Pangals, follows Islam. ➤ Roughly 1 per cent of Meiteis are Christians, and the remaining population adheres to Sanamahism, an indigenous faith that was followed before the conversion to Hinduism, Islam, and Christianity. ➤ The game of sagol kangjei and modern-day Manipuri are believed to have their roots in Lai Haraoba, a Meitei festival to please the ancestral deities. Yaoshang, which coincides with the festival of Holi, is another important festival. This joyful springtime celebration includes prayers, kirtana (recitations), playing with colors in temples, and the thabal chongba ("moonlight dance") in the evening, where young people hold hands and dance in a circle.
Kukis	➤ Kukis are known by different names to different communities. Some called them Lushai, some called them Kukis, Darlongs, Rokhums and among the Burma boarder they are known as Chins. They called themselves Hare-ems. However 'Kuki' has been accepted as the generic name for the community. ➤ As per 2011 Census all together Kukis are 10,965 persons in Tripura. In the past they lived in hill top and maintain their livelihood through jhum cultivation and also by producing fruits. ➤ Now-a-days they do plain land cultivation and rear livestock. Linguistically they speak a language which is closely related to Kuki-Chin linguistic family of Sino-Tibetan race. The Kukis have many clans and sub-clans. ➤ Kukis are fond of music and dance. They work hard in Jhum field, garden and enjoy dance and music at community level. Normally they do not arrange any marriage alliance outside their community. ➤ Traditionally they were not Christian but animist and worship different deities and spirits. But for the last 90(ninety) years majority of them have embraced Christianity as their religion. They have their own customary laws and village

	council. LAL is a term to denote village chief. This is the reason for which Darlong use Lal before their name. The village chief generally looks up all sort of social and religious disputes Including dispute related to marriage and divorce. Presently Kukis are socio economically advanced then other tribes.
Nagas	➤ Nāga, group of tribes inhabiting the Nāga Hills of Nāgāland (q.v.) state in northeastern India. They include more than 20 tribes of mixed origin, varying cultures, and very different physiques and appearances. ➤ The numerous Nāga languages (sometimes classified as dialects) belong to the Tibeto-Burman group of the Sino-Tibetan language family. Almost every village has its own dialect; different groups of Nāgas communicate in broken Assamese (Nāgame), or sometimes in English and Hindi. The largest tribes are the Konyaks, Aōs, Tangkhuls, Semās, and Angāmis. ➤ Most Nāgas live in small villages strategically placed on hillsides and located near water. Shifting cultivation (jhūm) is commonly practiced, although some tribes practice terracing. Rice and millet are staples. Manufactures and arts include weaving (on simple tension looms) and wood carving.

4. Consider the following Statements:

1. It is the latest tiger reserve of the country.
 2. The Reserve has Tropical dry deciduous mixed forests.
 3. The Reserve is located in the State that has the highest number of tiger reserves in the country.
- Which of the following tiger reserves is described above?

- (a) Ratapani Tiger Reserve
- (b) Dholpur – Karauli Tiger Reserve
- (c) Veerangana Durgavati Tiger Reserve
- (d) Madhav Tiger Reserve**

EXPLANATION:

Madhav National Park in Shivpuri district, Madhya Pradesh, was declared a tiger reserve earlier in March 2025, taking the tally of such reserves in the country to 58.

- The latest tiger reserve is spread over an area of 1,651 sq km, and currently has six tigers, including a cub. It is hoped that the notification of the new reserve will aid the movement of tigers in the Ranthambore-Kuno-Madhav National Park corridor, identified as a promising habitat for a growing tiger population.
- The forests of the park fall within the category of Northern tropical dry deciduous mixed forests as well as Dry Thorn Forests typical of North – Western Madhya Pradesh.
- With the inclusion of Madhav National Park, Madhya Pradesh now boasts nine tiger reserves, the highest number in any Indian state. **So, Option (d) is correct.**



ADDITIONAL INFORMATION:

NATIONAL TIGER CONSERVATION AUTHORITY (NTCA)	
About	The National Tiger Conservation Authority (NTCA) is a statutory body under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation, as per powers and functions assigned to it under the said Act.
Objectives	➤ Providing statutory authority to Project Tiger so that compliance of its directives become legal. ➤ Fostering accountability of Center-State in management of Tiger Reserves, by providing a basis for MoU with States within our federal structure. ➤ Providing for an oversight by Parliament. ➤ Addressing livelihood interests of local people in areas surrounding Tiger Reserves.
Project Tiger	The 'Project Tiger' is a Centrally Sponsored Scheme (CSS) of the Ministry of Environment, Forests and Climate Change, providing funding support to tiger range States for in-situ conservation of tigers in designated tiger reserves, and has put the endangered tiger on an assured path of recovery by saving it from extinction, as revealed by the recent findings of the All India tiger estimation using the refined methodology.



5. Consider the following:

Sl. no	Strategic Infrastructure	Connects	National Highway
1.	Pamban Road Bridge	Mandapam-Rameshwaram.	NH-49
2.	North-South Corridor	Srinagar-Kanyakumari	NH-44
3.	DSDBO Road	Leh to Daulat Beg Oldie	NH-1
4.	Atal Tunnel	Manali-Leh	NH-3

How many of the above rows is/are correctly matched?

- (a) Only one
- (b) Only two**
- (c) Only three
- (d) All four

EXPLANATION:

Recently, the Union Cabinet has approved construction of 4-Lane Paramakudi - Ramanathapuram Section (NH-87) in Tamilnadu.

Currently, connectivity between Madurai, Paramakudi, Ramanathapuram, Mandapam, Rameshwaram, and Dhanushkodi is dependent on existing 2-lane National Highway 87 (NH-87) and associated State Highways, which experience significant congestion due to high traffic volumes, especially in densely populated stretches and key towns along the corridor. The Annai Indira Gandhi Road bridge, also known as the Pamban bridge, is about 2.34 km long and is built close to the rail bridge. The Annai Indira Gandhi Road Bridge connects the National Highway (NH 87) with Rameswaram on the Pamban Island. The bridge connects Rameswaram Island with Mandapam on the mainland. The road bridge allows the smooth passage of ships under it. The location is a high-velocity cyclone-prone zone and is surrounded by serene blue waters. **So, Row 1 is not correct.**



The National Highway-44 (NH44) is the longest national highway in India, a vital artery stretching from Srinagar in the north to Kanyakumari in the South, covering an impressive 4,112 km (2,555 miles). Constructed as part of the National Highways Development Project (NHDP), NH44 forms the North-

South Corridor and is maintained by the National Highways Authority of India (NHAI) and the Central Public Works Department (CPWD). From the icy terrains of Kashmir to the tropical shores of Kanyakumari, NH44 facilitates trade, tourism, and development, bridging India's economic and cultural heartbeat. **So, Row 2 is correct.**

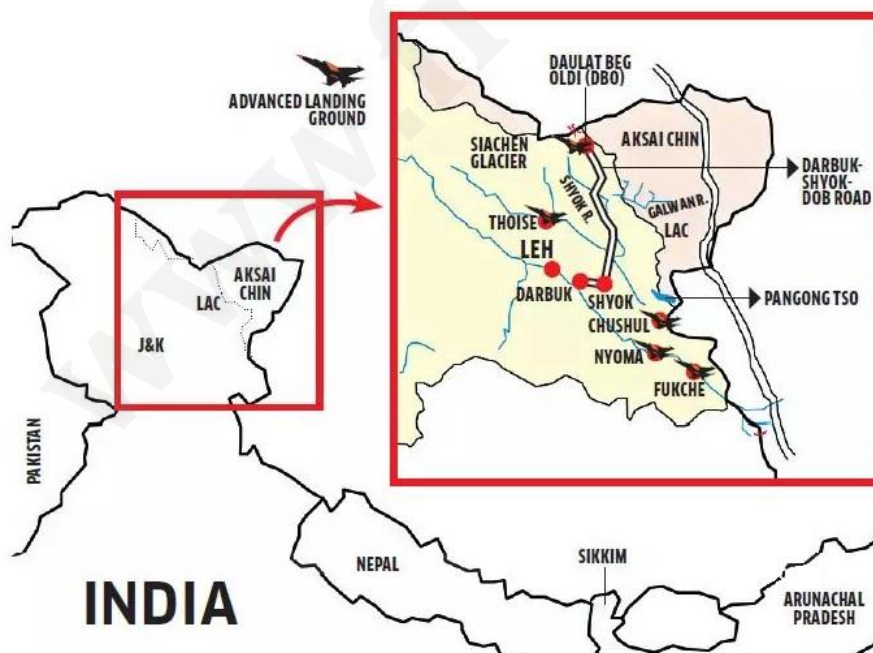


Darbuk-Shyok-Daulat Beg Oldie (DSDBO) is a 255-km-long, all-weather Road connecting Leh to Daulat Beg Oldie (DBO). The Road is built by the Border Roads Organisation (BRO) (Not by the NHAI). It has no specific number.

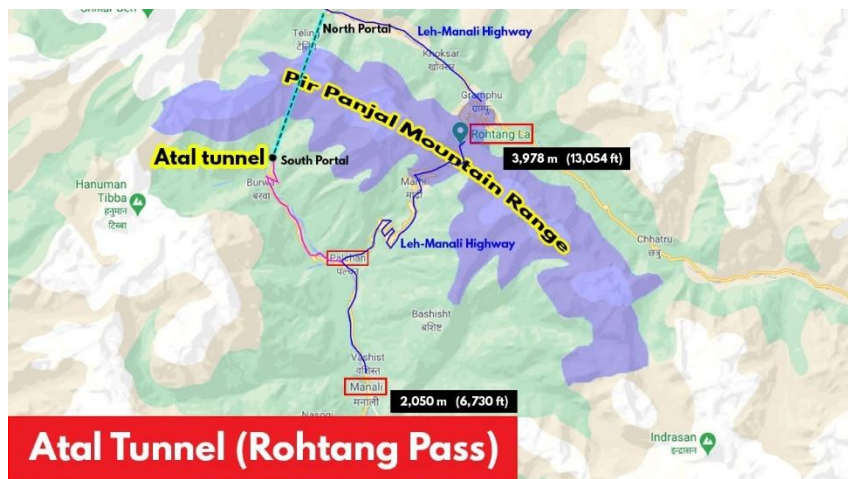
The DSDBO highway provides the Indian military access to the section of the Tibet-Xinjiang highway that passes through Aksai Chin. The road runs almost parallel to the LAC at Aksai Chin, the eastern ear of erstwhile Jammu and Kashmir State.

In a boost to border infrastructure along the Line of Actual Control (LAC), an alternate route to the strategic Daulat Beg Oldie (DBO) sector in Ladakh, free of surveillance by Chinese soldiers, has been constructed by the government. The 130-km-long new route, via Sasoma-Saser La-Saser Brangsa-Gapshan-DBO, will be a secure and faster alternative to the existing Darbuk-Shyok-DBO (DSDBO) road, which is vulnerable to Chinese surveillance.

Thus, the DSDBO is not a National Highway 1. **So, Row 3 is not correct.**



Atal Tunnel (also known as Rohtang Tunnel) is a highway tunnel built under the Rohtang Pass in the eastern Pir Panjal range of the Himalayas on the National highway 3 (NH-3) Leh-Manali Highway in Himachal Pradesh, India. At a length of 9.02 km, it is the longest tunnel above 10,000 feet (3,048 m) in the world and is named after former Prime Minister of India, Atal Bihari Vajpayee. The tunnel is at an elevation of 3,100 metres (10,171 ft) whereas the Rohtang Pass is at an elevation of 3,978 metres (13,051 ft). **So, Row 4 is correct.**



6. As you travel across the Eastern Ghats, you are likely to encounter how many of the following species growing naturally?

1. Indian Rosewood
2. Red Sanders
3. Indian Kino Tree
4. Mara uri (*Antiaris toxicaria*)
5. Poplar Sterculia (*Hildegardia populifolia*)

Select the correct answer using the code given below.

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All five

EXPLANATION:

The Eastern Ghats, once covered by luxuriant forests, are becoming barren because of the greed and endless quest of mankind in the name of development. The series of broken hills runs from the Mahanadi in Odisha to the Vaigai in Tamil Nadu, with an average elevation of 1,000 metres in peninsular India.



- In the Eastern Ghats, some valuable trees like:
- **Indian Rosewood** (Eetti-Dalbergia latifolia): Common in mixed deciduous forests and hills of Eastern Ghats up to 1300 m. Yields a valuable timber. Distribution throughout Eastern Ghats, world distribution in India, Andaman Islands (India), Nepal, Indonesia, Himalaya, Indo-China, Malay Peninsula. **So, Statement 1 is correct.**
 - **Red Sanders** (Semmaram-Pterocarpus santalinus): It is an endemic species to the Eastern Ghats found in Andhra Pradesh alone and cultivated in Andhra Pradesh, Tamil Nadu, Karnataka, Odisha and other States. **So, Statement 2 is correct.**
 - **Indian Kino Tree** (Vengai-Pterocarpus marsupium): It is a moderate to large deciduous tree, up to 30 m, with spreading branches and a large, rounded crown. It is distributed in tropical moist and dry deciduous forests of Gujarat, Uttar Pradesh, Bihar, Odisha, West Bengal, Madhya Pradesh, Western Ghats, Eastern Ghats, Karnataka, and parts of peninsular India, Sri Lanka and Nepal. **So, Statement 3 is correct.**
 - **Mara uri** (Antiaris toxicaria): Antiaris tree is found in the grassy savanna and coastal plateaus. In India, it is found in the Western and the Eastern Ghats, apart from the South and central Sahyadris. Acclaimed to be one of the tallest trees, it grows to more than 100 feet. Recently, Mara Uri was thought to be restricted to the Western Ghats but has been found in Pachamalai too (part of the Eastern Ghats in Tamil Nadu). **So, Statement 4 is correct.**
 - **Poplar Sterculia** (Hildegardia populifolia): It is endemic to the Eastern Ghats in Andhra Pradesh and Tamil Nadu. The species is believed to have disappeared from all its recorded localities except for one on the forested eastern slopes of the Kalrayans Hills, where about 20 trees survive. **So, Statement 5 is correct.**

ADDITIONAL INFORMATION:

EASTERN AND WESTERN GHATS	
About	Ghats, two mountain ranges forming the eastern and western edges, respectively, of the Deccan plateau of peninsular India. The two ranges run roughly parallel to the Bay of Bengal and Arabian Sea coasts, respectively, from which they are separated by strips of level coastal land.
Eastern Ghats	➤ The Eastern Ghats include several discontinuous and dissimilar hill masses that generally trend northeast-southwest along the Bay of Bengal. They are older than the Western Ghats, and have a complex geological history related to the assembly and breakup of the ancient supercontinent of Rodinia and the assembly of the Gondwana supercontinent. ➤ The Maliya and Madugula Konda ranges are in the northern portion of the Eastern Ghats and generally range in elevation between 900-1400m. ➤ The prominent summits in these ranges include the highest peak of the Eastern Ghats- Jindhagada Peak (1690 m), Arma Konda (1680 m), Gali Konda (1643 m) and Sunkrametta (1620 m). The highest mountain peak in the state of Odisha is Deomali (1672 m) which is situated in the Koraput district. ➤ The Similipal Massif is considered the farthest northern extension of the Eastern Ghats. ➤ The Eastern Ghats region falls under tropical monsoon climate receiving rainfall from both South-West monsoon and North-East retreating monsoon. ➤ The rainfall ranges from 60 cm to 160 cm. The mean temperature in January ranges between 20° C and 25° C. The maximum temperature goes up to 41° C during summer season. The climate of the higher hill ranges is generally cooler and wetter. ➤ Eastern Ghats are rich in floristic diversity and home to several rare, endemic and endangered taxa. Vegetation varies considerably with altitudes and shows a distinct zonation of forest types such as scrub jungles, deciduous forests, dry & semi-evergreen forests, evergreen forests and sholas. ➤ More than 4500 species of Angiosperms occur in this region which constitute about 13% of the flowering plants of India. ➤ The mountains' slopes have sparse forests containing valuable timber.

Western Ghats	➤ The Western Ghats, which are possibly a fault scarp, are the crest of the western edge of the Deccan plateau. ➤ Their steep seaward slopes are deeply dissected by streams and canyon like valleys, but on the landward side, their slopes are gentle and give way to wide, mature valleys. ➤ The range extends northward to the Tapti River and southward almost to Cape Comorin at India's southern tip. ➤ The mountains reach elevations of 900 to 1,500 metres in the north, rise less than 3,000 feet in the area south of Goa, and are higher again in the far South, reaching 2,637 metres at Doda Betta Mountain. ➤ The Palghat Gap separates the Western Ghats proper from their southward extension, known as the Southern Ghats. ➤ The Western Ghats, receive extremely heavy rainfall from the south-west monsoon, comprise peninsular India's principal watershed; rainfall is much lighter inland on the plateau. ➤ The high rainfall has produced dense forests on the seaward slopes, with bamboo, teak, and other valuable trees. ➤ Some rivers among the Western Ghats have been dammed to produce electric power. Several hill resorts are located in the mountains.
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7. Consider the following pairs:

Sl.no.	Soils	Deficient
1.	Alluvial Soil	Potash and Lime
2.	Black Soil	Organic matter
3.	Red Soil	Iron and Potash
4.	Laterite Soil	Phosphate and Calcium

How many of the above pairs is/are correctly matched?

- (a) Only one
(b) **Only two**
(c) Only three
(d) All four

EXPLANATION:

Alluvial soil has the highest productivity with respect to other soils. It is present mostly along rivers and is carried by their streams during the weathering of rocks.

- Alluvial soils are formed by the deposits of the sediments brought by rivers. Most of the rivers originate from the Himalayas and bring along a high amount of sediments with them. The soil is made up of particles like silt, sand, and clay.
- It has an adequate amount of phosphoric acid, potash, and lime, while the soil is deficient in Nitrogen and phosphorus. **So, Pair (1) is not correct.**

Black soil, which is also known as 'regur' soil, is distributed over the Deccan lava tract, which extends over parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu. The black colour is due to the presence of titaniferous magnetite. Black soils are predominantly clay with patches of clay loams, loams and sandy loams.

- These soils contain abundant Iron and fairly high quantities of lime, magnesia and alumina. Black soils are poor in phosphorus, Nitrogen and organic matter. **So, Pair (2) is correct.**
- The soils are generally rich in montmorillonite and the beidellite group of clay minerals.
- Black soils are most suitable for the cotton crop, hence it is also known as 'black cotton soil'. In addition to cotton, the soil is suitable for the cultivation of crops like wheat, groundnut, chillies, tobacco and jowar.

- Red soils cover a large area in the South and North-east of the peninsula. Such soils occur in Tamil Nadu, Eastern Andhra Pradesh, Karnataka, Goa, South-eastern Maharashtra, Madhya Pradesh and parts of Jharkhand, Odisha, Uttar Pradesh and West Bengal. Red soils cover an area of about 90,000 km².

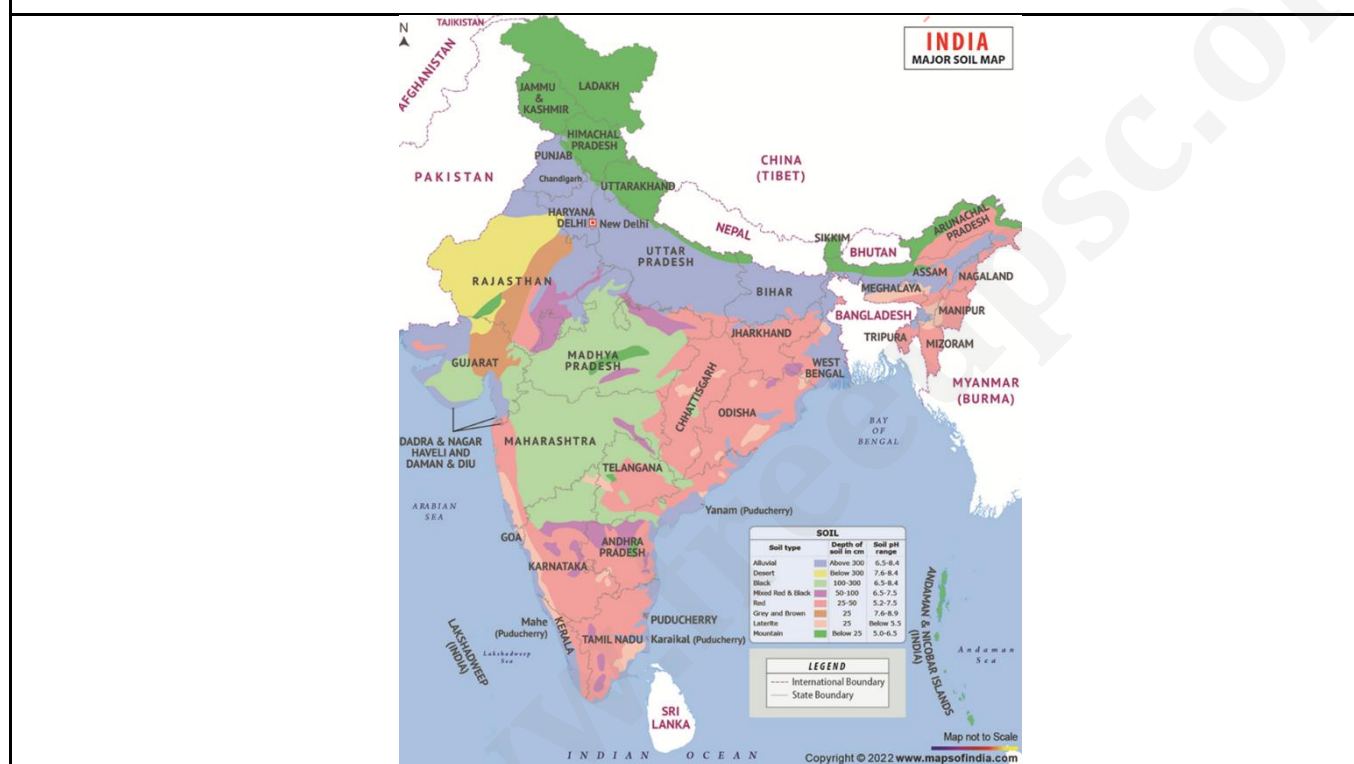
- The colour of red soil ranges from red to brown, chocolate, yellow, grey, or sometimes even black. Red soil contains a high percentage of iron content, which is responsible for its colour.
- This soil is deficient in Nitrogen, humus, and phosphoric acid, but rich in Iron and potash. **So, Pair (3) is not correct.**
- It is formed by the weathering of ancient crystalline and metamorphic rocks, particularly acid granites and gneisses, quartzitic rocks, and feldspathic rocks. Thus, Red soil is not deficient in Iron.

Laterite soil is typical of monsoon regions with high rainfall. It is formed by the leaching of soils rich in iron oxide, aluminium, lime, and silica.

- Laterite soils are found in parts of Karnataka, Tamil Nadu, Kerala, Madhya Pradesh, Assam, and Odisha.
- They are generally rich in Iron oxide and potash but low in fertility, organic matter, Nitrogen, phosphate, and calcium. **So, Pair (4) is correct.**
- However, with the application of manures and fertilisers, they can support the growth of crops like cashew nuts, rubber, tea, and coconut.
- Laterite soil hardens when exposed to air, making it suitable for making building bricks.

ADDITIONAL INFORMATION:

TYPES OF SOILS IN INDIA



8. Which of the following statements regarding the Red Soils of India is/are correct?
1. Their colour is red due to the presence of iron oxide, which is formed by leaching.
 2. They are found in various shades such as brown, chocolate, yellow, and even black, depending upon the degree of iron oxidation.
- Select the correct answer using the codes given below:
- (a) 1 only
(b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2

EXPLANATION:

Red soils have been estimated to occur in about 16% of the total land. These soils are found in the Chhotanagpur plateau, Telangana, Nilgiris, Tamil Nadu, Karnataka, Andhra Pradesh and the periphery areas of the Deccan Plateau.

- **Red soils are reddish in colour due to the presence of Iron.** These soils have been formed due to the decomposition of underlying igneous rocks under heavy rainfall. They have less humus. These are suitable for the cultivation of millets, pulses, linseed, tobacco, etc.
- Laterite soils occur in about 4% of the total land. These soils are formed under conditions of high temperature and heavy rainfall with alternate wet and dry periods.
- Laterite soils are found in elevated areas which receive very high rainfall. As a result of heavy rainfall, topsoil gets washed away. This process is called leaching. The soil, therefore, loses its fertility to a great extent. These soils are found in the northeastern State of India. Their **colour is red due to the presence of iron oxide, which is formed by leaching.** These soils are good for the cultivation of tea, coffee, rubber, cinchona and coconut. **So, Statement 1 is not correct.**
- The colour of red soil ranges from red to brown, chocolate, yellow, grey, or sometimes even black.
- Red soil contains a high percentage of iron content, which is responsible for its colour. The colour depends upon the degree of iron oxidation.
- This soil is deficient in Nitrogen, humus, phosphoric acid, magnesium, and lime, but fairly rich in potash, with its pH ranging from neutral to acidic.
- It is formed by the weathering of ancient crystalline and metamorphic rocks, particularly acid granites and gneisses, quartzitic rocks, and feldspathic rocks.
- Chemically, red soil is siliceous and aluminous, with free quartz as sand, but is rich in potassium, ranging from sand to clay, with the majority being loamy. **So, Statement 2 is correct.**

ADDITIONAL INFORMATION:

CLASSIFICATION OF SOILS	
Alluvial soil	➤ Alluvial soils are soils that have been deposited by rivers and streams. They are typically found in floodplains and deltas. Alluvial soils are very fertile and are often used for agriculture. They are also relatively easy to work with, making them a popular choice for construction projects. ➤ Alluvial soils are made up of a mixture of sand, silt, and clay. The exact composition of the soil will vary depending on the location and the type of River or stream that deposited it. ➤ However, alluvial soils are typically high in organic matter, which makes them very fertile. ➤ In India, alluvial soils are found in the Indo-Gangetic and Brahmaputra Plains. The majority of these soils have sufficient amounts of lime, phosphoric acid, and potash, which are perfect for the growth of wheat, sugarcane, paddy, and other cereal and pulse crops. ➤ Alluvial soils can be classified into two main types: Khadar and Bangar. • Khadar soils are the newer alluvium that is deposited by floods every year. They are typically very fertile and are used for growing crops such as rice and wheat. • Bangar soils are the older alluvium that is deposited away from the floodplains. They are not as fertile as Khadar soils, but they are still used for growing crops such as wheat and sugarcane.
Black Soil	➤ Black soil is a type of soil that is found in many parts of the world. It is characterised by its dark colour, which is due to the presence of organic matter. ➤ Black soil is also known for its high fertility, which makes it ideal for agriculture. ➤ Black soil is classified into three main types: shallow black soil, medium black soil, and deep black soil. • Shallow black soil is found in areas with low rainfall, and it is typically less than 30 cm thick.

	• Medium black soil is found in areas with moderate rainfall, and it is typically between 30 cm and 100 cm thick. • Deep black soil is found in areas with high rainfall, and it is typically more than 1 meter thick. ➤ They stretch southeast along the Godavari and Krishna basins, including the plateaus of Maharashtra, Saurashtra, Malwa, Madhya Pradesh, and Chhattisgarh.
Red and Yellow Soils	➤ Red and yellow soils are types of soil that are found in many parts of the world. They are named for their colours, which are due to the presence of Iron in the soil. Red soils are typically found in areas with low rainfall, while yellow soils are found in areas with more rainfall. Areas of Odisha, Chhattisgarh, the Piedmont zone of the Western Ghats, and the southern portions of the middle Ganga plain are characterised by yellow and red soils. ➤ Red and yellow soils are classified into two main types: fine-grained and coarse-grained. Fine-grained soils are more fertile than coarse-grained soils. They are also more likely to be found in areas with low rainfall. Coarse-grained soils are less fertile and more likely to be found in areas with more rainfall.

9. Consider the following:

Statement I :

"Breaks in the monsoon" refer to temporary interruptions in rainfall activity during the southwest monsoon season.

Statement II :

It is due to the north-south shifting of the monsoon trough.

Which one of the following is correct with respect to the above statements?

- (a) **Both Statement I and Statement II are correct, and Statement II explains Statement I.**
 (b) Both Statement I and Statement II are correct, but Statement II does not explain Statement I.
 (c) Statement I is correct, but Statement II is not correct.
 (d) Statement I is not correct, but Statement II is correct.

EXPLANATION:

An important phenomenon associated with the South West monsoon is its tendency to have 'breaks' in rainfall, resulting in alternate wet and dry spells. In other words, the monsoon rains take place only for a few days at a time and are interspersed with rainless intervals. These breaks are temporary in nature.

- These breaks in the monsoon are related to the movement of the monsoon trough.
 ➤ The monsoon trough is an elongated low-pressure area (trough of low pressure) that extends roughly east-west across northern India during the south-west monsoon season.
 ➤ For various reasons, due to several atmospheric and oceanic factors, the trough and its axis keep on moving northward or southward, which determines the spatial distribution of rainfall.
 ➤ When the axis of the monsoon trough lies over the plains, rainfall is good in these parts.
 ➤ On the other hand, whenever the axis shifts closer to the Himalayas, there are longer dry spells in the plains, and widespread rain occurs in the mountainous catchment areas of the Himalayan rivers.

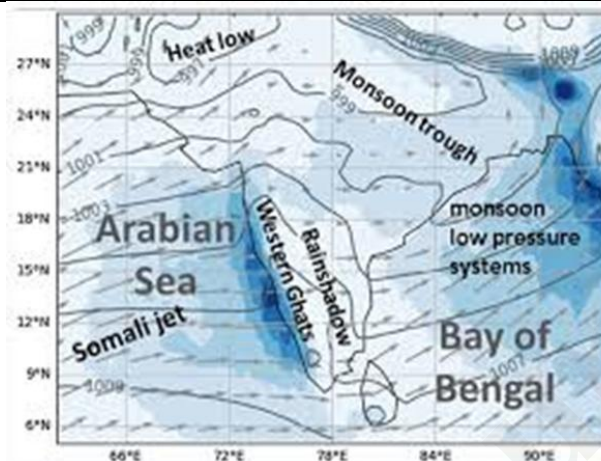
Therefore, breaks in the monsoon, which refers to temporary interruptions in rainfall activity during the south-west monsoon season, are due to the north-south shifting of the monsoon trough. **Both Statement I and Statement II are correct, and Statement II explains Statement I.**

ADDITIONAL INFORMATION:

HEAT LOW	
About	➤ During the northward march of sun in northern hemisphere, the continent surrounding the Arabian Sea begin to receive large amounts of heat; not only

in the form of radiation from sun, but also flux of heat from the earth's surface into atmosphere (160 Watts/m² for month of June over the arid zones of north-west India, Pakistan and middle eastern countries).

- As a result of this large input of power, a trough of low pressure forms over this region.
- It is a semi-permanent feature of the monsoon over India. The heat low is very shallow (extending up to 850 hPa (1.5 KM) level and there exists a well-marked ridge above the heat low. In spite of the occurrence of cloudiness, the precipitation is very small.
- Intense heat low (pressure departure is below normal) acts as a suction device for moist air along the monsoon trough and, to some extent, is related to good monsoon over India.
- During weak heat low (pressure departure is above normal), monsoon rainfall over India is greatly affected and results in deficient or scanty rainfall over vast areas of the country (eg, in 1987, central pressure over the heat low area was mostly above normal, which proved to be a drought year).



10. Consider the following with respect to the Greater Nicobar Islands:

1. The island has a Tropical deciduous forest.
2. Only the Shompen tribes inhabit this island.
3. Crab-eating Macaque, an endangered species, is endemic to this island.

How many of the above statements is/are correct?

- (a) Only one
 (b) Only two
 (c) All three
 (d) None

EXPLANATION:

The Andaman & Nicobar Islands support very luxuriant and rich vegetation due to a tropical hot and humid climate with abundant rains. As per the Champion & Seth Classification of Forest Types (1968), the forests in Andaman & Nicobar Islands belong to four Type Groups, i.e. Tropical Wet Evergreen, Tropical Semi Evergreen, Tropical Moist Deciduous and Littoral & Swamp Forests, which are further categorised into 13 Forest Types.

The Great Nicobar, one of the largest islands of the Nicobar, has a wide spectrum of ecosystems comprising tropical wet evergreen forests, mountain ranges reaching a height of 642 m (Mt. Thullier) above sea level, and coastal plains. The moist deciduous forests are common in the Andamans; they are almost absent in the Nicobar Islands. **So, Statement 1 is not correct.**

Great Nicobar is home to two notable tribes, namely, Nicobarese and Shompen.

- The Mongoloid Shompen tribe, about 200 in number, live in the forests of the biosphere reserve, particularly along the rivers and streams. They are hunters and food gatherers, dependent on forest and marine resources for sustenance.

- Another Mongoloid Tribe, Nicobarese, about 300 in number, used to live in settlements along the west coast. They were relocated to Afra Bay in the North Coast and Campbell Bay. They survive on fish caught from the sea.
- The Shompen move between the Core and Buffer zones, while the Nicobarese live in settlements spread along the coast.

So, Statement 2 is not correct.

The Great Nicobar Biosphere Reserve region is noted for its rich biodiversity.

- It houses 650 species of angiosperms, ferns, gymnosperms, bryophytes and lichens, among others. The tract is rich in plant diversity and fosters a number of rare and endemic species, including *Cyathea albisetacea* (tree fern) and *Phalaenopsis speciosa* (orchid).
- A total of 14 species of mammals, 71 species of birds, 26 species of reptiles, 10 species of amphibians and 113 species of fish have been reported. The region also harbours a large number of endemic and endangered species of fauna. To date, 11 species of mammals, 32 species of birds, 7 species of reptiles and 4 species of amphibians have been found to be endemic.
- Of these, the well-known Crab-eating, Nicobar Tree Shrew, Dugong, **Nicobar Megapode**, Serpent Eagle, saltwater crocodile, marine turtles and Reticulated Python are endemic and/or endangered.

So, Statement 3 is correct.

- The Nicobar megapode, which has been listed as "vulnerable to extinction" under the International Union for Conservation of Nature (IUCN) red list, is found only in the Nicobar Islands. Named for their enormous feet (mega-large; poda- foot) that resemble those of prehistoric species, these pheasant-like birds are becoming an increasingly rare sight in the islands they call home.



ADDITIONAL INFORMATION:

ANDAMAN AND NICOBAR ISLANDS	
Recently in the News	The Great Nicobar Island Project is an ongoing mega project launched in 2021 under the Holistic Development of the Island programme. The mega infrastructure project, implemented by the Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO), is proposed to construct an International Container Transshipment Terminal (ICTT), a greenfield international airport, a "greenfield city",
About	➤ The Union Territory of the Andaman and Nicobar Islands is situated between 6° and 14° North Latitude and 92° and 94° East Longitude. ➤ The islands located north of 10° north latitude are known as the Andaman Group of islands, while the islands located south of 10° north latitude are called the Nicobar Group of islands. ➤ The climate of the islands can be defined as a humid, tropical coastal climate. The islands receive rainfall from both the south-west and north-east monsoons, and maximum precipitation is between May & December. ➤ The original inhabitants of the islands lived in the forests for hunting and fishing.

	➤ There are four Negrito tribes, viz., the Great Andamanese, Onge, Jarawa and Sentinalese in the Andaman group of islands and two Mongoloid tribes, viz., Nicobarese and Shompens in the Nicobar group of islands.
Forests	➤ The recorded forest is 7,171 sq km of the total geographical area of the islands. Many types of forests are found in the islands, such as tropical wet evergreen, tropical semi-evergreen, moist deciduous, littoral, mangrove and swamp forests. ➤ A large variety of timbers are found in the Andaman group of islands. The most valuable timbers are padauk and gurjan. These species are not found in the Nicobar.
Wildlife	There are 96 Wildlife Sanctuaries, 9 National Parks and 1 Biosphere Reserve in these Islands. ➤ Mammals - Out of 55 terrestrial and 7 Marine mammal species reported so far, 32 species are endemic. ➤ Birds - As many as 246 species and subspecies of birds are reported to inhabit these Islands, and of these, 99 species and subspecies are endemic. ➤ Reptiles - There are 76 terrestrial reptiles; of these, 24 species are endemic. ➤ Marine Life - Islands harbour more than 1,200 species of fish, 350 species of echinoderms, 1,000 species of Molluscs and many more lower forms of life. Among vertebrates, dugongs, dolphins, whales, saltwater crocodiles, sea turtles, sea snakes, etc., are common. ➤ Coral and Coral reefs - So far, 179 species of corals belonging to 61 genera have been reported. Reefs are mostly fringing type on the eastern coast and barrier type on the western coast.

11. Match List I with List II and select the correct answer using the code given below:

	List I (Iron and Steel Hub)		List II (River near it)
(A)	Bokaro	1.	Subarneka
(B)	Jamshedpur	2.	Damodar
(C)	Rourkela	3.	Chandrabhaga
(D)	Vijayapura	4.	Brahmani

Codes :

	A	B	C	D
(a)	1	2	3	4
(b)	3	4	1	2
(c)	2	1	4	3
(d)	4	3	2	1

EXPLANATION:

Bokaro is a city and metropolitan area located in the State of Jharkhand, along the Chotanagpur plateau. It lies along the Damodar River, just west of one of India's largest iron and steel plants, the Bokaro Steel Plant, established in collaboration with the former Soviet Union.

Construction of the steelworks began in 1968, and the first blast furnace was inaugurated in 1972 and was fully completed in the 1980s. Facilities there were upgraded in the 1990s. Major coalfields are located nearby. Bokaro was built to provide housing and other community facilities for the plant's employees.

Thus, Bokaro is near the Damodar River. **A-2**

Jamshedpur is a city located in the State of Jharkhand. The city lies at the junction of the Subarnarekha and Kharkai rivers.

The city is sometimes called Tatanagar, named after industrialist Jamsetji Nasarwanji Tata, whose company opened a steel plant there in 1911.

- The Subarnarekha River rises near Nagri village in the Ranchi District of Jharkhand at an elevation of 600 m.
- It flows for a length of 395 km before outflowing into the Bay of Bengal in the Balasore district of Odisha.
- This River flows through the states of Jharkhand, West Bengal and Odisha.
- Its principal tributaries joining from the right are the Kanchi, the Karkari and the Kharkai. Thus, Jamshedpur is located near the Subarnarekha. **B-1**

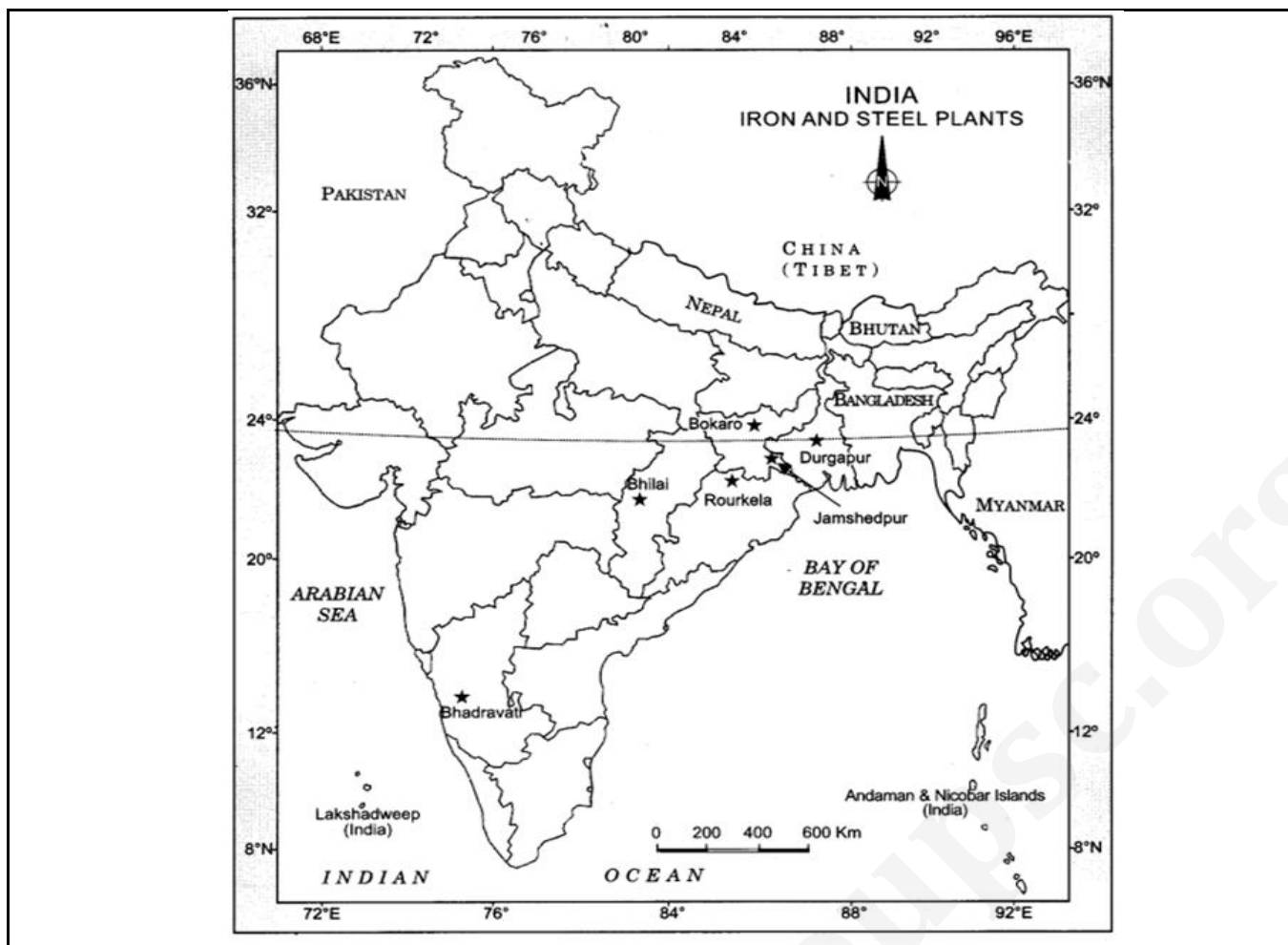
- Rourkela is a city located in the Sundergarh district of Odisha. The city is surrounded by a range of hills called Durgapur Pahad and encircled by Koel and Sankha rivers, which meet at Vedvyas, Raurkela and flow as a single river called Brahmani.
- It has one of the largest steel plants of the Steel Authority of India Limited (SAIL), which is situated here, named Rourkela Steel Plant. The city is also popularly known as Ispat Nagar.
- Rourkela Steel Plant (RSP), the first integrated steel plant in the public sector in India, was set up with German collaboration. Thus, Rourkela is located near the Brahmani River. **C-4**

Vijayanagara district is a district in the Indian State of Karnataka, located in the Kalyana Karnataka region with Hosapete as the district headquarters.

- It is the home of the former capital of the famous Vijayanagara Empire and its capital, Hampi, which is now one of the UNESCO World Heritage Sites.
- The JSW Steel plant, a private iron and steel conglomerate, is located in the Toranagallu village in the Ballari-Hospete iron ore belt of Vijayanagar district.
- It is the largest single-location integrated steel-making facility in India with a current capacity of 12 MTPA.
- The River Tungabhadra flows through the Vijayanagar district, which is the major source for the integrated steel plant.
- The River Tungabhadra derives its name from two streams, viz., the Tunga, about 147 km (91.5 miles) long and the Bhadra, about 178 Km (110.9 miles) long, which rise in the Western Ghats.
- The River, after the influence of the two streams near Shimoga, runs for about 531 Km (330 miles) till it joins the River Krishna at Sangamaleshwaram in Andhra Pradesh. It runs for 382 Km in Karnataka, forms the boundary between Karnataka and Andhra Pradesh for 58 Km and further runs for the next 91 Km in Andhra Pradesh.
- It is a perennial river, but the summer flows dwindle to as low as 2.83 to 1.42 cumec (100 to 50 cusec). Therefore, the Tungabhadra River flows through the Vijayanagar district, which hosts the largest integrated steel hub. **D-3**

ADDITIONAL INFORMATION:

IRON AND STEEL INDUSTRY IN INDIA	
Geographical Distribution	➤ Chhattisgarh: There are several iron and steel plants, including the Bhilai Steel Plant, located in Bhilai, which is one of the largest steel plants in India. ➤ Odisha: Rich in iron ore deposits, Odisha have several significant steel plants such as the Rourkela Steel Plant and the Tata Steel Plant in Kalinganagar. ➤ Jharkhand: Known for its vast reserves of iron ore, Jharkhand accommodates steel plants like Tata Steel in Jamshedpur and the Bokaro Steel Plant in Bokaro. ➤ West Bengal: The Durgapur Steel Plant and the Alloy Steel Plant in Durgapur contribute to the iron and steel industry in West Bengal. ➤ Maharashtra: The State have prominent steel plants such as the Tata Steel Plant in Jamshedpur and the JSW Steel Plant in Dolvi. ➤ Andhra Pradesh: The Visakhapatnam Steel Plant, also known as Vizag Steel, located in Visakhapatnam, is a major player in the iron and steel sector. ➤ Uttar Pradesh: The State have the Bhushan Steel Plant in Sahibabad and the Jai Balaji Industries Plant in Durgapur, among others.



12. With reference to Tropical Evergreen Forests, consider the following statements:

1. These forests generally receive more than 200 cm of annual rainfall.
2. Rosewood, rubber and mahogany are among the major trees found in these forests.
3. In India, they are found only along the slopes of the Western and Eastern ghats.

Which of the statements given above are correct?

- (a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

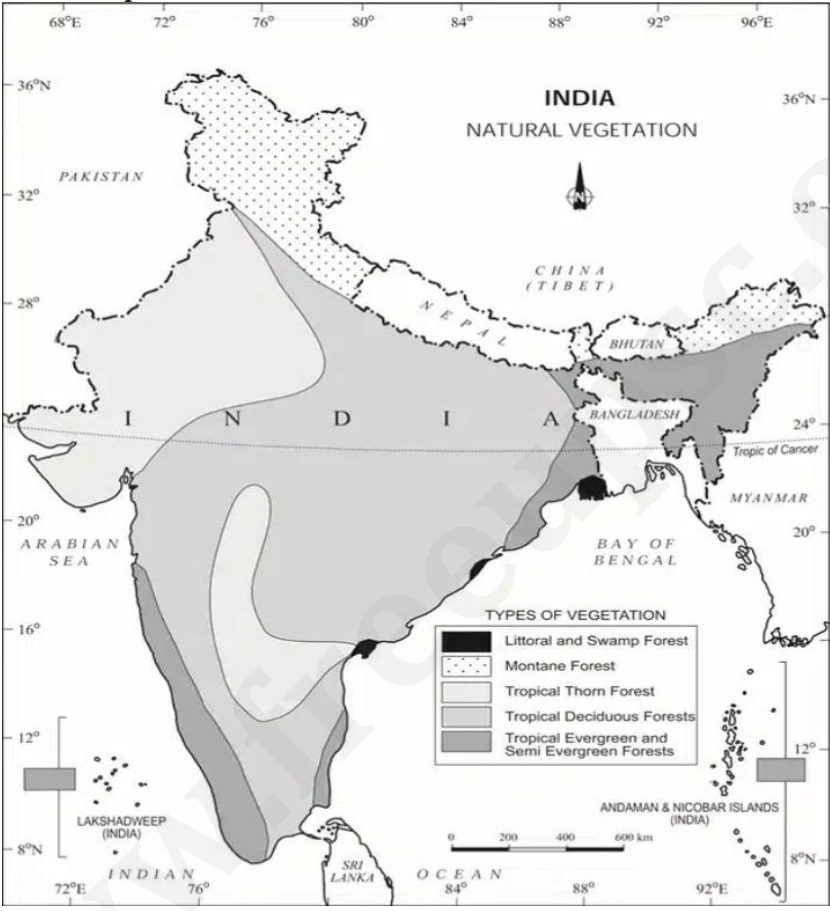
EXPLANATION:

In India, tropical evergreen forests are found in the areas of heavy rainfall in the Western Ghats, upper parts of Assam and islands of Lakshadweep, Andaman and Nicobar. **So, Statement 3 is not correct.**

- **Climate:** Trees in these forests remain green all year round as the climate of the region is warm and wet throughout the year. Trees shed their leaves continuously throughout the year, not seasonally. Because of this continuous and staggered leaf fall and regeneration, the forest always looks green, hence the name "evergreen."
- **Precipitation:** These forests are found in areas having more than 200 cm of rainfall with a short dry season and a mean annual temperature above 22°C. **So, Statement 1 is correct.**
- **Vegetation:** The trees reach a height of up to 60 meters or even more. It has a dense and mixed vegetation of all kinds, including trees, shrubs, climbers, creepers, epiphytes and ferns, giving it a multilayered structure. Hence, their economic exploitation is not viable.

- **Tree species:** The number of species of trees is very large in a small area. Rosewood, ebony, mahogany, rubber, jack wood and bamboo are the important species of trees found in Tropical Evergreen Forests. **So, Statement 2 is correct.**

ADDITIONAL INFORMATION:

TYPES OF FORESTS	
About	On the basis of certain common features such as predominant vegetation type and climatic regions, Indian forests can be divided into the following groups: ➤ Tropical Evergreen and Semi-Evergreen forests ➤ Tropical Deciduous forests ➤ Tropical Thorn forests ➤ Montane forests ➤ Littoral and Swamp forests.
	
Thorn Forests	➤ The areas with less than 75 cm of annual rainfall. ➤ The climate of this part is mainly dry. ➤ Mainly found in North-Western India, the interior parts of the Peninsular India, including semi-arid areas of Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Haryana, Karnataka, Andhra Pradesh and Maharashtra. ➤ Vegetation of these forests is widely distributed in the form of small trees and bushes with deep roots. ➤ Acacia, euphorbia, babul, cacti, khair, date and palms are common varieties of trees in this type of vegetation.
Tidal Forests	➤ These forests are found in tidal creeks and swamps influenced by the tides and wetland topography. ➤ These areas are characterised by mud, silt and water accumulated on the surface. ➤ Roots and branches of the trees are submerged under water for a specific period of time. They are also called mangrove forests. Mangroves are practically evergreen with thick, leathery leaves.

- Such types of forests are found in the deltas of the Sundarbans, Mahanadi, the Godavari, Krishna, and Kaveri rivers and in the Andaman and Nicobar Islands.
- Mangrove or Sundari is the common tree in the Sunderbans, while palm, coconut, keora, and agar are other important species of tidal forest.
- These forests are located along the coasts. They provide protection against cyclones.

13. Consider the following statements:

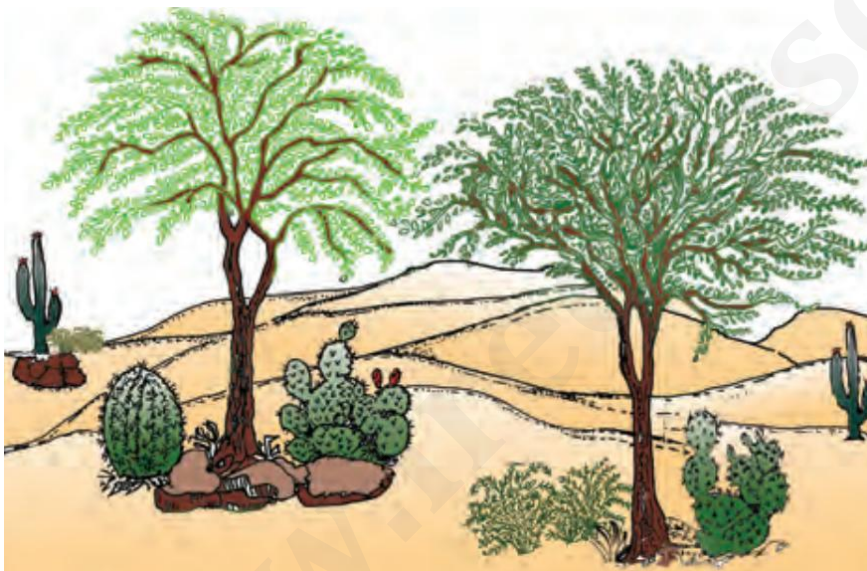
1. Thin leaves to minimise evaporation
2. Tussocky grass as undergrowth
3. Trees with long roots to absorb moisture
4. Succulent stems to conserve water

How many of the above is/are characteristics of species in thorn forests of India?

- (a) Only one
- (b) Only two
- (c) Only three**
- (d) All four

EXPLANATION:

Tropical thorn forests occur in regions receiving less than 50–70 cm of rainfall, mainly in the north-western and semi-arid areas of Rajasthan, Gujarat, Haryana, Punjab, Madhya Pradesh, Uttar Pradesh, and Chhattisgarh.

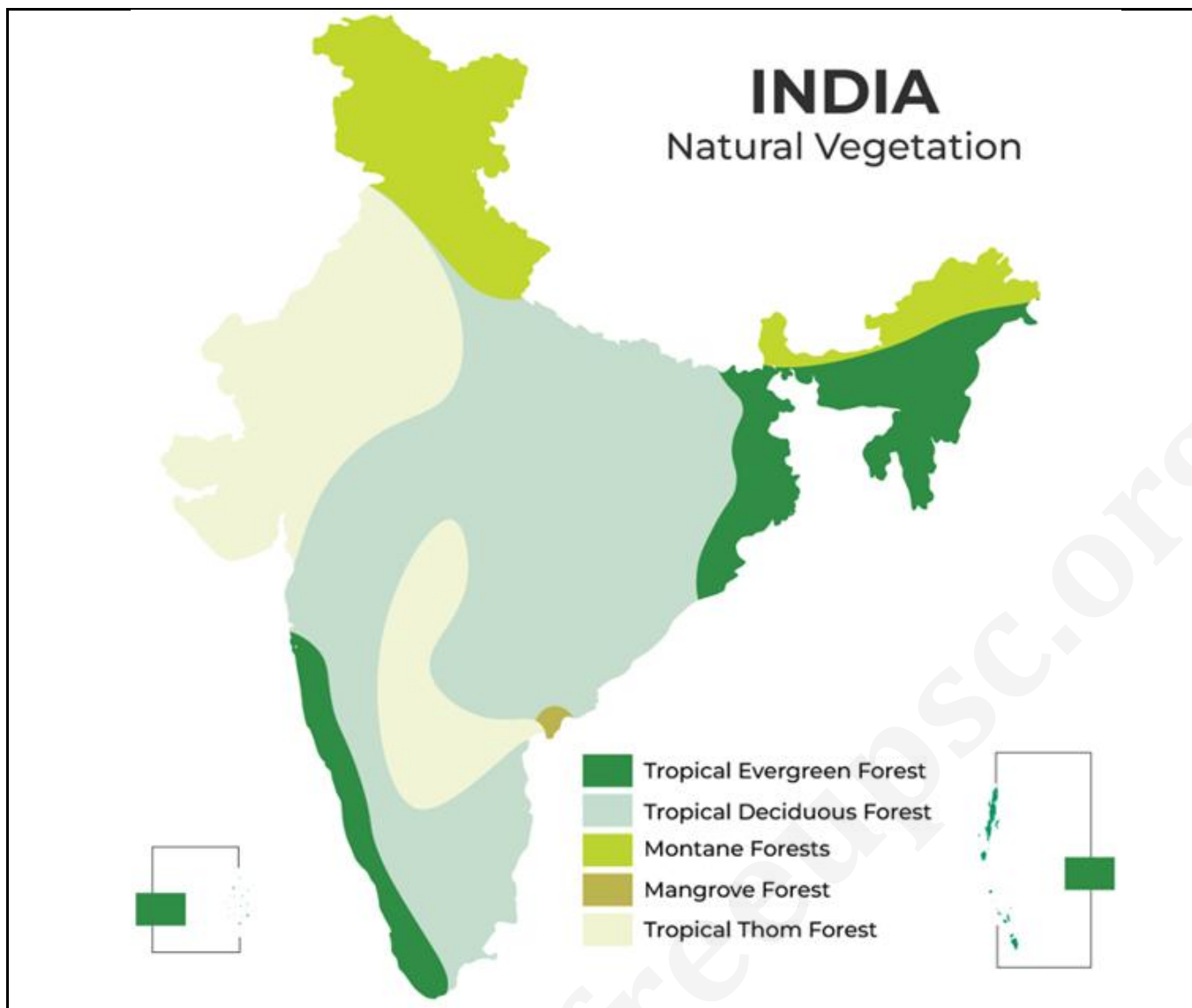


Characteristics of species in thorn forests:

- The vegetation mainly consists of thorny trees, shrubs, and grasses such as acacia, babool, ber, khair, neem, khejri, palas, wild date palm, euphorbia, and cactus.
- These plants are well adapted to the dry and harsh climate.
- The trees are scattered and have long, deep roots to absorb underground moisture, while their thick, fleshy (succulent) stems help store water. **So, Statements 3 and 4 are correct.**
- The leaves are small, thick (not thin), or transformed into spines to minimize water loss through evaporation. **So, Statement 1 is not correct.**
- Most plants remain leafless for most of the year, giving the area a dry, scrub-like appearance typical of arid and semi-arid regions.
- The undergrowth consists of tussocky grass up to 2 metres high. **So, Statement 2 is correct.**
- Common animals found in these forests include rats, mice, rabbits, foxes, wolves, tigers, lions, wild asses, horses, and camels.

ADDITIONAL INFORMATION:

INDIA'S NATURAL VEGETATION	
About	Natural vegetation refers to plants that grow naturally without human interference and have adapted to the local climate and soil conditions over time. India has a great diversity of natural vegetation due to its varied climate and terrain. ➤ The Himalayas have temperate forests, ➤ The Western Ghats and Andaman & Nicobar Islands have tropical rainforests, ➤ The deltas have mangrove forests, and ➤ The deserts of Rajasthan have cacti, thorny bushes, and shrubs. Based on climate and vegetation type, India's forests are classified into five major groups.
Tropical Evergreen and Semi-Evergreen Forests	➤ Found in areas with over 200 cm rainfall, mainly in the Western Ghats, Andaman & Nicobar Islands, parts of Assam, and Tamil Nadu coast. ➤ Trees grow up to 60 m and remain green throughout the year. ➤ Important trees: Ebony, mahogany, rosewood, rubber, and cinchona. ➤ Animals: Elephant, monkey, lemur, deer, one-horned rhinoceros, and many birds, bats, and insects.
Tropical Deciduous (Monsoon) Forests	➤ Most widespread forests; found in regions with 70–200 cm rainfall ➤ Trees shed leaves in dry summer for 6–8 weeks. ➤ Moist deciduous: Found in northeast India, Jharkhand, Chhattisgarh, Odisha, and along the Western Ghats. • Trees: Teak, sal, shisham, sandalwood, khair, arjun, bamboo. ➤ Dry deciduous: Found in rainier parts of the Peninsular plateau, Bihar, and Uttar Pradesh • Trees: Teak, sal, peepal, neem. • Animals: Lion, tiger, pig, deer, elephant, snakes, and lizards.
Tropical Thorn Forests and Scrubs	➤ Found in areas with less than 70 cm rainfall — Rajasthan, Gujarat, Punjab, Haryana, Madhya Pradesh, and Uttar Pradesh. ➤ Vegetation: Thorny trees, shrubs, and grasses like acacia, babool, ber, khair, neem, khejri, palas, euphorbia, and cactus. ➤ Plants have deep roots, thick stems, and small leaves to conserve water. ➤ Animals: Camels, wild ass, fox, wolf, lion, and deer
Montane Forests	➤ Found in mountainous regions where vegetation changes with altitude. ➤ 1000–2000 m: Wet temperate forests with oak and chestnut. ➤ 1500–3000 m: Coniferous forests with pine, deodar, fir, and cedar. ➤ Above 3600 m: Alpine vegetation — juniper, birch, mosses, lichens ➤ Animals: Kashmir stag, snow leopard, yak, red panda, wild sheep, and bears.
Littoral and Swamp (Mangrove) Forests	➤ Found in coastal tidal areas and deltas of Ganga, Mahanadi, Godavari, Krishna, and Kaveri ➤ Trees have roots submerged in water. ➤ Common tree: Sundari (used for timber); also palm, coconut, keora, and agar. ➤ Animals: Royal Bengal tiger, crocodile, gharial, turtles, and snakes.



14. Consider the following pairs

Sl.no.	Vegetation type	Species
1.	Wet temperate forests	Chestnuts
2.	Temperate forests	Pine
3.	Alpine forests	Silver fir
4.	Tundra	Mosses

Which of the above pairs are correctly matched?

- (a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) **1, 2, 3 and 4**

EXPLANATION:

In Himalayan mountainous areas, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation. As such, there is a succession of natural vegetation belts in the same order as we see from the tropical to the tundra region.

- **The wet temperate type of forests** is found between a height of 1000 and 2000 metres. Evergreen broad-leaf trees, such as oaks and **chestnuts**, predominate. **So, Pair 1 is correct.**

- Between 1500 and 3000 metres, temperate forests containing coniferous trees, like **pine**, deodar, silver fir, spruce and cedar, are found. These forests cover mostly the southern slopes of the Himalayas, places with high altitude in southern and north-east India. At higher elevations, temperate grasslands are common. **So, Pair 2 is correct.**
- At high altitudes, generally more than 3,600 metres above sea level, temperate forests and grasslands give way to the Alpine vegetation. **Silver fir**, junipers, pines and birches are the common trees of these forests. However, they get progressively stunted as they approach the snow-line. Ultimately, through shrubs and scrubs, they merge into the Alpine grasslands. These are used extensively for grazing by nomadic tribes, like the Gujjars and the Bakarwals. **So, Pair 3 is correct.**
- At higher altitudes, **mosses** and lichens form part of tundra vegetation. The common animals found in these forests are Kashmir stag, spotted deer, wild sheep, jack rabbit, Tibetan antelope, yak, snow leopard, squirrels, Shaggy horn wild ibex, bear and rare red panda, sheep and goats with thick hair. **So, Pair 4 is correct.**

15. With reference to tropical deciduous forests, consider the following statements:

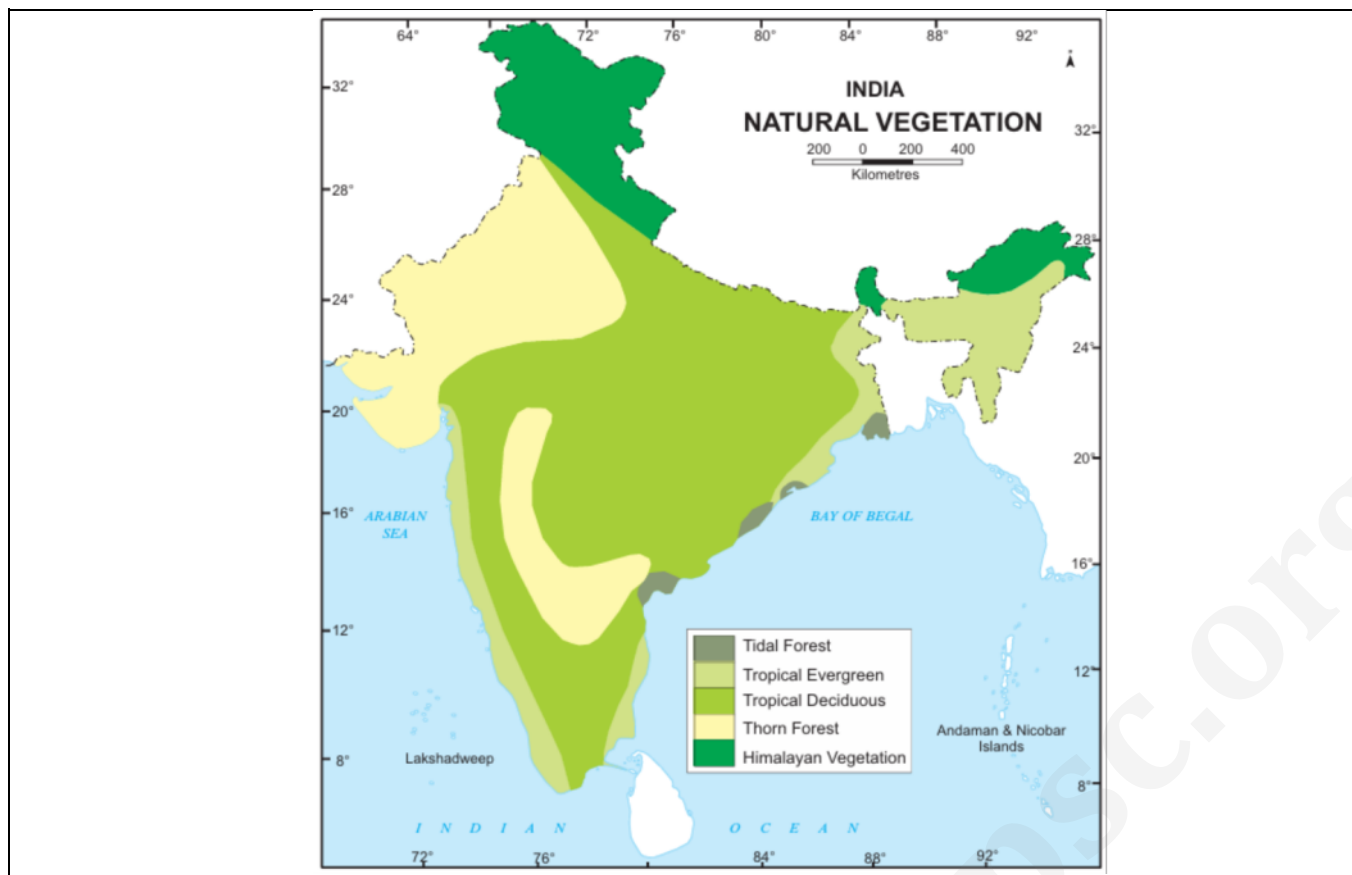
1. They are known as 'monsoon forests'.
 2. Teak is a dominant species of this forest.
 3. Trees in these forests shed their leaves as they receive an annual rainfall of less than 50 cm.
- How many of the above statements is/are correct?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

EXPLANATION:

Tropical Deciduous Forests are the most widespread forests in India. Trees of this forest type shed their leaves for about six to eight weeks in dry summer. That is why they are called tropical deciduous forests. They are also called the monsoon forests. **So, Statement 1 is correct.**

- **Distribution:** As far as the physical distribution of this type of forest is concerned, they are found in the entire country, excluding some parts of the Deccan Plateau, the Northeastern Region, Western Ghats and the Eastern coast.
- **Species:** Teak is the most dominant species of this forest. Bamboos, sal, shisham, sandalwood, khair, kusum, arjun, and mulberry are the commercially important species. **So, Statement 2 is correct.**
- **Precipitation:** These forests are found in the areas receiving annual rainfall between 75 and 200 cms. On the basis of the availability of rainfall, these forests are further divided into moist deciduous and dry deciduous. **So, Statement 3 is not correct.**
- **The moist deciduous forests:** These are found in areas of rainfall between 100 and 200 cm. These are distributed mainly in the eastern parts of the country, the Northeastern states along the foothills of the Himalayas, Jharkhand, Odisha and Chhattisgarh, and the eastern slopes of the Western Ghats.
 - Teak, Bamboo, Sal, Shisham, Sandalwood, Khair, Kusum, Arjun, Mahua, Jamun and Mulberry are the important species of trees found in these forests.
- **The dry deciduous forests:** These are spread in the areas receiving rainfall between 75 and 100 cms annually. These forests are found in the interior parts of the Peninsular plateau and the plains of Uttar Pradesh, Madhya Pradesh and Bihar.
 - Tree species that grow in this vegetation are Teak, Sal, Peepal, and Neem.



16. With reference to the 2011 Census, consider the following information:

Sl. no.	Population density	State	Reasons
1.	Less than 250 persons per sq.km	Assam	Extreme climatic conditions, difficult terrain
2.	Between 251 and 500 persons per sq.km	Bihar	Dissected terrain, less fertile soils
3.	Above 750 persons per sq.km	Kerala	Plains with fertile soils, higher rainfall

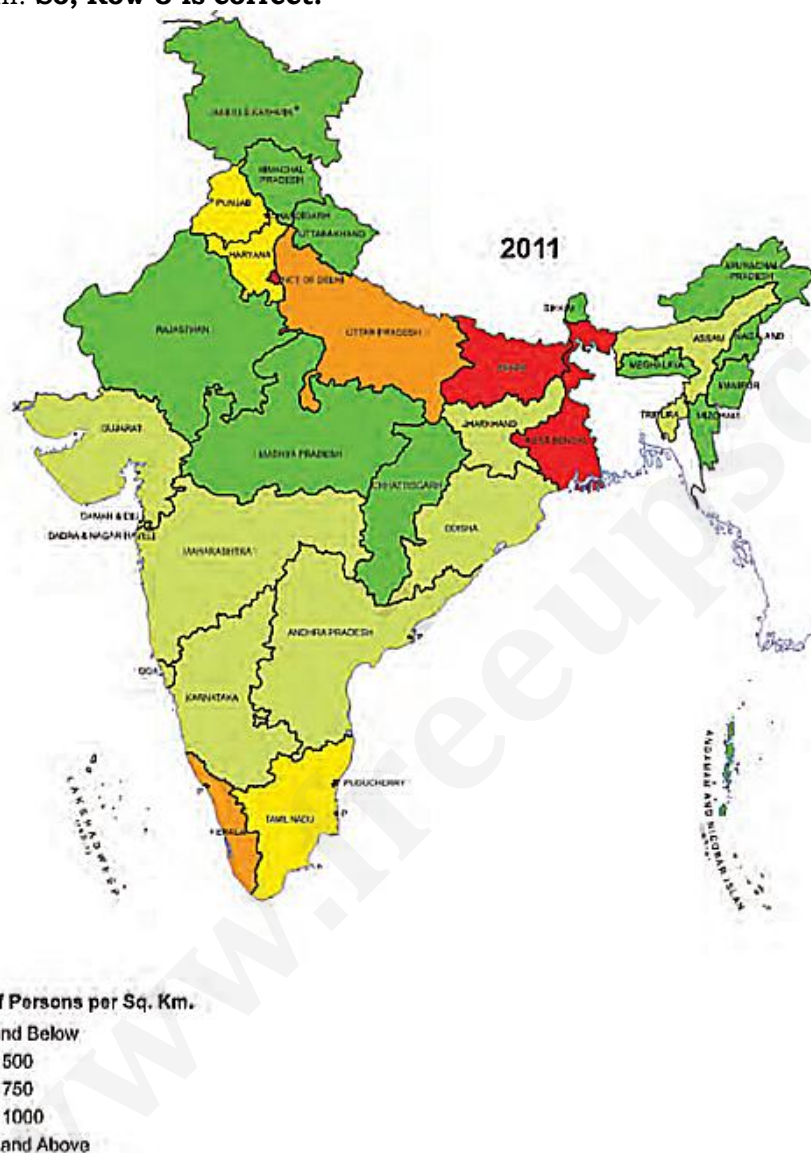
How many of the above rows is/are correctly matched?

- (a) Only one
(b) Only two
(c) All three
(d) None

EXPLANATION:

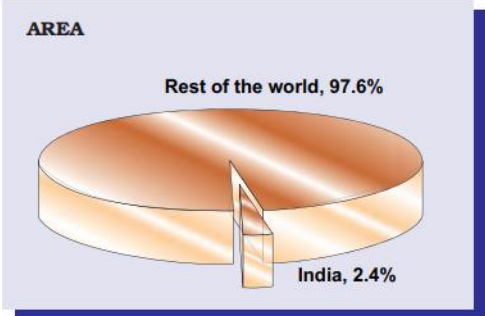
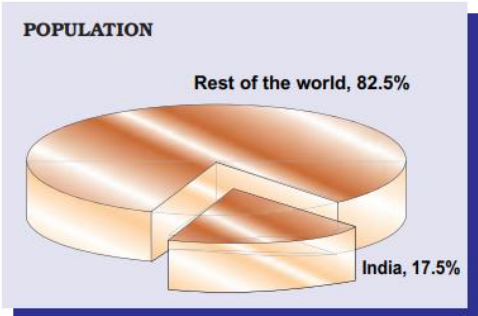
Population density is a measure of the number of people living in a specific area, usually per square kilometre. It indicates how crowded or sparsely populated a place is and is calculated by dividing the total population by the total land area. India is one of the most densely populated countries in the world.

- **Bihar:** In 2011, India's population density was 382 persons per square kilometre, ranging from 1,102 in Bihar (the highest) to 17 in Arunachal Pradesh (the lowest). Therefore, the population density of Bihar does not fall within the range of 251–500 persons per sq km. **So, Row 2 is not correct.**
- **Assam:** Assam and most of the Peninsular states have moderate population densities. The population density of Assam in 2011 was 398 persons per sq km, compared to 340 persons per sq km in 2001. Therefore, the population density of Assam does not fall below 250 persons per sq km. **So, Row 1 is not correct.**
- **Kerala:** The Northern Plains and Kerala in the south have high to very high population densities due to flat plains, fertile soils, and abundant rainfall. The population density of Kerala is 860 persons per sq km. **So, Row 3 is correct.**



ADDITIONAL INFORMATION:

POPULATION SIZE AND DISTRIBUTION	
About	➤ India's population as of March 2011 stood at 1,210.6 million, which account for 17.5 per cent of the world's population. ➤ These 1.21 billion people are unevenly distributed over our country's vast area of 3.28 million square km, which accounts for 2.4 per cent of the world's area. ➤ The 2011 Census data reveal that Uttar Pradesh with a population size of 199 million is the most populous state of India.

	➤ Uttar Pradesh accounts for about 16 per cent of the country's population. ➤ On the other hand, the Himalayan state of Sikkim has a population of just about 0.6 million and Lakshadweep has only 64,429 people. ➤ Almost half of India's population lives in just five states. ➤ These are Uttar Pradesh, Maharashtra, Bihar, West Bengal and Andhra Pradesh. Rajasthan, the biggest state in terms of area, has only 5.5 per cent of the total population of India. AREA  POPULATION 
Census	➤ A census is an official enumeration of population done periodically. In India, the first census was held in the year 1872. ➤ The first complete census, however, was taken in the year 1881. ➤ Since then, censuses have been held regularly every tenth year. ➤ The Indian Census is the most comprehensive source of demographic, social and economic data.

17. Consider the following statements:

1. A country can reap the benefits of a demographic dividend if the dependency ratio of the population increases.
 2. A majority of India's population is under the age of 35 years.
- Which of the statements given above is/are correct?

- (a) 1 only
(b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2

EXPLANATION:

Demographic dividend refers to the economic growth that happens when a country's working-age population is larger than its dependent population, creating opportunities for higher productivity and development.

- The dependency ratio compares the number of children (0–14 years) and elderly people (65 years and above) to the working-age group (15–64 years).
- A lower dependency ratio means fewer dependents per worker, allowing a country to benefit from its demographic dividend. However, a higher ratio increases social spending and puts pressure on working people.
- Therefore, a country can reap the benefits of a demographic dividend only if the dependency ratio of the population is decreased (not increased). **So, Statement 1 is not correct.**
- India, with about 65% of its population under the age of 35, has the world's largest youth population. This offers a great opportunity for rapid development.
- The government aims to harness this potential by providing quality education, modern skills, better job opportunities, and support for entrepreneurship, empowering youth to drive India's future growth. **So, Statement 2 is correct.**

ADDITIONAL INFORMATION:

CENSUS OF INDIA							
Recently in news	Recently, on July 11 th the world Population Day was celebrated. The theme for the year 2025 is “Empowering young people to create the families they want in a fair and hopeful world.						
India census	➤ The Indian Census is the largest and most reliable source of statistical information about the people of India. ➤ Conducted every 10 years for over 150 years, it provides valuable insights into the country’s population and its characteristics ➤ The first census began in 1872, conducted at different times in various parts of India. ➤ Since then, it has served as an important source of data for scholars and researchers in fields like demography, economics, sociology, anthropology, and statistics. ➤ India also has a long history of population records. References to early censuses can be found in Kautilya’s Arthashastra (321–296 BC) and Abul Fazl’s Ain-i-Akbari during Emperor Akbar’s reign. ➤ The first modern census was conducted between 1865 and 1872, and the first synchronous (coordinated) census covering the entire country was carried out in 1881.						
Key Demographic findings from Census 2011	➤ Total population: 1.21 Billion with males comprising 623.2 million and females 587.6 million , as of March 1, 2011. ➤ Population growth: 182 million increase during the decade 2001-2011. ➤ The child sex ratio was 918 females per thousand males in 2011. ➤ The population density of India in 2011 was 382 per sq km-decadal growth of 17.7 percent. ➤ The literacy rate in the country is 73.0 per cent, 80.9 for males and 64.6 for females. ➤ Kerala retained its position by being on top with a 94.0 per cent literacy rate, closely followed by Lakshadweep (91.8 per cent) and Mizoram (91.3 per cent). Religious composition as per Census 2011 <table><tr><td>Hindu 96.63 crores (79.8%) ➤ 16.8%</td><td>Muslim 17.22 crores (14.2%) 24.6%</td><td>Christian 2.78 crores (2.3%) 15.5%</td><td>Sikh 2.08 crores (1.7%) 8.4%</td><td>Buddhist 0.84 crores (0.7%) 6.1%</td><td>Jain 0.45 crores (0.4%) 5.4%</td></tr></table> Growth Rate (2001–11) Source: Census 2011	Hindu 96.63 crores (79.8%) ➤ 16.8%	Muslim 17.22 crores (14.2%) 24.6%	Christian 2.78 crores (2.3%) 15.5%	Sikh 2.08 crores (1.7%) 8.4%	Buddhist 0.84 crores (0.7%) 6.1%	Jain 0.45 crores (0.4%) 5.4%
Hindu 96.63 crores (79.8%) ➤ 16.8%	Muslim 17.22 crores (14.2%) 24.6%	Christian 2.78 crores (2.3%) 15.5%	Sikh 2.08 crores (1.7%) 8.4%	Buddhist 0.84 crores (0.7%) 6.1%	Jain 0.45 crores (0.4%) 5.4%		
Socio-Economic and Caste Census (SECC) 2011	➤ Conducted by the Ministry of Rural Development, SECC-2011 was a study of the socio-economic status of rural and urban households and ranking of households based on predefined parameters. ➤ The Census in rural areas was conducted by Dept. of Rural Development, in urban areas by Ministry of Housing and Urban Affairs. ➤ The purpose of SECC-2011 was to enable evidence-based policy making, targeted delivery of welfare schemes, and efficient identification of beneficiaries for various government programmes. ➤ It included caste enumeration, but names of caste/tribe/religion were not shared publicly.						

18. Consider the following tribes:

1. Bakarwals
2. Gujjars
3. Bhotiyas
4. Gaddis

How many of the above practice transhumance in the Himalayas?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four**

EXPLANATION:

Transhumance refers to the seasonal movement of people with their livestock between different geographical or climatic regions. Each year, in spring and autumn, herders move thousands of animals along traditional routes — mostly on foot or horseback, often with their families and dogs.

The Himalayan ranges show a gradual change in vegetation from tropical to tundra with increasing altitude.

- Foothills: Deciduous forests are common.
- 1,000–2,000 m: Wet temperate forests dominate.
- 1,500–1,750 m: Pine forests with Chir Pine, an important commercial tree.
- Western Himalayas: Deodar trees are abundant and valued for construction.
- Higher ranges: Blue pine, spruce, and temperate grasslands are found.
- 3,000–4,000 m: Alpine forests with silver firs, junipers, birch, and rhododendrons occur, giving way to high pastures.

These high-altitude pastures are used for transhumance by several Himalayan tribes:

- **Gujjars:** Primarily cattle herders who move between the plains and lower Himalayan slopes
- **Bakarwals:** A nomadic tribe mainly rearing sheep and goats, migrating between Jammu plains and Kashmir highlands.
- **Bhotiyas:** Inhabit higher Himalayan valleys and trade across mountain passes, besides practicing seasonal herding.
- **Gaddis:** Found in Himachal Pradesh, they rear sheep and goats, moving between Kangra valley and higher pastures in summer.

Thus, All the four tribes practice transhumance in the Himalayas. **So, Option (d) is correct.**

19. Consider the following statements:

1. According to 2011 Census, less than ten percent of India's population comprises internal migrants.
2. Internal migration always changes the size and distribution of the population.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2**

EXPLANATION:

Migration refers to the movement of people from one region or territory to another, either within a country (internal migration) or between countries (international migration).

- Internal migration is the movement of people within a country involving the establishment of a new temporary or permanent residence.
- Internal migration is a key factor influencing a country's population structure, characteristics, as well as socio-economic development.
- The Census of India reveals that in 2011, migrants based on place of last residence were 453 million, accounting for 37.5 per cent of the total population in India, which is twice the number in the year 1971 (159 million).

- So, India's internal migration as per the 2011 census is not less than 10 per cent of the Indian population. **So, Statement 1 is not correct.**
- The internal migration does not changes the size of the population but alters its spatial distribution. **So, Statement 2 is not correct.**

ADDITIONAL INFORMATION:

TRENDS OF MIGRATION IN INDIA	
Migration Patterns & its impact	Migration plays an important role in changing both the composition and distribution of a population. It affects not only the size of the population but also its age and sex structure, especially in rural and urban areas. ➤ Patterns of Migration in India: In India, most migration occurs from rural to urban areas due to both "push" and "pull" factors. • Push factors (Rural areas): Poverty, unemployment, and lack of opportunities. • Pull factors (Urban areas): Better employment prospects and improved living conditions. ➤ Impact on Urbanization: Rural-to-urban migration has led to a steady increase in India's urban population share: • 1951: 17.29% • 2011: 31.80% The number of 'million-plus cities' (cities with a population of over one million) also rose significantly: • 2001: 35 cities • 2011: 53 cities • 2023: 59 cities
Census 2011 Migration Data	According to the 2011 Census, about 21 crore people migrated within India during the preceding decade. This migration was predominantly intra-state. • Intra-state migration: 88% • Inter-state migration: 12% ➤ Gender Trends in Migration: Intra-state migration: Mostly females, primarily due to marriage-related migration. Inter-state migration: Mostly males, mainly for employment and livelihood opportunities. ➤ Rural and Urban Migration Patterns: The rural population forms the major source of out-migration, with a 68% share overall. • Inter-state level: 58% of migrants come from rural areas. • Intra-state level: 59% of in-migrants are from rural areas. At the inter-state level, urban areas account for about 72% of the in-migrant population.

20. With reference to different phases of population growth in India, consider the following information:

Sl. no.	Period	Changes in components of population growth	Reasons
1.	1901-1921	High birth rate and high death rate	Illiteracy, poor health, lack of accessibility to food supplies
2.	1921-1951	Low birth rate and high death rate	Better health and sanitation, Great Economic Depression, World war
3.	1951-1981	Low birth rate and low death rate	Centralized planning, Increase in international migration
4.	Post 1981	High birth rate and lower death rates	Better female education rates, decrease in mean age at marriage

How many of the above statements is/are correct?

- (a) Only one
(b) Only two
(c) Only three
(d) All four

EXPLANATION:

Population growth refers to the change in the number of people living in a particular area between two points in time. It is expressed as a percentage.

➤ In India, the growth rate over the past century has been influenced by variations in birth rate, death rate, and migration, showing four distinct phases:

- Phase I (1901–1921)
- Phase II (1921–1951)
- Phase III (1951–1981)
- Phase IV (1981–Present)

Phase I (1901–1921): Stagnant or Stationary Growth

- The period from 1901 to 1921 is referred to as a period of stagnant or stationary phase of growth of India's population, since in this period, the growth rate was very low, even recording a negative growth rate during 1911–1921.
- Both the birth rate and death rate were high, keeping the rate of increase low.
- Poor health and medical services, illiteracy of people at large and inefficient distribution system of food and other basic necessities were largely responsible for the high birth and death rates in this period. **So, Row 1 is correct.**

Phase II (1921–1951): Steady Growth

The decades 1921–1951 are referred to as the period of steady population growth.

- An overall improvement in health and sanitation throughout the country brought down the mortality rate. At the same time, better transport and communication systems improved the distribution system.
- The crude birth rate remained high in this period, leading to a higher growth rate than the previous phase.
- This is impressive against the backdrop of the Great Economic Depression, the 1920s and World War II.

Thus, there was a low mortality rate and a high birth rate during this phase. **So, Row 2 is not correct.**

Phase III (1951–1981) : Period of Population Explosion

The decades 1951–1981 are referred to as the period of population explosion in India, which was caused by a rapid fall in the mortality rate (Low death rate) but a high fertility rate (implies high birth rate) of the population in the country.

- The average annual growth rate was as high as 2.2 per cent.
- It is in this period, after Independence, that developmental activities were introduced through a centralised planning process, and the economy started showing up ensuring the improvement of the living conditions of people at large. Consequently, there was a higher growth rate.
- Besides, increased international migration bringing in Tibetans, Bangladeshis, Nepalis and even people from Pakistan contributed to the high growth rate.

Thus, there was a high birth rate during this phase. **So, Row 3 is not correct.**

Phase IV (1981–Present): Slowing Growth

In the post-1981 till present, the growth rate of the country's population, though it remained high, has started slowing down gradually.

- A downward trend in crude birth rate (low birth rate) is held responsible for such population growth.
- This was, in turn, affected by an increase in the mean age at marriage, improved quality of life, particularly the education of females in the country.
- In the 1981 census, the mortality rates dropped to 18.4 deaths per 1000 lives; this mortality rate dropped further to 15.8 deaths per 1000 lives in the 1991 census. In 1996, the mortality rates were 14.6 deaths per 1000 lives.

Thus, Phase IV had a low birth rate and a low death rate. **So, Row 4 is not correct.**

21. Consider the following statements:

1. It is a tributary of River Ganga.
2. It originates in the Indian Himalayas.

Which one of the following rivers best fits the description given above?

- (a) **Yamuna**
 (b) Ghaghara
 (c) Gandak
 (d) Son

EXPLANATION:

The Yamuna River, a major river of northern India, primarily flows through the states of Uttarakhand and Uttar Pradesh, and is regarded as one of the country's most sacred rivers.

- The Yamuna River is the westernmost and longest tributary of the Ganga, that originates from the Yamunotri Glacier on the western slopes of the Bandarpunch Range (6,316 m) in the Great Himalayas.
- Rising near Yamunotri, the river flows southward through the Himalayan foothills before entering the Indo-Gangetic Plain.
- It then forms part of the boundary between Uttar Pradesh and Haryana.
- The Eastern and Western Yamuna Canals branch from the river in this region.
- The Yamuna eventually joins the Ganga River at Prayagraj (Allahabad)

Right bank and Left bank tributaries of Yamuna River:

- Major right-bank tributaries include the Chambal, Sind, Betwa, and Ken, which originate from the Peninsular Plateau.
- On the left bank, it receives smaller rivers such as the Hindan, Rind, Sengar, and Varuna.

A significant portion of the Yamuna's water is diverted into the Western Yamuna, Eastern Yamuna, and Agra Canals to support irrigation. **So, Option (a) is correct.**



ADDITIONAL INFORMATION:

THE GANGA SYSTEM	
About	The Ganga rises from the Gangotri glacier near Gaumukh (3,900 m) in Uttarkashi district, Uttarakhand, as the Bhagirathi. It flows through deep Himalayan gorges and meets the Alaknanda at Devprayag, where it is called the Ganga. ➤ The principal tributaries joining the river from right are the Yamuna and the Son. ➤ The Ramganga, the Ghaghra, the Gandak, the Kosi and the Mahananda join the river from left. ➤ The Chambal and the Betwa are the two other important sub-tributaries.

Ghaghara	A left-bank tributary of the Ganga, it rises as the Karnali River in southern Tibet, flows through Nepal, and enters India to join the Ganga below Chapra (Bihar) after a 970 km course.
Gandak	Formed by the Kaligandak and Trishulganga streams, it originates between Dhaulagiri and Mount Everest in Nepal and joins the Ganga at Sonpur near Patna (Bihar).
The Son	A right-bank tributary rising from the Amarkantak Plateau, it flows north to join the Ganga near Arrah, west of Patna.
Chambal	Originates near Mhow (Madhya Pradesh) in the Malwa Plateau, flows north through Rajasthan, and joins the Yamuna. It is known for its badland topography, called Chambal ravines.
Kosi	An antecedent river originating north of Mount Everest in Tibet as the Arun River. After joining the Son Kosi and Tamur Kosi in Nepal, it forms the Sapt Kosi before entering India.
Ramganga	A small river rising near Gairsain in the Garhwal hills, it enters the plains near Najibabad and joins the Ganga near Kannauj.
Damodar	Flows through a rift valley along the Chotanagpur Plateau and joins the Hugli River. Once known as the 'Sorrow of Bengal', it is now regulated by the Damodar Valley Corporation.
Sarda	Rises from the Milam Glacier in the Nepal Himalayas, known as Goriganga or Kali, and joins the Ghaghara along the Indo-Nepal border.
Mahananda	Originates in the Darjeeling hills and joins the Ganga as its last left-bank tributary in West Bengal.

22. Consider the following statements:

Statement-I:

River Ganga develops large meanders between Ambala and the Sunderbans.

Statement II:

The slope of the area between Ambala and Sunderbans is very high.

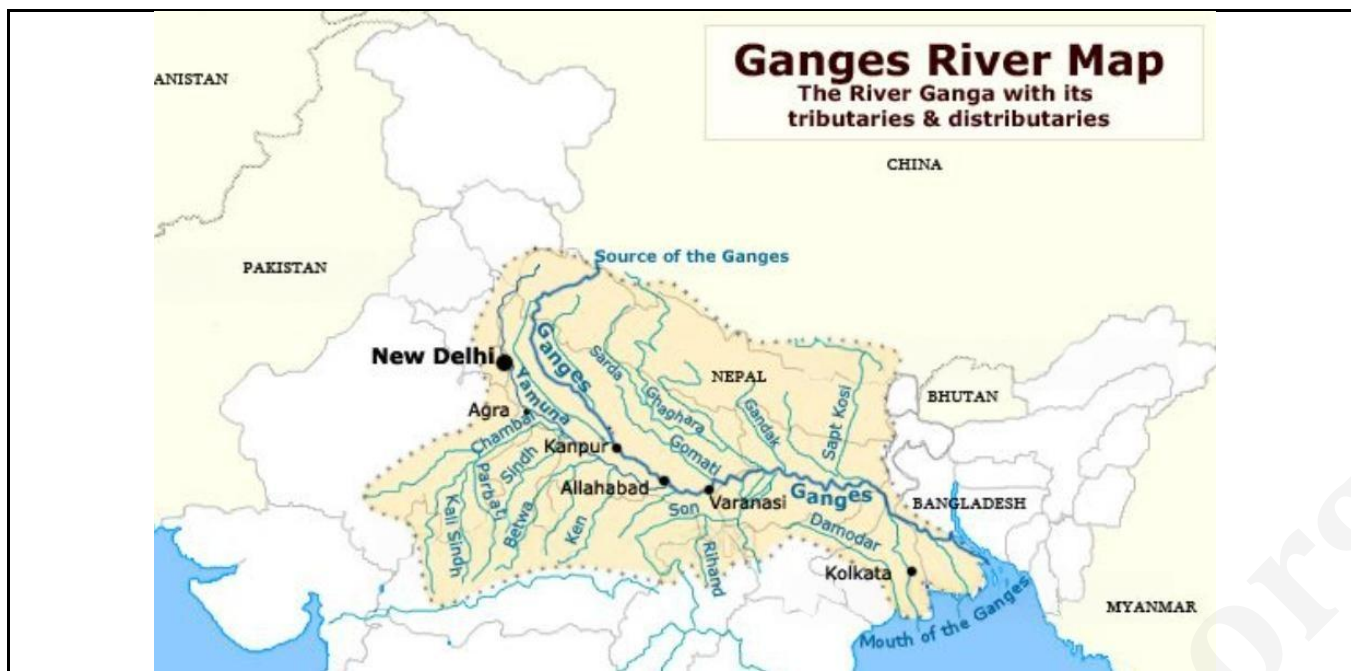
Which of the following is correct in respect of the above statements?

- Both Statement-I and Statement-II are correct, and Statement-II is the correct Explanation for Statement-I.
- Both Statement-I and Statement-II are correct and Statement-II is not the correct Explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect**
- Statement-I is incorrect but Statement-II is correct

EXPLANATION:

The Ganga and its tributaries flow across the Indo-Gangetic plains, stretching from the foothills near Ambala in the northwest to the Sunderbans delta in the southeast.

- Over this vast stretch, the slope is gentle, allowing the river to meander extensively, especially across Uttar Pradesh, Bihar, and West Bengal.
- The Ganga River has a total length of over 2,500 km, and Ambala lies on the water divide between the Indus and Ganga river systems.
- The plains between Ambala and the Sunderbans extend for nearly 1,800 km, but the total fall in elevation is only about 300 metres, meaning the slope decreases by just one metre for every six kilometres.
- Because of this low gradient, the Ganga develops large meanders along its middle and lower courses not due to a high slope, but because of the gentle slope. **So, Statement I is correct, but Statement II is incorrect.**



ADDITIONAL INFORMATION:

THE GANGA RIVER SYSTEM	
Origin and Early Course	The headwaters of the Ganga, known as the Bhagirathi, originate from the Gangotri Glacier in Uttarakhand. It is joined by the Alaknanda at Devprayag, where the combined flow is called the Ganga. At Haridwar, the river emerges from the mountains onto the plains.
Major Tributaries	The Ganga is joined by several important Himalayan tributaries — Yamuna, Ghaghara, Gandak, and Kosi. Yamuna River ➤ Originates from the Yamunotri Glacier in the Himalayas. ➤ Flows parallel to the Ganga and joins it as a right-bank tributary at Allahabad (Prayagraj). Ghaghara, Gandak, and Kosi Rivers: ➤ All originate in the Nepal Himalayas. ➤ These rivers often cause floods in the northern plains, leading to damage but also deposit fertile alluvium, enriching the soil. Peninsular Tributaries: ➤ The main peninsular tributaries—Chambal, Betwa, and Son—originate in semi-arid regions. ➤ They have shorter courses and carry less water compared to the Himalayan tributaries.
Delta formation	➤ After receiving waters from its tributaries, the Ganga flows eastward up to Farakka in West Bengal, the northernmost point of the Ganga delta. ➤ At Farakka, the river bifurcates: • The Bhagirathi-Hooghly, a distributary, flows southward through the deltaic plains into the Bay of Bengal • The mainstream continues southward into Bangladesh, where it joins the Brahmaputra and is known as the Meghna before entering the Bay of Bengal. Sundarban Delta: ➤ The delta formed by the Ganga and Brahmaputra is called the Sundarban Delta. ➤ It is one of the largest and most fertile deltas in the world.

23. Consider the following statements:

1. Lagoons form when barrier islands or coral reefs separate a body of water from the ocean.
2. Sambhar Lake and Pulicat Lake are lagoons separated from the sea by islands.

Which of the statements given above is/are **not** correct?

- (a) 1 only
(b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2

EXPLANATION:

A lagoon is a body of water separated from larger bodies of water by a natural barrier. Lagoons are separated from larger bodies of water by sandbars, barrier reefs, coral reefs, or other natural barriers. The word "lagoon" derives from the Italian word laguna, which means "pond" or "lake." **So, Statement 1 is correct.**



Pulicat Lake



Sambhar Lake

Pulicat Lake: Pulicat Lake is a saltwater lagoon on the Coromandel Coast of Andhra Pradesh state, southern India.

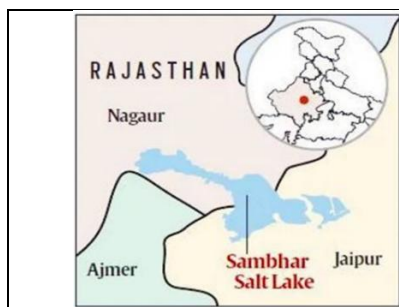
- It extends from the extreme southeastern portion of Andhra Pradesh into the adjacent portion of Tamil Nadu state and has a length of about 30 miles (50 km) and a width of 3 to 10 miles (5 to 16 km).
- Towns along the lake include Dugarajupatnam and Pulicat.
- The long and narrow Sriharikota Island, which separates Pulicat Lake from the Bay of Bengal, is the site of Satish Dhawan Space Centre, India's satellite-launching facility.
- The only sea entrance into the lake is around the south end of the island, north of the town of Pulicat on the mainland

Sambhar Lake: It is one of the largest inland saline depressions in western desert of India was declared a Ramsar site in 1990 due to its biological and biotic importance.

- It is situated west of Jaipur, Rajasthan, and this salt lake forms a vast saline wetland, which constitute the most important area for the flamingos outside Rann of Kutch.

The lake is surrounded by sand flats and dry thorn scrub and fed by seasonal rivers and streams.

- The lake is important for a variety of wintering waterbirds, including large numbers of flamingo
- Thus, Sambhar Lake is not a lagoon. **So, Statement 2 is not correct.**



ADDITIONAL INFORMATION:

TYPES OF LAGOONS & WETLANDS IN INDIA	
Types of Lagoons	There are two main types of lagoons: Atoll Lagoons ➤ Form when an island sinks below the ocean surface, leaving a ring of coral that keeps growing upward. ➤ The water enclosed inside this ring forms the lagoon. ➤ Atoll formation can take up to 300,000 years. ➤ These lagoons are usually deep. Example: The Lakshadweep Islands are India's only coral atoll region, where coral reefs form rings around shallow central lagoons Coastal Lagoons ➤ Found along gently sloping coasts and separated from the ocean by sandbanks, reefs, or islands. ➤ Usually shallow and often connected to the ocean by an inlet. ➤ Formed due to factors like sea level rise, sediment amount, and tidal range. ➤ They are younger and more dynamic than atoll lagoons and have shorter lifespans because of their exposed coastal location. Example: Chilika Lake in Odisha is Asia's largest brackish water lagoon. Other examples include Pulicat Lake (on the Andhra Pradesh–Tamil Nadu border) and Vembanad Lake in Kerala.
Indias Wetlands	➤ India has a rich variety of wetlands, about 70% of which are areas under paddy cultivation ➤ The total wetland area is about 3.9 million hectares. ➤ Chilika Lake (Odisha) and Keoladeo National Park (Bharatpur) are protected under the Ramsar Convention (Wetlands of International Importance).
Types of wetlands in India	India's wetlands are grouped into eight categories: ➤ Reservoirs of the Deccan Plateau and lagoons/wetlands of the southern west coast. ➤ Saline areas of Rajasthan, Gujarat, and the Gulf of Kachchh. ➤ Freshwater lakes and reservoirs from Gujarat to Madhya Pradesh (including Keoladeo National Park). ➤ Delta wetlands and lagoons of the east coast (like Chilika Lake) ➤ Freshwater marshes of the Gangetic Plain. ➤ Floodplains and marshes of the Brahmaputra and northeast hills. ➤ Lakes and rivers of Kashmir and Ladakh. ➤ Mangrove forests and wetlands of the Andaman and Nicobar Islands.

24. With reference to the Brahmaputra river, consider the following statements:

1. It flows through the Yarlung Tsangpo Grand Canyon.
2. The state of Arunachal Pradesh has the highest drainage area of the river in India.
3. Northern bank tributaries of the river form braided channels and cause floods.
4. The South-West monsoon causes a majority of the rainfall in its basin.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) **All four**

EXPLANATION:

The Source of the River Brahmaputra is the Chemayungdung Glacier, which covers the slopes of the Himalayas about 100 km southeast of Lake Mapam in southwestern Tibet. The three headstreams that arise there are the Kubi, the Angsi, and the Chemayungdung.

- From its source, the river runs for nearly 1,100 km in a generally easterly direction between the Great Himalayas range to the south and the Kailas Range to the north.
- Throughout its upper course, the river is generally known as the Tsangpo ("Purifier"); it is also known by its Chinese name (Yarlung Zangbo).
- After passing through Tibet, the river turns suddenly to the north and northeast and cuts a course through a succession of narrow gorges between the mountainous massifs of Gyala Peri and Namcha Barwa in a series of rapids and cascades.
- Thereafter, the river turns south and southwest and flows through the Yarlung Tsangpo Grand Canyon, one of the world's deepest gorges, as it crosses the eastern extremity of the Himalayas, with canyon walls that extend upward for 5,000 meters and more on each side. **So, Statement 1 is correct.**
- During that stretch, the river enters northern Arunachal Pradesh state in northeastern India, where it is known as the Dihang (or Siang) River, and turns more southerly.

Brahmaputra drainage basin extends over an area of 580,000 sq.km lying in Tibet (China), Bhutan, India and Bangladesh.

The drainage area lying in India is 194413 sq.km, which is nearly 5.9% of the total geographical area of the country. It is bounded on the north by the Himalayas, on the east by the Patkai range of hills running along the Assam-Myanmar/Burma border, on the south by the Assam range of hills and on the west by the Himalayas and the ridge separating it from the Ganga sub-basin.

The State-wise distribution of drainage area (sq km) is given below:

- Arunachal Pradesh: 81,424
- Assam: 70,634
- West Bengal: 12,585
- Meghalaya: 11,667
- Nagaland: 10,803
- Sikkim: 7,300

Therefore, from the above data, Arunachal Pradesh has the highest drainage area of the river Brahmaputra in India. **So, Statement 2 is correct.**

The North Bank Tributaries of the River Brahmaputra in India:

- Have very steep slopes and form shallow braided channels for a considerable distance from the foothills and in some cases right up to the outfall.
- Have boulder, pebble and coarse sandy beds and carry a heavy silt charge that causes flashy floods. **So, Statement 3 is correct.**

The South Bank Tributaries of the River Brahmaputra in India:

- Have comparatively flatter grades and deep meandering channels almost from the foothills.
- It has a comparatively low silt charge.

The meteorological conditions in the catchments of the River Brahmaputra in Tibet and India are different and lie in different climatic zones.

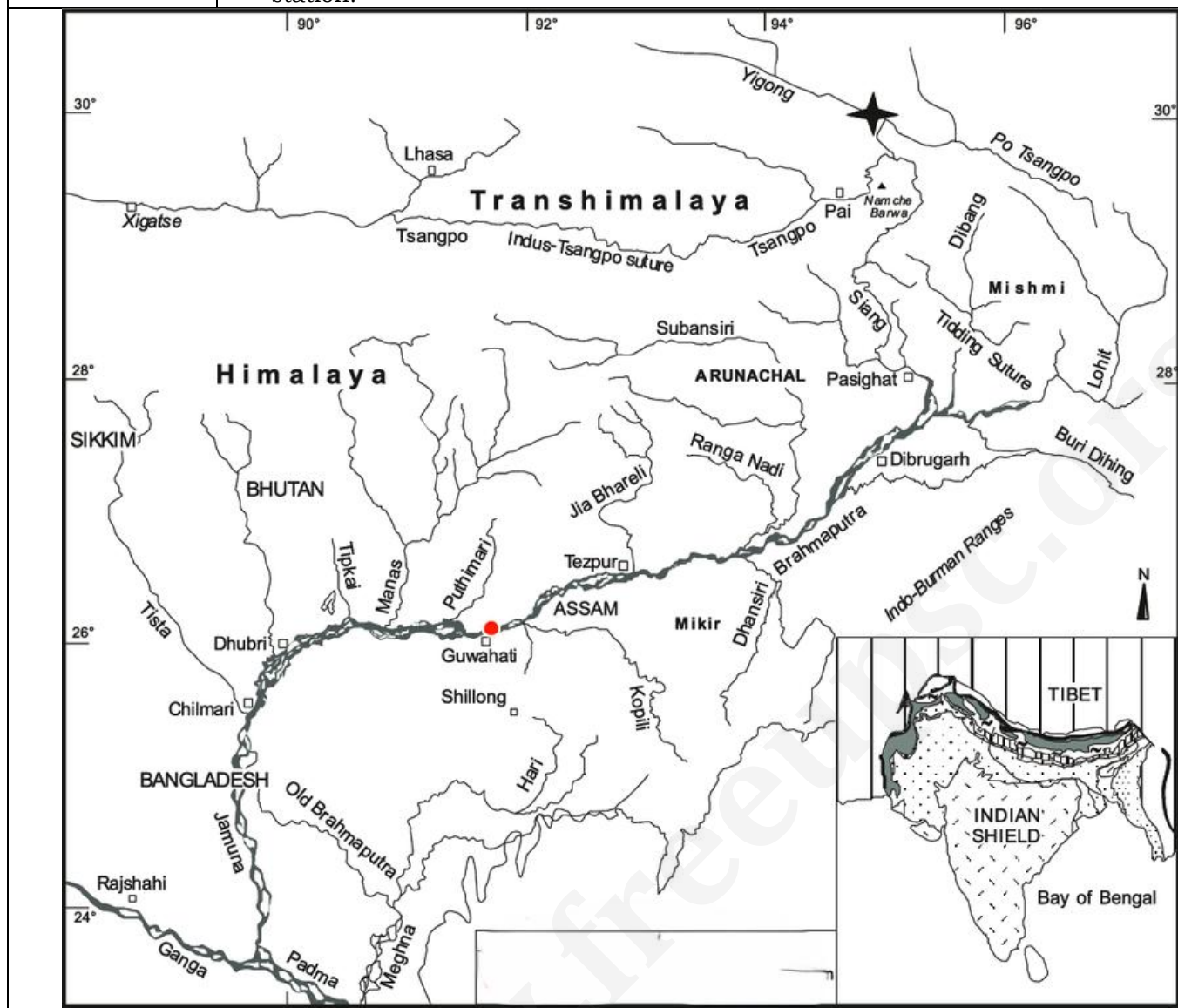
- The mean annual rainfall over the entire catchment, including Tibet and Bhutan, is about 2500 mm.
- The mean annual rainfall over the Indian portion of the Brahmaputra catchment alone is approximately 3000 mm.
- The rainfall in the Brahmaputra basin is mainly due to the Southwest monsoon, and out of the total annual rainfall, 85% occurs during the monsoon months from May to September. **So, Statement 4 is correct.**

- Besides, the valley gets a good amount of rainfall in the months of April and May due to thunderstorm activities, which account for floods during heavy rain in June, when the soil is already saturated and the river bank is at full stage.

ADDITIONAL INFORMATION:

RIVER BRAHMAPUTRA																											
Recently in the News	China has approved the construction of the world's largest dam, on the Brahmaputra River in Tibet close to the Indian border, raising concerns in riparian states — India and Bangladesh.																										
About	➤ The Brahmaputra River is a long transboundary river in the Continent of Asia that flows through the Tibet Autonomous Region of China, India, and Bangladesh. ➤ The river originates in the Lake Manasarovar region close to Mount Kailash and then flows for more than 3,969km within the boundaries of the Tibet Autonomous Region, India, and Bangladesh, and finally drains into the Bay of Bengal. ➤ The Brahmaputra River is considered the 15th longest river and the 9th largest river in the world by discharge volume. ➤ The Brahmaputra is navigable throughout the Bengal Plain and Assam upstream to Dibrugarh, 700 miles (1,100 km) from the sea. ➤ The Brahmaputra remained unbridged throughout its course in the plains until the Saraighat Bridge—carrying both road and rail traffic—was opened in 1962 near Guwahati, Assam. A second crossing in Assam, the Kalia Bhomora road bridge near Tezpur, was opened in 1987. More bridges have been built on the Brahmaputra since then: the Naranarayan Setu (1998) and the Bogibeel Bridge (2018) are two notable ones. ➤ The Bhupen Hazarika Setu, also known as the Dhola–Sadiya Bridge because it links Dhola to Sadiya, is the longest bridge over water in India.																										
Tributaries	<table border="1"> <thead> <tr> <th>Tributaries from North bank</th><th>Tributaries from South bank</th></tr> </thead> <tbody> <tr> <td>The Jiahal</td><td>The Noa Dehing</td></tr> <tr> <td>The Subansiri</td><td>The Buridehing</td></tr> <tr> <td>The Siang</td><td>The Debang</td></tr> <tr> <td>The Kameng (Jiabharali in Assam)</td><td>The Dikhow</td></tr> <tr> <td>The Dhansiri(North)</td><td>The Dhansiri(S)</td></tr> <tr> <td>The Puthimari</td><td>The Kopili</td></tr> <tr> <td>The Pagladiya</td><td>The Digaru</td></tr> <tr> <td>The Manas</td><td>The Dudhnai</td></tr> <tr> <td>The Champamati</td><td>The Krishnai</td></tr> <tr> <td>The Saralbhang</td><td></td></tr> <tr> <td>The Aie</td><td></td></tr> <tr> <td>The Sankosh</td><td></td></tr> </tbody> </table>	Tributaries from North bank	Tributaries from South bank	The Jiahal	The Noa Dehing	The Subansiri	The Buridehing	The Siang	The Debang	The Kameng (Jiabharali in Assam)	The Dikhow	The Dhansiri(North)	The Dhansiri(S)	The Puthimari	The Kopili	The Pagladiya	The Digaru	The Manas	The Dudhnai	The Champamati	The Krishnai	The Saralbhang		The Aie		The Sankosh	
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Flood Control	➤ Flood-control schemes and the building of embankments were initiated after 1954. ➤ In Bangladesh the Brahmaputra embankment running west of the Jamuna River from north to south helps to control floods. ➤ The Tista Barrage Project is both an irrigation and a flood-protection scheme. ➤ Until the 21st century, little power had been harnessed along the Brahmaputra, although the estimated potential was great—some 12,000 megawatts in India alone. ➤ An increasing number of hydroelectric stations have been completed in Assam, most notably the Kopili Hydel Project in the south of the state.																										

- Another major project, the Ranganadi plant, has been built in Arunachal Pradesh, which has considerably more generating capacity than the Kopili station.



25. Consider the following information:

Sl. no.	Local storm	Region	Effect
1.	Mango showers	Coastal Karnataka	Cause early ripening of mangoes
2.	Blossom showers	Andhra Pradesh	Cause blossoming of coffee flowers
3.	Loo	Assam	Helpful for jute cultivation

How many of the above rows is/are correctly matched?

- (a) Only one
(b) Only two
(c) All three
(d) None

EXPLANATION:

Mango Showers are pre-monsoon rains that occur in parts of South India, particularly in Kerala, Karnataka, and Tamil Nadu, during the months of March to May.

- These rains are caused by westerly winds blowing from the Arabian Sea toward the Indian peninsula. As these moist winds move inland, they are forced to rise along the western slopes of the Western Ghats. The rising air cools and condenses, resulting in light to moderate rainfall, often in the form of short showers or thunderstorms.
- They are called "Mango Showers" because they usually occur just before the monsoon season and help in the ripening of mangoes, an important fruit crop in South India. These rains also provide relief from the summer heat and prepare the soil for early agricultural activities. **So, Pair 1 is correct.**
- Mango showers are also called Blossom showers or Coffee showers in Karnataka (Not Andhra Pradesh), as they aid the blossoming of coffee flowers in the plantations of the Kodagu (Coorg) and Chikmagalur regions. **So, Pair 2 is not correct.**

In the months of April and May, the air starts heating up in North and Northwest India, which is located away from the sea. But due to the presence of jet streams above, the hot, dry air is not able to rise up; instead, the air moves from west to east on the surface. These surface hot dry blowing winds are called 'Loo' in North India.

- It is a strong, dusty, hot and dry summer wind that blows from west to east over the Indo-Gangetic plain of north India (Not in Assam) and Pakistan.
- It blows strongly in the months of April, May and June. Due to its very high temperature and dryness, it causes fatal heat strokes. **So, Pair 3 is not correct.**

ADDITIONAL INFORMATION:

LOCAL WINDS	
Loo	➤ Loo are hot and dry winds, which blow very strongly over the northern plains of India and Pakistan in the months of May and June. ➤ Their direction is from west to east and they are usually experienced in the afternoons. Their temperature varies between 45°C to 50°C.
Foehn	➤ Foehn is strong, dusty, dry and warm local wind which develops on the leeward side of the Alps mountain ranges. Regional pressure gradient forces the air to ascend and cross the barrier. ➤ Ascending air sometimes causes precipitation on the windward side of the mountains. After crossing the mountain crest, the Foehn winds starts descending on the leeward side or northern slopes of the mountain as warm and dry wind. ➤ The temperature of the winds vary from 15°C to 20°C which help in melting snow. Thus making pasture land ready for animal grazing and help the grapes to ripe early.
Chinook	➤ Chinook is the name of hot and dry local wind which moves down the eastern slopes of the Rockies in U.S.A. and Canada. The literal meaning of chinook is 'snow eater' as they help in melting the snow earlier. They keep the grasslands clear of snow. Hence they are very helpful to ranchers.
Mistral	➤ Mistrals are most common local cold winds. They originate on the Alps and move over France towards the Mediterranean Sea through the Rhone valley. They are very cold, dry and high velocity winds. They bring down temperature below freezing point in areas of their influence. People in these areas protect their orchards and gardens by growing thick hedges and build their houses facing the Mediterranean sea.

26. With reference to the Inter Tropical Convergence Zone, consider the following statements:

1. It is a high-pressure zone where trade winds converge.
2. Descending air in this zone causes thunderstorms and heavy rainfall.
3. Doldrums occur within this zone.

Which of the statements given above is/are correct?

(a) 3 only

(b) 2 and 3 only

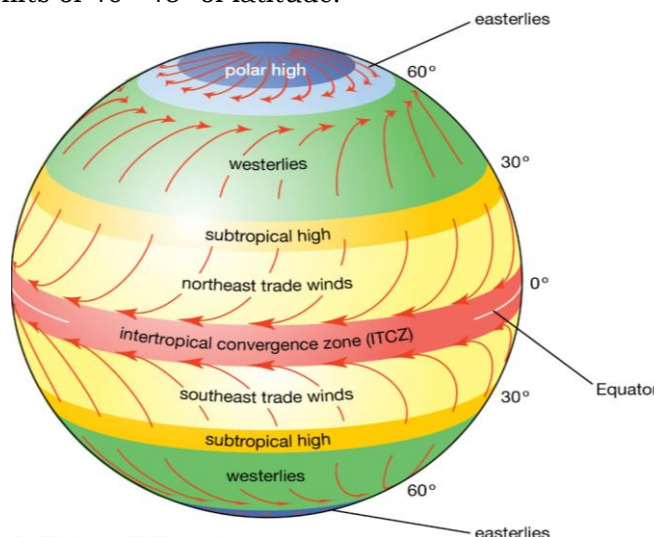
(c) 1 and 3 only

(d) 1, 2 and 3

EXPLANATION:

The Intertropical Convergence Zone (ITCZ) is a low-pressure (not high-pressure) zone located at the Equator where trade winds converge, and so, it is a zone where air tends to ascend. Therefore, the air in the ITCZ rises, not descends. The rising moist air cools and condenses, leading to cumulonimbus clouds, thunderstorms, and heavy rainfall. **So, Statements 1 and 2 are not correct.**

The ITCZ shifts north and south seasonally with the Sun. Over the Indian Ocean, it undergoes especially large seasonal shifts of 40°–45° of latitude.



Doldrums, equatorial regions of light ocean currents and winds within the intertropical convergence zone (ITCZ), a belt of converging winds and rising air encircling Earth near the Equator. **So, Statement 3 is correct.**

- The northeast and southeast trade winds meet there; this meeting causes air uplift and often produces clusters of convective thunderstorms.
- They occur along the Equator in the Indian and western Pacific oceans and slightly north of the Equator off the African and Central American west coasts.
- Sailors of old sailing ships dreaded this zone because their ships could become becalmed for days, leading to frustration and low spirits. Hence, the term "doldrums" also came to mean a state of depression or inactivity.

ADDITIONAL INFORMATION:

ROLE OF ITCZ IN INDIAN MONSOON

About	ITCZ - The Intertropical Convergence Zone (ITCZ) is a low-pressure zone located at the Equator where trade winds converge, and so, it is a zone where air tends to ascend. ➤ In July, the ITCZ is located around 20–25-degree north latitudes (over the Gangetic plains), sometimes called the monsoon trough. ➤ This monsoon trough encourages the development of a thermal low over north and North West India. ➤ Due to the shift of the ITCZ, the trade winds of the southern hemisphere cross the Equator between 40 degrees and 60 degrees E longitudes and start blowing from southern to northern due to the Coriolis force. It becomes the southwest monsoon. ➤ In winter, the ITCZ moves southward, and so the reversal of winds from northeast to south and southwest takes place. They are called northeast monsoons.
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27. Which one of the following is **not** correct about regur soils?

- (a) The presence of compounds of aluminium and iron gives them a black color.
- (b) They have been formed by the disintegration of volcanic basaltic lava.
- (c) They are favorable for the cultivation of sugarcane and fruits.
- (d) **A pebbly crust is a characteristic of these soils.**

EXPLANATION:

The black cotton soils cover about 16% of the total land. These soils are found in the States of Maharashtra, Gujarat, Madhya Pradesh, Karnataka, Andhra Pradesh, Tamil Nadu, Uttar Pradesh and Rajasthan.

- These soils have been formed due to the weathering of the lava rocks. This is also known as the Regur soil and Cotton soil. **So, Option (b) is correct.**
- These soils are rich in lime, iron, magnesia and alumina but lack in the phosphorus, nitrogen and organic matter.
- The colour of the soil is generally black due to the presence of compounds of aluminium and iron. **So, Option (a) is correct.**
- Black soil is generally clayey, deep and has low permeability and impregnability. But its depth varies from place to place. It is very thick in the lowlands but very thin in the highlands.
- The most important characteristics of this soil are its ability to retain moisture even during the dry season. The soils form wide cracks during summer due to moisture loss and swelling and become sticky when saturated. Thus, the soil is aerated and oxidised to deep levels, which contribute to maintaining its fertility.
- This continued fertility is favourable in the area of low rainfall for cotton cultivation even without irrigation.
- Other than cotton, black soil is favourable for the cultivation of crops like sugarcane, wheat, onion and fruits. **So, Option (c) is correct.**

Pebbly crust is a characteristic of Laterite soils (Not the Black Soil). The laterite soils are commonly found in areas of high altitude and heavy rainfall in Karnataka, Tamil Nadu, Madhya Pradesh, Jharkhand, Orissa, Assam and Meghalaya, extending over 13 million hectares. **So, Option (d) is not correct.**

- They generally form under hot and humid climatic conditions.
- The lateritic soils are particularly found on high flat erosion surfaces in areas of high and seasonal rainfall.
- Loss of nutrients by accelerated leaching is the most common feature which renders the soil infertile.
- The pebbly crust is the important feature of laterites, which is formed due to the alteration of wet and dry periods.
- As a result of weathering, laterite becomes extremely hard. Thus, their characteristics include complete chemical decomposition of the parent rock, complete leaching of silica, a reddish-brown colour given by the oxides of aluminium and iron and lack of humus.
- The crops which are generally grown are rice, millets, sugarcane on lowland and tropical plantations such as rubber, coffee and tea on uplands.

28. Consider the following information:

Sl. no.	Type of soil erosion	Area affected
1.	Sheet erosion	Northeastern hills
2.	Ravine erosion	The Ganga Brahmaputra plains
3.	Wind erosion	Rajasthan

Which of the above pairs are correctly matched?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only**
- (d) 1, 2 and 3

EXPLANATION:

Soil erosion refers to the process of removal and transportation of the top layer of soil from the Earth's surface by exogenetic agents such as wind, water, glaciers, and gravity.

- It involves the physical detachment and displacement of soil particles, leading to loss of fertile topsoil and degradation of land productivity.
- Soil erosion is broadly categorized into different types depending on the agent which triggers the erosion activity.
- Sheet erosion, a type of erosion caused by rains that is widespread over sloping deforested terrain, terraced uplands of the Peninsular region, Sutlej-Ganga plains, Coastal plains, Western Ghats and the North-Eastern hills. **So, Pair (1) is correct.**

Ravine erosion is a type of erosion caused by the continuous action of running water, which deepens and widens gullies into steep-sided, narrow valleys called ravines. It leads to severe land degradation and loss of fertile topsoil, making land infertile and uncultivable. Major Ravine-Affected Areas in India includes:

- Yamuna-Chambal ravine zone – Uttar Pradesh & Madhya Pradesh (most extensive)
- Gujarat ravine zone
- Punjab-Siwalik foothills zone
- Chhotanagpur zone
- Other affected regions include the Mahanadi valley, upper Son, Narmada and Tapi valleys, and parts of western Uttar Pradesh.

Relatively Less Affected Areas: The Deccan region south of the Godavari, the Ganga-Brahmaputra plains east of Varanasi, Kutchchh, and western Rajasthan are comparatively less affected by ravine erosion. **So, Pair (2) is not correct.**

Wind erosion is a common phenomenon in dry and arid regions where strong winds loosen, lift, and transport soil particles from one place to another.

- It occurs mainly in areas with sparse vegetation and loose, sandy soils. Continuous wind action shapes various desert landforms such as sand dunes and mushroom rocks.
- In India, wind erosion is most prominent in Western Rajasthan, where sandy, structureless soils with low organic matter are easily carried away by high-velocity winds, especially during the hot summer months from April to June.
- This process leads to the loss of fertile topsoil and contributes to land degradation and desertification. **So, Pair (3) is correct.**

ADDITIONAL INFORMATION:

SOIL EROSION	
About	Soil erosion is the process of detachment and removal of the top layer of soil from its original place by natural agents like water, wind, glaciers, and gravity. It occurs due to both natural factors and human activities. Major causes include: ➤ Destruction of natural vegetation through deforestation, overgrazing, and forest fires. ➤ Improper land use, such as keeping land barren, cultivating along slopes, faulty irrigation methods, and growing crops that leave soil exposed. ➤ Human and animal activities, including overgrazing, indiscriminate tree cutting, and expansion of agriculture, which remove the protective cover and make soil vulnerable to erosion. Types of Soil Erosion: (Based on Origin) ➤ Geological Erosion: This is a natural and slow process where soil is eroded and simultaneously replenished through weathering. It occurs under undisturbed natural conditions and generally maintains a balance between soil loss and formation. ➤ Accelerated Erosion: When human activities like cultivation or deforestation disturb the natural balance, soil removal exceeds its formation rate. This rapid erosion leads to loss of fertility and land degradation. Types of Soil Erosion: (Based on Erosion Agents)

	➤ Water Erosion: The most common type, caused by rainfall, surface runoff, rivers, or sea waves. It removes soil from higher areas and deposits it in lower regions. Major subtypes include: • Raindrop erosion • Sheet erosion • Rill erosion • Gully erosion • Stream bank erosion • Slip erosion ➤ Wind Erosion: Common in dry and arid regions, especially deserts. Strong winds loosen, lift, and transport fine soil particles, forming sand dunes and mushroom rocks. In India, it is severe in Western Rajasthan. ➤ Glacial Erosion: Occurs in high-altitude cold regions. Moving glaciers carry soil and rock particles along their base and deposit them as the ice melts. ➤ Gravitational Erosion (Mass Movement): Involves the downward movement of soil and rock due to gravity, leading to landslides and soil slips, especially on steep slopes.
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29. Consider the following:

1. Seawater intrusion
2. Over-extraction
3. Rainfall

How many of the above could lead to higher electrical conductivity levels in groundwater?

- (a) Only one
(b) **Only two**
(c) All three
(d) None

EXPLANATION:

Electrical conductivity (EC) in groundwater is a measure of its ability to conduct an electrical current, which indicates the total concentration of dissolved ions (salts).

The electrical Conductivity is affected by the number of dissolved ions in water (salinity), the types of ions in the water, water flow, rainfall, and temperature.

Conductivity is one of the most useful indicators of water quality. Electrical conductivity measures the ability of water to transmit an electrical current over a certain distance.

Salinity, water flow and temperature are the main factors that cause high conductivity in the water.

- Seawater is rich in dissolved salts such as Na^+ , Cl^- , and Mg^{2+} . When it intrudes into coastal aquifers, it elevates the salinity of groundwater, leading to higher electrical conductivity levels. **So, Statement 1 is correct.**
- Excessive groundwater extraction can lower the water table, enabling saline water from deeper zones or adjacent seawater to move upward or inland. It also reduces dilution, causing dissolved ions to become more concentrated, particularly in confined aquifers, resulting in increased electrical conductivity over time. **So, Statement 2 is correct.**
- Fresh rainwater generally decreases the electrical conductivity of water, as it dilutes the concentration of dissolved ions and salts. **So, Statement 3 is not correct.**

30. Consider the following statements:

Statement-I:

According to the United Nations Conference on Trade and Development (UNCTAD), India is the second largest exporter of 'Telecommunications, Computer, & Information Services' in the world.

Statement II:

According to the UNCTAD, India has over twenty percent share in global export market of 'Telecommunications, Computer, & Information Services'.

Statement III:

India has steadily accounted for the third-largest share in global services exports over the last decade. Which of the following is correct in respect of the above statements?

- (a) Both Statement II and III are correct, and both explain Statement I.
 (b) Both Statement II and Statement III are correct, but only one of them explains Statement I.
 (c) Only one among the Statements II and III is correct, and that explains Statement I.
(d) Neither Statement II nor Statement III is correct.

EXPLANATION:

According to the United Nations Conference on Trade and Development (UNCTAD) India's share in global services exports rose from 1.9% in 2005 to 4.3% in 2023.

- Services exports now make up 9.4% of India's GDP, showing their vital role in the economy.
- India is the second-largest global exporter in Telecommunications, Computer, and Information Services, with a 10.2% share of global exports in 2023.
- In Other Business Services (professional, technical, and consulting), India ranks third, with a 7.2% share.
- These figures highlight India's strength and growing importance as a global hub for high-value, knowledge-based service.

Though India being the second-largest global exporter in Telecommunications, it does not hold 20 % share in the global export market of 'Telecommunications, Computer, & Information Services'. **So, Statement I is correct and Statement II is not correct.**

India's share in global services exports has been steadily rising over the past two decades.

- India ranks seventh globally, with a 4.3% share in global services exports.
- The services sector accounts for over 50% of India's GDP and includes trade, tourism, aviation, telecom, shipping, ports, communication and storage, finance, insurance, transportation, real estate, business services, software services, and IT-BPM.
- This strong performance highlights India's global competitiveness in the services sector.
So, Statement III is not correct.

31. Consider the following states:

1. Uttar Pradesh
2. Punjab
3. Haryana
4. Rajasthan
5. Gujarat

The planned Delhi-Mumbai Expressway passes through how many of the above states?

- (a) Only two
(b) Only three
 (c) Only four
 (d) All five

EXPLANATION:

The Delhi-Mumbai Expressway connects the country's capital, Delhi, to the financial capital, Mumbai. It is being built as part of the Bharatmala Pariyojana, which is a flagship program of the Government of India.

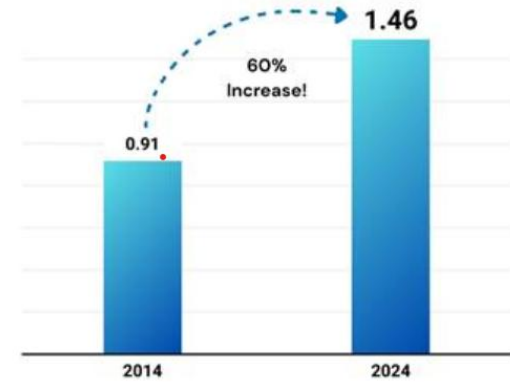
- The expressway is 1380 km long and eight-lane expressway that is meant to reduce the travel time from 24 to 12 hours.
- The expressway passes through and connects cities in and around Haryana, Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra with each other and national capital Delhi.
- Therefore, the expressway does not pass through Uttar Pradesh or Punjab. **So, Option (b) is correct.**

DELHI-MUMBAI EXPRESSWAY



ADDITIONAL INFORMATION:

BHARATMALA PARIYOJANA

About	➤ The Bharatmala Pariyojana specifically deals with the advancement of India's infrastructure by addressing critical gaps through the development of economic corridors, expressways, and connectivity roads. ➤ Aligned with the Make in India vision, the programme focuses on improving logistics efficiency, fostering industrial growth with enhanced connectivity to key hubs, and ensuring safer, more reliable transportation networks. ➤ This initiative not only boosts economic growth but also supports indigenous manufacturing and infrastructure development, making India more self-reliant in its transportation and logistics sector.						
National Highway Network	➤ India's National Highway network has undergone a remarkable transformation over the past decade, driven by higher budget allocations and accelerated construction. ➤ The network has expanded from 91,287 km in 2014 to 1,46,145 km in 2024, marking a 60% increase. ➤ This expansion has significantly improved connectivity, reduced travel time, and boosted economic activities across the country. India's National Highway Network (In Lakh KM)  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>Length (Lakh KM)</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>0.91</td> </tr> <tr> <td>2024</td> <td>1.46</td> </tr> </tbody> </table>	Year	Length (Lakh KM)	2014	0.91	2024	1.46
Year	Length (Lakh KM)						
2014	0.91						
2024	1.46						

32. Consider the following information:

Sl. no.	Infrastructure Project	Significance	Connects
1.	Sudarshan Setu	India's longest Cable-stayed bridge	Okha mainland and Beyt Dwarka island
2.	Sonamarg Tunnel	World's Longest Highway Tunnel above 10,000 Feet	Srinagar and Sonamarg
3.	Maitri Setu	India's longest bridge	Tripura in India with Chittagong in Bangladesh

How many of the above rows is/are correctly matched?

- (a) Only one
 (b) Only two
 (c) All three
 (d) None

EXPLANATION:

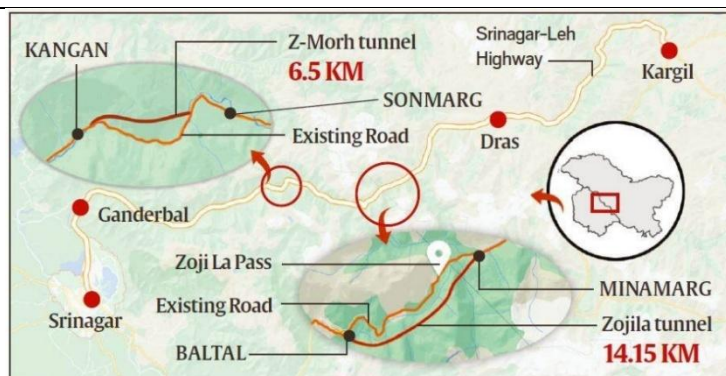
The 'Sudarshan Setu', India's longest cable-stayed bridge, which will connect the Okha mainland and the Beyt Dwarka island in Gujarat.

- The four-lane cable-stayed bridge is 2.32 km long and was built at a cost of around Rs 980 crore.
- Also known as the Okha-Beyt Dwarka Signature Bridge, it also has solar panels installed on the upper portions of the footpath, generating one megawatt of electricity.
- The construction of Sudarshan Setu aims to benefit approximately 8,500 residents living on the island and accommodate around two million pilgrims visiting the temples in the area. **So, Row (1) is correct.**



Recently, the Prime Minister of India inaugurated the Z-Morh tunnel and renamed it as the Sonamarg Tunnel.

- It is a 6.4-km bi-directional tunnel with an approach road of 5.6 km. Z-Morh connects the Sonamarg health resort with Kangan town in the Ganderbal district of central Kashmir.
- Atal Tunnel** (also known as Rohtang Tunnel) is a highway tunnel built under the Rohtang Pass in the eastern Pir Panjal range of the Himalayas on the Leh-Manali Highway in Himachal Pradesh, India.
- At a length of 9.02 km, it is the longest tunnel above 10,000 feet (3,048 m) in the world and is named after former Prime Minister of India, Atal Bihari Vajpayee. **So, Row (2) is not correct.**



The Maitri Setu bridge has been built over the Feni River, which forms part of the boundary between India's Tripura State and Bangladesh.

- The 1.9 km long bridge connects Sabroom in India with Ramgarh in Bangladesh, providing direct road access to the Chittagong Port, about 80 km away.
- It plays a vital role in enhancing trade and connectivity between the two countries.

Dhola-Sadia Bridge: Bhupen Hazarika Setu (Dhola-Sadiya Bridge), Assam. Spanning 9.15 kilometres over the Lohit River, the Dhola-Sadiya Bridge is India's longest river bridge. Opened in 2017, it connects Assam with Arunachal Pradesh. Thus, Maitri Setu bridge is not the longest bridge of India. **So, Row (3) is not correct.**



33. Consider the following:

1. Bihta
2. Orvakal
3. Shivamogga
4. Kushinagar

Which among above are **not** brownfield airport projects of India?

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only**
- (c) 1, 3 and 4 only
- (d) 1, 2, 3 and 4

EXPLANATION:

In the aviation sector, airport development projects are generally classified into Greenfield and Brownfield categories.

- The main distinction is that Greenfield projects involve the construction of entirely new airports, whereas Brownfield projects focus on the redevelopment or expansion of existing airports.

- Recently, the Central Government approved the first flagship airport project for Bihar, which is a brownfield airport at Bihta, located in the suburbs of Patna, at an estimated cost of ₹459 crore.
- This second airport for Patna will be situated about 25 km from the main city. **So, Statement 1 is correct.**

To reduce congestion at existing urban airports and improve regional connectivity, the Government of India has granted 'in-principle' approval for the development of 21 Greenfield airports across the country. These include:

- Goa: Mop
- Maharashtra: Navi Mumbai, Shirdi, Sindhudurg
- Karnataka: Kalaburagi, Vijayapura, Hassan, Shivamogga
- Madhya Pradesh: Dabra (Gwalior)
- Uttar Pradesh: Kushinagar, Noida (Jewar)
- Gujarat: Dholera, Rajkot
- Puducherry: Karaikal
- Andhra Pradesh: Dagadathi, Bhogapuram, Orvakal (Kurnool)
- West Bengal: Durgapur
- Sikkim: Pakyong
- Kerala: Kannur
- Arunachal Pradesh: Itanagar

Out of these, 12 Greenfield airports have already been operationalized, namely: Durgapur, Shirdi, Sindhudurg, Pakyong, Kannur, Kalaburagi, Orvakal (Kurnool), Kushinagar, Itanagar, Mopa, Shivamogga, and Rajkot.

Thus, Shivamogga, Orvakal and Kushinagar airports comes under greenfield airports (not brownfield airports). **So, Statements 2, 3 and 4 are not correct.**

ADDITIONAL INFORMATION:

GREEN FIELD AND BROWNFIELD AIRPORTS	
Recently in news	The central govt has given in-principle approval for the construction of a greenfield airport in Rajgir and a brownfield airport in Raxaul.
Greenfield Airport	A Greenfield airport is conventionally referred to as an aviation facility being developed on empty land or previously undeveloped land, and an airport whose commissioning, planning & construction process is carried out from the scratch / grass route level. Advantages of Greenfield Airports: ➤ Airport at Greenfield sites can be planned as per the governing guidelines for unrestricted development of the Airport and aircraft movement up to full potential. ➤ Availability of Land for future expansion of Airport. Disadvantages of Greenfield Airports: ➤ Requirement of more time and money for creation of complete new infrastructure at airport as well as Airport connectivity.
Brownfield Airport	A Brownfield airport is conventionally referred to as an airport which has an existing infrastructure for the development of an airport, such as a runway, Terminal Building, etc. Development works are carried out further on these facilities, and additional facilities required for safe aircraft operation are created in a phased manner. Advantages of Brownfield Airports : ➤ Brownfield airport already has airport infrastructure. ➤ As airport infrastructure is already existing at Brownfield airport and it only needs to be upgraded as per requirement, this will lead to cost-effectiveness of airport. ➤ Connectivity is already available to places of importance in a city like offices, hospitals, institutions etc. Disadvantages of Brownfield Airports : ➤ Limited scope for expansion due to landlocked situation. ➤ High cost for acquisition of land for expansion and rehabilitation.

34. Consider the following information:

Sl. no.	Indian commodities	Its major importers
1.	Ores and minerals	China, USA, Oman
2.	Tea	UAE, Iraq, Iran
3.	Electronic goods	USA, China, Netherlands

How many of the above rows is/are correctly matched?

- (a) Only one
- (b) Only two
- (c) All three**
- (d) None

EXPLANATION:

The journey of Indian exports is a result of innovation with global integration. Starting from the Silk Route to post-liberalisation boom, exports have been diversified from spices and textiles to technology, pharmaceutical, and engineering goods.

- Mica, Coal & Other Ores, Minerals including Processed Minerals exports rose by 16.60% in April-August 2025 in comparison to last year.
- The increasing demand of the commodity was also experienced in August-2025, with a growth of 24.57% exports in comparison to last year.

Major Importers: Some of the top countries where India exports processed minerals and their sub-products are China, USA, UK, Oman and Bangladesh. **So, Pair 1 is correct.**

India achieved a significant milestone in the global tea industry, surpassing Sri Lanka to become the world's second-largest exporter of tea in 2024. India's Assam, Darjeeling, and Nilgiri teas rank among the world's finest.

- Black tea leads the country's exports, making up 96% of shipments, while varieties like green, herbal, masala, and lemon tea further enhance India's global reputation.

Major Importers: India exports tea to several countries, with the UAE, Iraq, USA, Russian Federation, and Iran emerging as top destinations. **So, Pair 2 is correct.**

In the last 10 years, production of electronic goods increased 6x and export of electronic goods increased 8x.

- Smartphones remain one of the key growth drivers, with India transforming from a net importer to a net exporter.
- Smartphone exports have crossed INR 1 lakh crore within just five months of FY26, which is 55% higher than the same period in the last fiscal.

Major Importers: Indian electronic goods exports are rising, with major markets including the USA, UAE, China, Netherlands and UK, driven by Make in India and PLI schemes. **So, Pair 3 is correct.**

ADDITIONAL INFORMATION:

INDIA's EXPORT SURGE	
Recently in News	In August 2025, Indian exports registered a positive growth of 4.77% vs. August 2024. Exports increased by 5.19% to USD 346.10 billion in April-August 2025 in comparison to April-August 2024.
India's growth in export	➤ According to World Bank data, the world's exports are growing at 2.5%, whereas India's exports are expanding at 7.1% (2024) outpacing global growth and reflecting the country's strong progress on the international front. ➤ The share of exports in India's GDP has risen from 19.8% in 2015 to 21.2% in 2024, highlighting the growing importance of exports in the Indian economy (World Bank). ➤ India's trade performance has also maintained its growth momentum during the first five months of FY 2025-26.

Exports of other Cereals	➤ “Other cereals” include rye, barley, oats, fonio, quinoa, etc., but exclude wheat, rice, maize, and millet. ➤ The global demand for these cereals is rising due to growing health awareness and preference for nutritious foods. ➤ With India’s rich agricultural diversity, these crops enhance food security and create new export opportunities. Major export destinations: Nepal, Sri Lanka, UAE, Bangladesh, and Bhutan.
Meat, dairy and poultry products	➤ Exports of meat, dairy, and poultry products grew by 20.29% between April and August 2025 compared to the same period last year. ➤ In August 2025 alone, exports increased by 17.69% compared to August 2024. ➤ Growth in exports is supported by government initiatives such as: • Agriculture Export Policy – improves market access and helps farmers tap export opportunities. • Agricultural and Processed Foods Export Promotion Scheme (APEDA) assists businesses in export infrastructure development, quality development and market development. Main importers: Vietnam, UAE, Egypt, Malaysia, and Saudi Arabia.
Engineering goods	➤ Major exports include industrial machinery, such as IC engines and parts, dairy and food-processing machines, textile machinery, boilers, valves, injection molding machines, and ATMs. ➤ Government support through schemes like: • Zero Duty Export Promotion Capital Goods (EPCG) • Market Access Initiative (MAI) Top destinations: USA, UAE, Germany, UK, and Saudi Arabia.
Drugs and pharmaceuticals	➤ India remains a global supplier of affordable generics and specialty drugs ➤ Growth supported by initiatives such as: • Uniform Code for Pharmaceutical Marketing Practices (UCPMP) 2024 • National Medical Devices Policy, 2023 Top buyers: USA, UK, Brazil, France, and South Africa
Textiles	➤ India is the 6th largest textile exporter globally. ➤ Readymade garments remain a key, labor-intensive export sector. ➤ Growth is driven by, • Aatmanirbhar Bharat initiatives promoting domestic value addition • Sustainable practices and focus on high-quality production Major markets: USA, UK, UAE, Germany, Netherlands, and Spain.

35. Consider the following information:

Sl. no.	Landform	Description
1.	Lonar crater lake	A crater formed due to meteorite
2.	The Great Rann of Kachchh	A saline playa
3.	Barren island	India’s only active volcano located in the Nicobar Islands
4.	Mawmluh Cave	A stalactites cave formed during Holocene Epoch

How many of the above rows is/are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three**
- (d) All four

EXPLANATION:

Lonar Crater Lake, located in the Buldhana district of Maharashtra, is a unique and mysterious natural wonder.

- It is the only known saline crater lake in the world, formed by the impact of a meteorite about 50,000 years ago.
- Its water is actually seven times saltier than seawater.
- The lake has a diameter of 1.2 kilometres and a depth of 150 meters, and is surrounded by a rim of hills that rise up to 75 degrees.
- Lonar Lake has been declared a Wildlife Sanctuary for the conservation of the lake. **So, Pair (1) is correct.**



The Great Rann of Kachchh is a very large saline playa. Playas are flat, shallow lake beds that occur in arid and semi-arid climate zones.

- The Great Rann of Kutch, a vast area of salt marshes located in the Thar Desert in Gujarat, India, spans roughly 26,000 square kilometres.
- It is divided into two main parts: the Great Rann of Kutch and the Little Rann of Kutch.
- This region is characterised by its flat, arid landscapes, which transform into a spectacular wetland during the monsoon season. **So, Pair (2) is correct.**



Recently, Minor volcanic eruptions were noticed twice in a span of eight days at Barren Island in the Andaman and Nicobar Islands.

- Situated in the Andaman Sea, Barren Island is approximately 138 kilometres northeast of Sri Vijaya Puram (Port Blair).
- It is renowned for being South Asia's only active volcano, which last erupted in 2017.
- The island spans about 3 square kilometres and is predominantly covered by volcanic cones and ash, with little vegetation visible from afar.

- The rugged terrain, surrounded by crystal-clear waters and coral reefs, creates a stark yet fascinating landscape unlike any other in the Indian subcontinent.
- Therefore, India's only active volcano is located on Barren Island, which lies in the Andaman Islands, not the Nicobar Islands. **So, Pair 3 is not correct.**



Recently, the Meghalayan Age Caves — including the Mawmluh, Arwah, Mawsmmai, and Krem Puri caves have been added to UNESCO's Tentative List for World Heritage status.

- These caves are spread across the Shillong Plateau in the state of Meghalaya, in northeastern India.
- They bear a distinct geological signature of the Holocene epoch.
- The stalactites (long, pointed mineral formations that hang from the ceiling of the cave) and stalagmites found in the Mawmluh Cave have been designated as the Global Boundary Stratotype Section and Point (GSSP) for the Meghalayan Age stage of the Holocene Series.
- Meghalaya is home to some of the world's most intricate cave systems and has more caves than any other region in India. **So, Pair (4) is correct.**



36. Consider the following:

1. Karbi-Anglong plateau
2. Palamu patland plateau
3. Dhupgarh peak
4. Barchans in Jaisalmer

Which of the above landforms are part of the Peninsular Plateau?

- (a) 1, 2 and 4 only
- (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only
- (d) 1, 2, 3 and 4**

EXPLANATION:

The Peninsular Plateau is roughly a triangular landmass surrounded by low mountain ranges.

- The Delhi Ridge in the northwest (an extension of the Aravalis), the Rajmahal Hills in the east, the Gir Range in the west, and the Cardamom Hills in the south collectively mark the outer boundaries of the plateau.
- Beyond these limits, an extension of the plateau is also seen in the northeastern region, represented by the Shillong and Karbi-Anglong Plateaus. These areas, though geographically separated, share the same geological structure and are considered part of the Peninsular Plateau. **So, Statement 1 is correct.**
- The Peninsular India is made up of a series of patland plateaus such as the Hazaribagh plateau, the Palamu plateau, the Ranchi plateau, the Malwa plateau, the Coimbatore plateau and the Karnataka plateau, etc. **So, Statement 2 is correct.**

Based on its relief features, the Peninsular Plateau can be broadly divided into three major units:

- The Deccan Plateau,
- The Central Highlands, and
- The Northeastern Plateau.

Among these, the Satpura Range, forming part of the Deccan Plateau, contains the Dhupgarh Peak — the highest point of the range, rising to about 1,350 metres in Madhya Pradesh. The Satpuras are an integral feature of the Peninsular landmass, stretching from Maharashtra to Madhya Pradesh. Therefore, Dhupgarh Peak is considered as an extension of Peninsular plateau. **So, Statement 3 is correct.**

As part of the Central Highlands, the Peninsular Plateau extends even into its western extremities near Jaisalmer, where it is overlain by longitudinal sand ridges and crescent-shaped dunes (barchans) of the Thar Desert. The presence of metamorphic rocks such as marble, slate, and gneiss in this region further confirms its ancient geological origin as a component of the Peninsular block. **So, Statement 4 is correct.**

37. With reference to coastal plains of India, consider the following statements:

1. The Eastern coastal plain is broader than the Western coastal plain.
2. The Western coast is a submerged coastal plain, making it suitable for the development of ports and harbours.
3. Kayals and deltas are abundant along the Eastern coast.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

EXPLANATION:

A coastal plain is defined as a flat or gently sloping region adjacent to a coastline, formed from marine and fluvial deposits, characterized by varying elevations and features such as marshes and prairies. On the basis of the location and active geomorphological processes, it can be broadly divided into two: the eastern coastal plains and the western coastal plains.

East Coastal plain:

- The East Coastal Plain stretches from the Subarnarekha River in the north to Kanyakumari in the south, covering about 1,500 km in length and an average width of 100 km.
- It is wider than the Western Coastal Plain.
- The deltas of the Mahanadi, Godavari, Krishna, and Kaveri rivers together occupy nearly 25% of this plain. **So, Statement 1 is correct.**

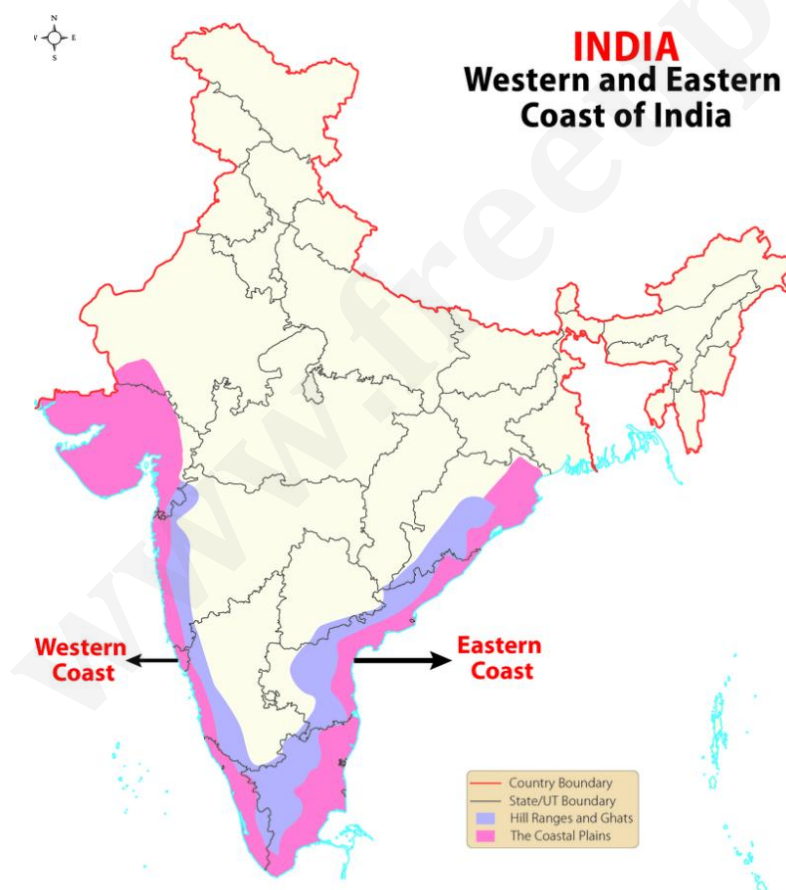
West Coastal Plain:

- The West Coastal Plain extends from the Rann of Kachchh in the north to Kanyakumari in the south.
- It lies between the steep Western Ghats on the east and the Arabian Sea on the west.
- It is narrower than the East Coastal Plain, with an average width of about 65 km, becoming even narrower toward Kanyakumari.
- The western coast is a submerged coastal plain, which makes it ideal for natural ports and harbours
- Major ports include Kandla, Mazagaon, Jawaharlal Nehru Port (Navi Mumbai), Marmagao, Mangalore, and Cochin. **So, Statement 2 is correct.**

The East Coastal Plains have well-developed deltas, formed by rivers flowing eastward into the Bay of Bengal.

In contrast, the Western Coastal Plains are narrow in the middle and become broader toward the north and south. The rivers here are short and swift, and therefore, do not form deltas.

- The Malabar Coast along the western plains has unique features called 'Kayals' (backwaters), which are used for fishing, inland navigation, and have become a major tourist attraction.
- The famous Nehru Trophy Vallamkali (boat race) is held every year in the Punnamada Kayal of Kerala.
- Therefore, while deltas are a characteristic feature of the Eastern Coast, kayals (backwaters) are distinctive to the Western, particularly the Malabar Coast. **So, Statement 3 is not correct.**



ADDITIONAL INFORMATION:

COASTAL PLAINS OF INDIA	
About	➤ India has a long coastline stretching over 5,700 km, mainly comprising regions lying beyond the Western and Eastern Ghats. ➤ The Indian coastline is relatively uniform and regular, with fewer deep inlets or indentations • On the west coast, small inlets form a few natural harbours, such as Mumbai, Marmagao, Cochin, and New Mangalore. • The east coast, in contrast, has very few natural harbours, with Visakhapatnam being a notable exception. ➤ The Western Coastal Plains are well known for the cultivation of spices, while the Eastern Coastal Plains primarily grow rice, palm, areca nut, and coconut ➤ The region's backwaters, lakes, and lagoons provide ideal conditions for fishing and inland navigation. ➤ Historically, the coastal plains have been centres of international trade and commerce since ancient times, linking India with many maritime nations. ➤ Several famous beaches—such as Miramar (Goa), Juhu (Mumbai), Gopalpur-on-Sea and Puri (Odisha), Ramakrishna Beach (Visakhapatnam), and Marina Beach (Chennai)—serve as major tourist attractions. ➤ The Kerala coast is rich in monazite deposits, while the offshore areas of Mumbai hold abundant petroleum reserves, contributing significantly to India's mineral and energy resources.

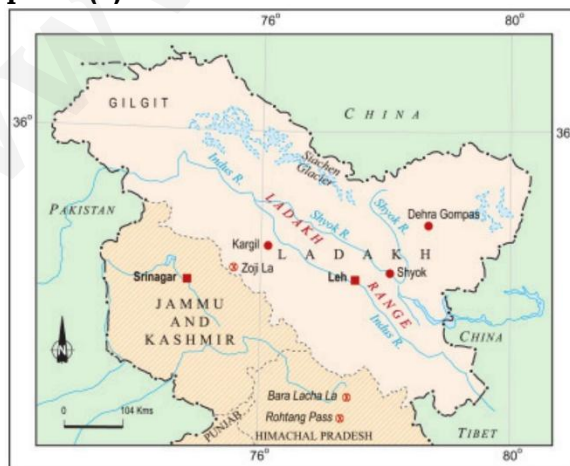
38. Ladakh is a cold desert lying exactly between which one of the following ranges?

- (a) **Greater Himalayas and Karakoram Range**
- (b) Karakoram Range and Pir Panjal Range
- (c) Greater Himalayas and Pir Panjal Range
- (d) Karakoram Range and Shiwalik Range

EXPLANATION:

Ladakh is a cold desert region in northern India, situated between the Karakoram Range in the north and the Zaskar Range (part of the Greater Himalayas) in the south. It shares borders with Jammu and Kashmir to the west and Himachal Pradesh to the south, while its northern and eastern boundaries adjoin Pakistan and China, respectively.

- The altitude in Ladakh ranges from about 3,000 metres in Kargil to more than 8,000 metres in the Karakoram Range.
- Owing to this high altitude, the climate is extremely cold and dry. The air is thin, so the sun's heat feels intense, yet the overall temperatures remain low.
- In summer, daytime temperatures rise just above 0°C, while nights fall well below freezing.
- During winter, temperatures often stay below -30°C, making Ladakh one of the coldest inhabited regions in the world. **So, Option (a) is correct.**



ADDITIONAL INFORMATION:

About	Ladakh is a Union Territory in northern India, covering about 59,000 sq km along the upper Indus River valley. The name Ladakh is derived from the Tibetan words “La” meaning mountain pass and “Dak” meaning country. It is one of the highest inhabited regions in the world, characterized by mountain peaks, high plains, deep valleys, glaciers, and high-altitude lakes. Drainage: • The region is mainly drained by the Indus River and its tributaries. • The Zaskar River flows northward and joins the Indus below Leh, the largest urban centre of Ladakh. Flora and Fauna • Vegetation is sparse due to dryness — only patches of grass and shrubs grow. • Willow and poplar trees are found in valleys; apple, apricot, and walnut trees bloom in summer. • Common birds include robins, redstarts, Tibetan snowcock, ravens, and hoopoes (some migratory). • Animals include wild goats, wild sheep, yaks, and Tibetan dogs.
Geopolitical Significance of Ladakh	Ladakh holds great strategic importance as it borders Pakistan in the west and China in the east. The region has been a long-standing zone of military and territorial tensions. ➤ After the 1949 ceasefire, control of the area was divided between India and Pakistan, marking the beginning of the dispute. ➤ The Siachen Glacier, located in the Karakoram Range, continues to be contested between the two countries. ➤ In 1999, the Kargil War erupted when Pakistani troops infiltrated Indian positions, but they were eventually forced to withdraw. ➤ On the eastern front, Aksai Chin, a part of northeastern Ladakh, has been under Chinese control since the 1962 Sino-Indian War. ➤ Tensions have persisted in recent years, most notably with the Galwan Valley clash in 2020, where Indian and Chinese soldiers engaged in a violent confrontation.
Greater Himalayas (Himadri)	➤ The Greater Himalayas, also known as Himadri, form the innermost and highest range of the Himalayan system. ➤ They contain the world’s tallest peaks, including Mount Everest (8,848 m), Kanchenjunga (8,586 m), and Nanda Devi (7,817 m). ➤ These mountains remain perennially snow-covered and act as the main watershed for several perennial rivers such as the Ganga, Yamuna, and Brahmaputra. ➤ The range is composed mainly of crystalline rocks and represents the youngest fold mountains of the world, formed by the collision of the Indian and Eurasian plates.
Karakoram Range	➤ Situated north of the Greater Himalayas, the Karakoram Range is one of the most rugged and glaciated mountain systems on Earth. ➤ It contains K2 (Mount Godwin-Austen, 8,611 m) — the second-highest peak in the world — and the Siachen Glacier, the largest glacier outside the polar regions. ➤ The Karakoram extends across India, Pakistan, and China and holds immense strategic and geopolitical importance.
Pir Panjal Range	➤ The Pir Panjal Range, part of the Lesser Himalayas, lies south of the Greater Himalayas. ➤ It is known for its dense forests, alpine meadows, and snow-fed passes such as Banihal Pass and Pir Panjal Pass, which connect the Kashmir Valley with the Jammu and Himachal regions. ➤ The Kashmir Valley lies between the Greater Himalayas in the north and the Pir Panjal Range in the south. ➤ The range is mainly composed of sedimentary rocks and experiences heavy snowfall in winter.

Shiwalik Range (Sub-Himalayas)	➤ The Shiwalik Range, also called the Outer Himalayas, forms the southernmost and youngest range of the Himalayas. ➤ These hills are composed mainly of unconsolidated sediments (sandstones, conglomerates, and clays) deposited by rivers from the higher ranges. ➤ The Shiwaliks consist of low-altitude hills (900–1,200 m) and contain longitudinal valleys known as Duns (e.g., Dehra Dun, Patli Dun). ➤ The range acts as a transition zone between the Himalayas and the northern plains.
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39. Consider the following hills:

1. Aravalli hills
2. Nallamala hills
3. Javadi hills
4. Veliconda hills
5. Mahendragiri hills

Which of the above hills are examples of relict and residual mountains ?

- (a) 1, 3 and 4 Only
- (b) 2, 3 and 5 Only
- (c) 1, 2, 4 and 5 Only
- (d) 1, 2, 3, 4 and 5

EXPLANATION:

When mountain ranges are uplifted by tectonic forces, they are slowly worn down by wind, water, and ice over millions of years.

The softer rocks erode quickly, while the harder rocks remain standing. These remaining hard rock portions are called relict or residual mountains. They are the remnants of old mountain ranges that have been mostly worn away by erosion and denudation.

- The Peninsular Block of India is an ancient and stable landmass composed mainly of old gneisses and granites.
- Its northern boundary extends from Kachchh to the Rajmahal Hills, with extensions in Rajasthan, Meghalaya, and the Karbi Anglong Plateau.
- Due to tectonic movements, several rift valleys such as those of the Narmada, Tapi, and Mahanadi rivers were formed, along with block mountains like the Satpuras.
- The region is characterized by residual mountains such as the Aravalli, Nallamala, Javadi, Veliconda, Palkonda, and Mahendragiri Hills, and has shallow river valleys with gentle slopes. **So, Option (d) is correct.**

ADDITIONAL INFORMATION:

CLASSIFICATION OF MOUNTAINS	
Fold Mountains	➤ Mountain ranges mainly consisting of uplifted, folded sedimentary rocks are called fold mountains. ➤ When these rocks are subjected to horizontal compressional forces for millions of years, they get bent into up and down folds. ➤ This leads to the formation of anticlines and synclines. ➤ Such earth movements occur from time to time and lift the folds to a considerable height, which results in the formation of fold mountains.
Block mountains	➤ Block mountains are also formed by the internal earth movements. ➤ When the forces of tension act on the rocks, they create faults in them. ➤ When the land between the two almost parallel faults is raised above the adjoining areas, it forms a block mountain. ➤ It may also occur when land on the outer side of the faults slips down, leaving a raised block between them. ➤ The rocks composing the fault levels may be flat-lying or even folded.
Volcanic Mountains	➤ Due to high temperature deep inside the earth, rocks turn into molten magma. ➤ When this molten rock material is ejected to the earth's surface during a volcanic eruption, it accumulates around the vent and may take the form of a cone.

- The height of the cone increases with each eruption, and it takes the form of a mountain.
- As these mountains are formed by the accumulation of volcanic material, they are known as volcanic mountains or mountains of accumulation.
- Mount Mauna Loa in the Hawaiian Islands, Mount Popa in Myanmar, Mount Vesuvius in Italy, Mount Cotopaxi in Ecuador and Mount Fuji Yama in Japan are examples of volcanic mountains.

40. Consider the following Pairs:

Sl. no.	River	Originates from
1	Vaitarna river	Gujarat
2	Bedti river	Maharashtra
3	Dhadhar river	Madhya Pradesh
4	Kalinadi	Karnataka

How many pairs given above is/are correctly matched?

- (a) Only one
 (b) Only two
 (c) Only three
 (d) All four

EXPLANATION:

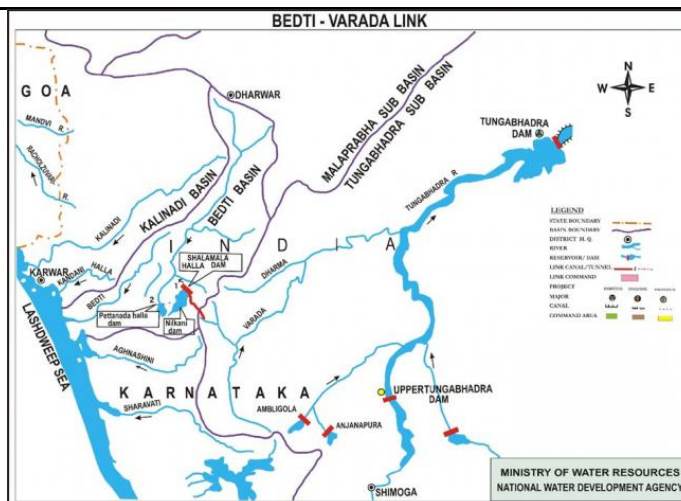
The river Vaitarna is one of the west-flowing rivers in the region North of Mumbai and South of the Tapi River (not Gujarat).

- The river rises in the Sahyadri hill range at Trimbak in the Nasik district of Maharashtra (not Gujarat), and after traversing a distance of about 120 km in Maharashtra towards the west, it joins the Arabian Sea.
- The main tributaries of the Vaitarna River are Pinjal, Ganjai, Surya, Daharji, and Tansa. **So, Pair (1) is not correct.**



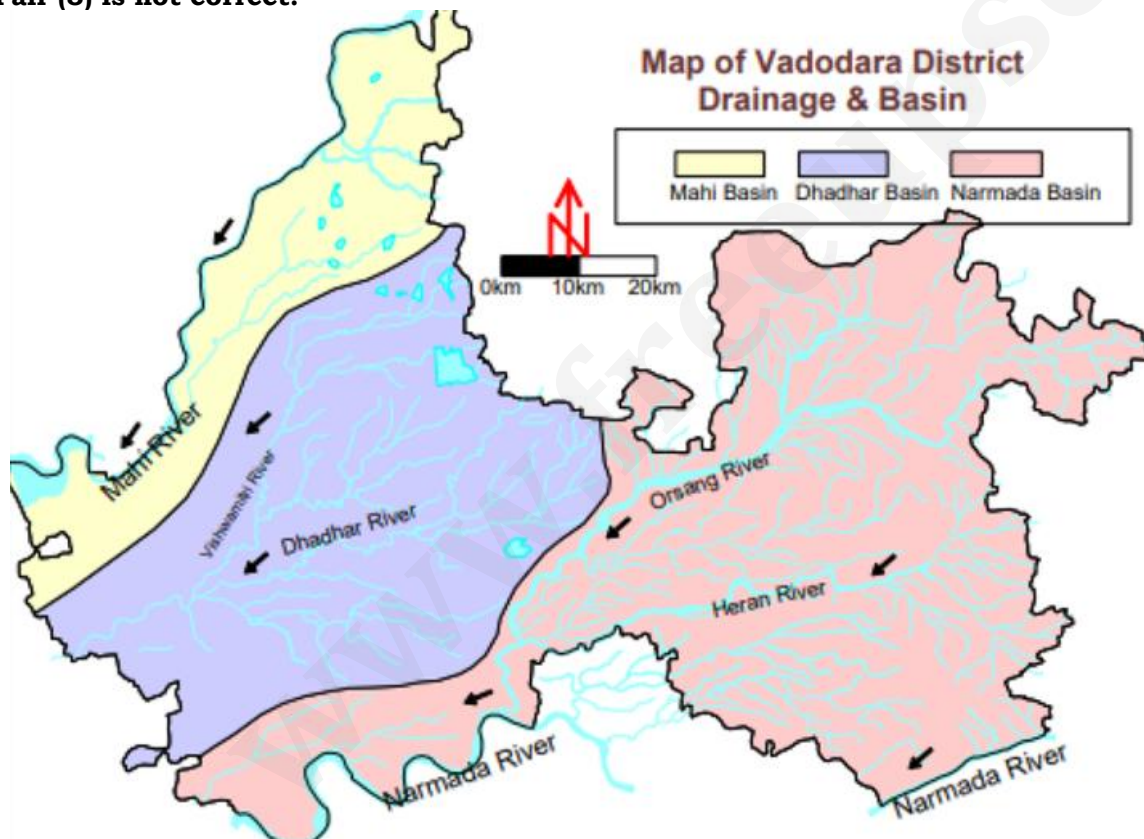
The Bedti River, also known as the Gangavalli River, originates in the Western Ghats, near Hubli in Karnataka (not Maharashtra). It traverses 30 km before joining Shalmala, a tributary from the left at Kalghatgi.

- After the confluence with Shalmala, the river flows in a westerly and south-westerly direction for about 69 km.
- After traversing a total length of 152 km, the river Bedti falls into the Arabian Sea near Gokarna. **So, Pair (2) is not correct.**



The Dhadhar River is one of the west-flowing rivers in Gujarat state (not Maharashtra). It originates from the Pavagadh Hills of Gujarat (not Madhya Pradesh) and flows through Vadodara and Bharuch districts.

- The river Dhadhar flows for 87 km. receives the Vishwamitri tributary from the right bank at Pingalwada village, 500 m upstream of the Gauge and discharge site of Central Water Commission.
- After flowing another 55 km, it falls into the Gulf of Khambhat.
- The total length of the river from its source to outfall in the Gulf of Khambhat is about 142 km. **So, Pair (3) is not correct.**



The west-flowing river Kalinadi, also known as River Kali, originates at an elevation of about 900 metres near Diggi village in the Western Ghats of Karnataka.

After traversing the picturesque landscapes of the Uttara Kannada (U.K.) district, it joins the Arabian Sea at Karwar. Revered as the lifeline of Uttara Kannada, River Kali sustains the rich biodiversity of the Western Ghats and supports the livelihoods of the people in the region. **So, Pair (4) is correct.**



41. Arrange the following hills from North to South:

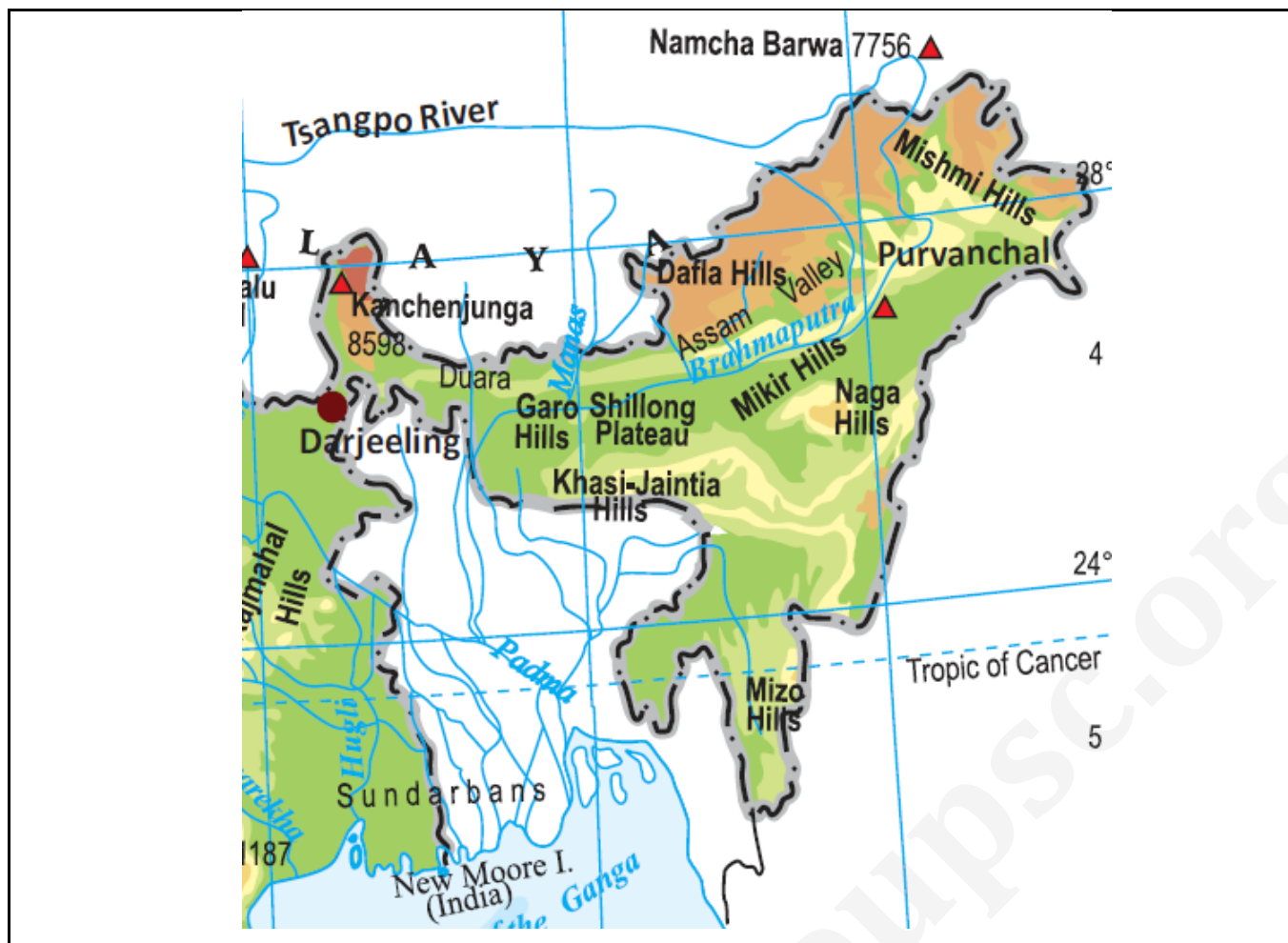
- (a) **Mishmi hills-Dafla hills-Naga hills-Mizo hills**
- (b) Dafla hills-Mishmi hills-Naga hills-Mizo hills
- (c) Mishmi hills-Dafla hills-Mizo hills-Naga hills
- (d) Dafla hills-Mishmi hills-Mizo hills-Naga hills

EXPLANATION:

The North Eastern region of India forms part of the Himalayan mountain system and is known for its diverse geology. It lies within the Himalayan Fold Belt, created by the collision of the Indian and Eurasian tectonic plates. The region features several important hill ranges:

- **Mishmi Hills** – Located at the junction of the Northeastern Himalaya and Indo-Burma ranges in northeastern Arunachal Pradesh, these steep mountains rise from about 400 m near the Brahmaputra plains to over 5,000 m near the India–China border. They have rich vegetation, from subtropical evergreen forests to temperate forests.
- **Dafla (Daphla) Hills** – Found along the Arunachal–Assam border, north of Tezpur and North Lakhimpur, these hills are inhabited by the Dafla tribes. They are bounded by the Aka Hills on the west and the Abor Range on the east.
- **Naga Hills** – Part of the Indo-Myanmar Ranges, these hills extend across Nagaland, Manipur, parts of Arunachal Pradesh, and into northwestern Myanmar.
- **Mizo Hills** – Located in southeastern Mizoram, these hills form part of the Arakan Yoma range. They rise to about 2,125 m (7,000 ft) and are covered with dense evergreen forests. Shifting and terrace cultivation are common in the valleys.

The correct order of the hills arranged from north–south is: Mishmi Hills → Dafla Hills → Naga Hills → Mizo Hills. **So, Option (a) is correct.**



42. Consider the following pairs:

Sl. no.	River	Associated Geographic Areas
1	Jhelum	Pir Panjal Range
2	Ravi	Dhauladhar Range
3	Beas	Kullu Valley
4	Sutlej	Shipki La Pass

How many pairs given above are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

EXPLANATION:

Indian drainage system consists of a large number of small and big rivers. The Jhelum, Ravi, Beas and Sutlej are part of Indus River system.

Jhelum river:

- It is an important tributary of the Indus, rises from a spring at Verinag situated at the foot of the Pir Panjal in the south-eastern part of the valley of Kashmir.
- It flows through Srinagar and the Wular lake before entering Pakistan through a deep narrow gorge. It joins the Chenab near Jhang in Pakistan. **So, Row 1 is correct.**

Ravi river:

- It is another important tributary of the Indus.

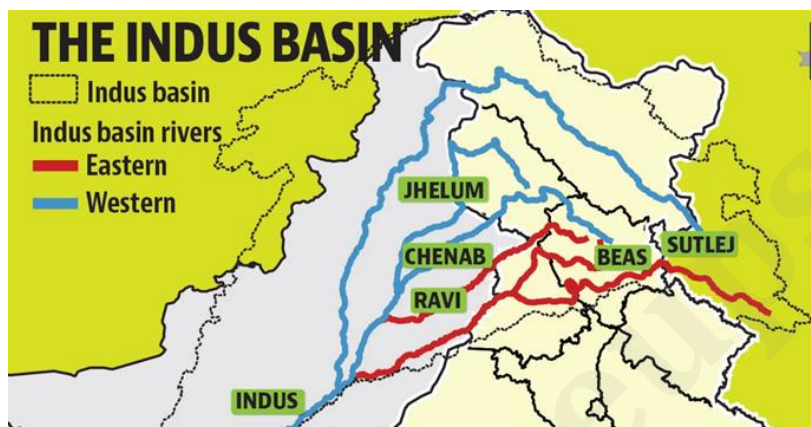
- It rises west of the Rohtang pass in the Kullu hills of Himachal Pradesh and flows through the Chamba valley of the state.
- Before entering Pakistan and joining the Chenab near Sarai Sidhu, it drains the area lying between the southeastern part of the Pir Panjal and the Dhauladhar ranges. **So, Row 2 is correct.**

Beas river:

- It is another important tributary of the Indus, originating from the Beas Kund near the Rohtang Pass at an elevation of 4,000m above the mean sea level.
- The river flows through the Kullu valley and forms gorges at Kati and Lari in the Dhauladhar range.
- It enters the Punjab plains where it meets the Satluj near Harike. **So, Row 3 is correct.**

Satluj river:

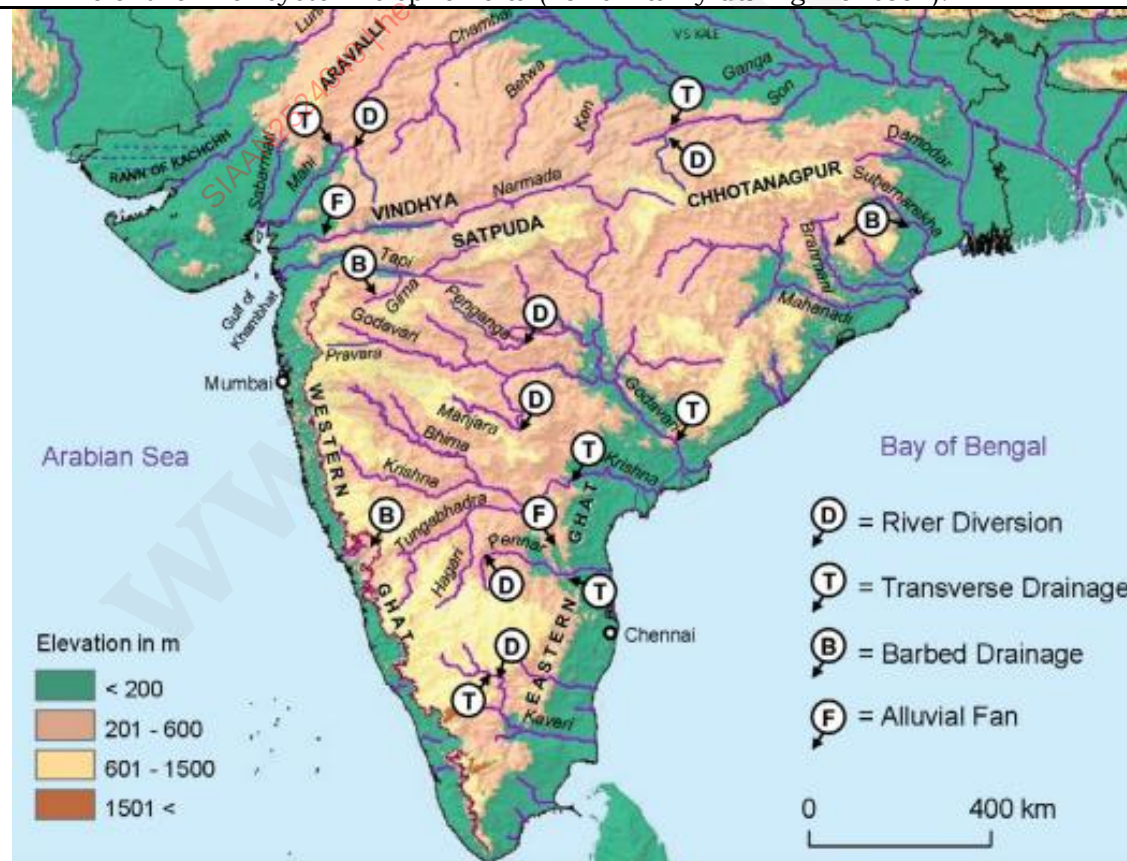
- It originates in the 'Raksas tal' near Mansarovar at an altitude of 4555m in Tibet, where it is known as Langchen Khambab.
- It flows almost parallel to the Indus for about 400 km before entering India, and comes out of a gorge at Rupar.
- It passes through the Shipki La on the Himalayan ranges and enters the Punjab plains. It is an antecedent river.
- It is a very important tributary as it feeds the canal system of the Bhakra Nangal project. **So, Row 4 is correct.**



ADDITIONAL INFORMATION:

MAJOR RIVER SYSTEMS OF THE PENINSULAR DRAINAGE	
Mahanadi	➤ Rises near Sihawa in Raipur district of Chhattisgarh. ➤ Flows through Odisha and discharges its water into the Bay of Bengal ➤ Has a catchment area of about 1.42 lakh sq. km ➤ 53% of its drainage basin lies in Madhya Pradesh and Chhattisgarh, while 47% lies in Odisha. ➤ Some navigation is possible in the lower course of the river.
Godavari	➤ The largest Peninsular river system, also called the Dakshin Ganga. ➤ Rises in the Nasik district of Maharashtra and flows eastward to the Bay of Bengal. ➤ Its tributaries run through Maharashtra, Madhya Pradesh, Chhattisgarh, Odisha, and Andhra Pradesh ➤ Has a length of about 1,465 km and a catchment area of 3.13 lakh sq. km. ➤ Drainage distribution: 49% in Maharashtra, 20% in Madhya Pradesh and Chhattisgarh, and the rest in Andhra Pradesh ➤ Major tributaries: Penganga, Indravati, Pranhita, and Manjra. ➤ Subjected to heavy floods in its lower reaches south of Polavaram, where it forms a picturesque gorge. ➤ Navigable only in its deltaic stretch. ➤ After Rajahmundry, it splits into several branches, forming a large delta.
Krishna	➤ The second-largest east-flowing Peninsular River ➤ Originates near Mahabaleshwar in the Sahyadri Hills. ➤ Has a total length of 1,401 km. ➤ Major tributaries: Koyna, Tungabhadra, and Bhima.

	➤ Catchment area distribution: 27% in Maharashtra, 44% in Karnataka, and 29% in Andhra Pradesh & Telangana.
Kaveri	➤ Originates in the Brahmagiri Hills of Kodagu district, Karnataka (at an elevation of 1,341 m). ➤ Has a length of 800 km and a drainage area of 81,155 sq. km. ➤ Drainage distribution: 3% in Kerala, 41% in Karnataka, and 56% in Tamil Nadu. ➤ Tributaries: Kabini, Bhavani, and Amravati. ➤ The upper catchment receives rainfall during the southwest monsoon, while the lower catchment receives rainfall during the northeast monsoon. ➤ Hence, the river carries water throughout the year with less fluctuation than other Peninsular r
Narmada	➤ Originates on the western flank of the Amarkantak Plateau at an altitude of about 1,057 m. ➤ Flows in a rift valley between the Satpura (south) and Vindhya (north) ranges. ➤ Forms a picturesque gorge in the Marble Rocks and the Dhuandhar Falls near Jabalpur. ➤ Has a length of 1,312 km and a catchment area of 98,796 sq. km. ➤ Empties into the Arabian Sea, south of Bharuch, forming a 27 km long estuary. ➤ The Sardar Sarovar Project is constructed on this river.
Tapi	➤ Another west-flowing river, originating from Multai in Betul district of Madhya Pradesh. ➤ Has a length of 724 km and drains an area of 65,145 sq. km. ➤ Drainage distribution: 79% in Maharashtra, 15% in Madhya Pradesh, and 6% in Gujarat.
Luni	➤ The largest river system of Rajasthan, west of the Aravalli Range. ➤ Originates near Pushkar in two branches—Saraswati and Sabarmati—which join at Govindgarh ➤ Flows westward from the Aravallis, then southwest to join the Rann of Kachchh. ➤ The entire river system is ephemeral (flows mainly during monsoon).



43. The Ganga River is known by this name after which of the following locations?

- (a) Vishnu Prayag
- (b) Karna Prayag
- (c) **Devprayag**
- (d) Rudraprayag

EXPLANATION:

The Ganga originates in the southern Great Himalayas on the Indian side of the India-Tibet border. Its main source stream, the Bhagirathi, rises from the Gangotri Glacier at Gaumukh in Uttarkashi district at an elevation of 3,892 m.

- Other important headstreams include the Alaknanda, Mandakini, Dhauliganga, and Pindar, all originating in northern Uttarakhand.
- Among these, the Alaknanda is the longer stream, while the Bhagirathi is considered the true source of the Ganga.
- The Bhagirathi and Alaknanda join at Devprayag, from where the river is officially known as the Ganga.
- It then flows southwest through the Siwalik Range, emerging from the Himalayas at Rishikesh, and enters the plains at Haridwar.
- The Ganga flows for about 2,525 km, receiving many tributaries along its course, before draining into the Bay of Bengal and forming a vast delta.

Thus, the Ganga originates from the Bhagirathi at Gaumukh, gets the name 'Ganga' at Devprayag after merging with the Alaknanda, and flows eastward through northern India before emptying into the Bay of Bengal. **So, Option (c) is correct.**



ADDITIONAL INFORMATION:

PANCH PRAYAG	
About	The term Prayag means “confluence” (of rivers). The Panch Prayag are five sacred river confluences in Uttarakhand where different rivers meet the Alaknanda on its journey to form the Ganga River. ➤ The Panch Prayag mark the gradual evolution of the Ganga River system, from its headstreams to its main flow. ➤ They represent both geomorphological features (river confluences) and cultural symbols (pilgrimage spots) ➤ The route connecting all these confluences is part of the Char Dham Yatra circuit in Uttarakhand.

- These confluences lie along the Alaknanda valley, which is geologically young, with steep gradients and active erosion.
- The five confluences are:
 - Vishnuprayag — Alaknanda meets Dhauliganga.
 - Nandaprayag — Alaknanda meets Nandakini.
 - Karnaprayag — Alaknanda meets Pindar.
 - Rudraprayag — Alaknanda meets Mandakini.
 - Devprayag — Alaknanda meets Bhagirathi; from here the river is officially the Ganga River.

44. Which of the following statements is correct regarding Lunar Eclipse?

- (a) Moon will be in between the Earth and Sun
- (b) Earth will be in between the Moon and Sun**
- (c) Sun will be in between the Moon and Earth
- (d) Sun, Moon, and Earth are in straight line.

EXPLANATION:

Lunar eclipses occur at the full Moon phase. When **Earth is positioned precisely between the Moon and Sun**, Earth's shadow falls upon the surface of the Moon, dimming it and sometimes turning the lunar surface a striking red over the course of a few hours. Each lunar eclipse is visible from half of Earth. **So, Option (b) is correct.**

There are three types of lunar eclipses depending on how the sun, Earth and moon are aligned at the time of the event.

- **Total lunar eclipse** - The Moon moves into the inner part of Earth's shadow, or the umbra. Some of the sunlight passing through Earth's atmosphere reaches the Moon's surface, lighting it dimly. Colours with shorter wavelengths — the blues and violets — scatter more easily than colours with longer wavelengths, like red and orange. Because these longer wavelengths make it through Earth's atmosphere, and the shorter wavelengths have scattered away, the Moon appears orangish or reddish during a lunar eclipse. The more dust or clouds in Earth's atmosphere during the eclipse, the redder the Moon appears.
- **Partial lunar eclipse** - An imperfect alignment of Sun, Earth and Moon results in the Moon passing through only part of Earth's umbra. The shadow grows and then recedes without ever entirely covering the Moon.
- **Penumbral eclipse** - The Moon travels through Earth's penumbra, or the faint outer part of its shadow. The Moon dims so slightly that it can be difficult to notice.

45. Consider the following pairs:

Sl. no.	Column A	Column B
1	Sutlej and Subansiri rivers	Antecedent Rivers
2	Jhelum and Chambal Rivers	Flows through a Gorge
3	Narmada and Damodar Rivers	Flows through a Rift Valley

How many pairs given above are **not** correctly matched?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None**

EXPLANATION:

Antecedent river drainage develops when the stream exists prior to the topography and the original course of flow is maintained despite the change in the underlying rock structure.

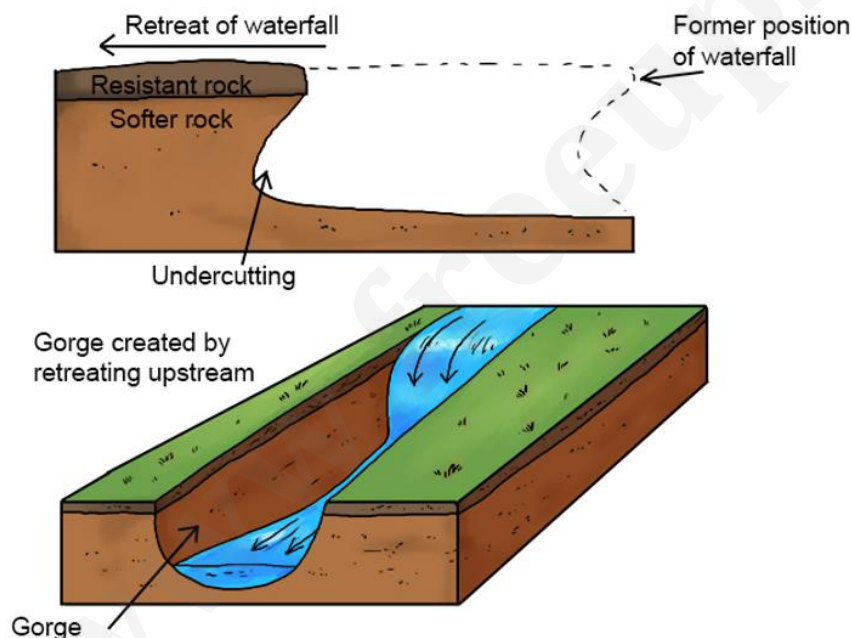
A prominent example is the Himalayan River Indus, Ganga and Brahmaputra, which have their presence before the uplift of the Himalayas and maintain their courses through gorges in the mountain.

- **The Sutlej:** It originates in the 'Raksas tal' near Mansarovar at an altitude of 4,555 m in Tibet where it is known as Langchen Khambab. It is an antecedent river.
- **The Kosi:** It is an antecedent river with its source to the north of Mount Everest in Tibet, where its mainstream Arun rises.
- **The Subansiri:** The Brahmaputra receives numerous tributaries in its 750 km long journey through the Assam valley. Its major left bank tributaries are the Burhi Dihing and Dhansari (South) whereas the important right bank tributaries are the Subansiri, Kameng, Manas and Sankosh. The Subansiri which has its origin in Tibet, is an antecedent river. **So, Pair 1 is correct.**

The Himalayan drainage system has evolved through a long geological history. It mainly includes the Ganga, the Indus and the Brahmaputra river basins.

These rivers pass through the giant gorges carved out by the erosional activity carried on simultaneously with the uplift of the Himalayas. Besides deep gorges, these rivers also form V-shaped valleys, rapids and waterfalls in their mountainous course.

- **The Jhelum:** It is an important tributary of the Indus, rises from a spring at Verinag situated at the foot of the Pir Panjal in the south-eastern part of the valley of Kashmir. It flows through Srinagar and the Wular lake before entering Pakistan through a deep narrow gorge. It joins the Chenab near Jhang in Pakistan.
- **The Chambal:** It rises near Mhow in the Malwa plateau of Madhya Pradesh and flows northwards through a gorge upwards of Kota in Rajasthan. **So, Pair 2 is correct.**



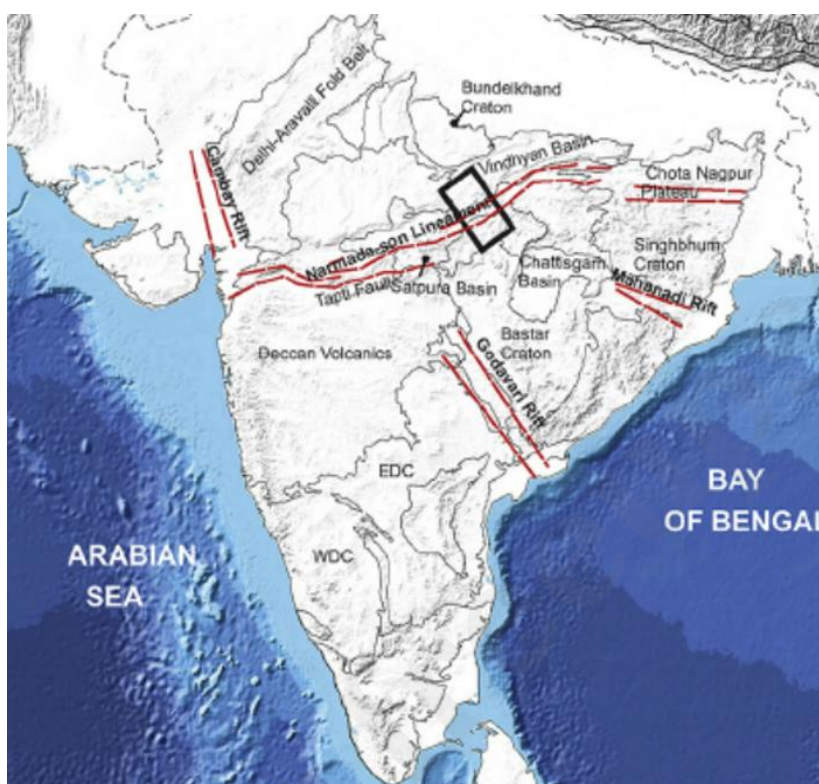
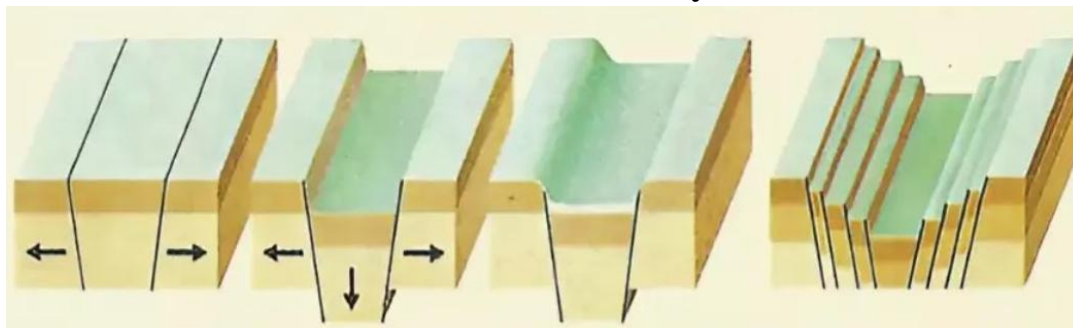
A rift valley is a lowland region that forms where Earth's tectonic plates move apart, or rift. Rift valleys are found on land and at the bottom of the ocean, where they are created by the process of seafloor spreading.

Rift valleys differ from river valleys and glacial valleys in that they are created by tectonic activity and not the process of erosion.

- **The Damodar:** It is a tributary of the Ganga River occupies the eastern margins of the Chotanagpur Plateau where it flows through a rift valley and finally joins the Hugli. The Barakar is its main tributary.
- **The Narmada:** It originates on the western flank of the Amarkantak plateau at a height of about 1,057 m. The Narmada and the Tapi which flow through the rift valley. The Narmada flowing in a

rift valley between the Satpura in the south and the Vindhyan range in the north, it forms a picturesque gorge in marble rocks and Dhuandhar waterfall near Jabalpur. **So, Pair 3 is correct.**

Formation of rift valley



46. Consider the following statements:

Statement I:

Western Rajasthan experiences arid climate conditions.

Statement II:

The Aravalli Range runs parallel to the southwest monsoon winds offering little barrier to rainfall. Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct but Statement-II is not correct
- (d) Statement-I is not correct but Statement-II is correct

EXPLANATION:

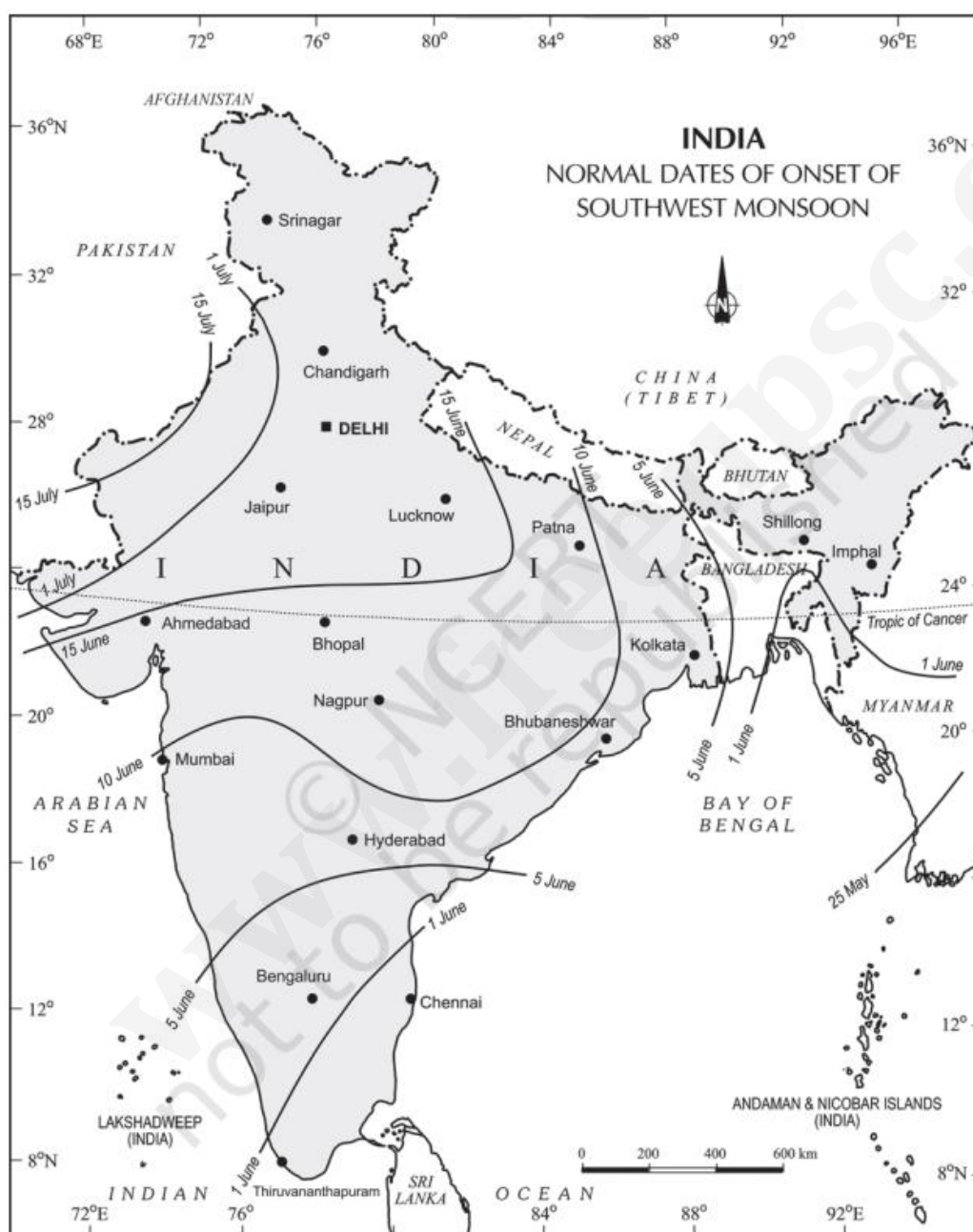
Rajasthan's climate ranges from arid to sub-humid. Western Rajasthan, located in the Thar Desert, is arid, with low rainfall (less than 250 mm), very high summer temperatures (over 45°C), extreme temperature fluctuations, and dry winds.

- These conditions are influenced by the rain shadow effect of the Aravalli Range, the region's distance from the sea, and high evaporation.
- Eastern Rajasthan, beyond the Aravallis, is semi-arid to sub-humid, with better rainfall, higher humidity, and lower wind speeds. **So, Statement I is correct.**

The northwestern portion of Rajasthan is generally sandy and dry, largely covered by the Thar Desert, which extends into adjoining areas of Pakistan.

- The Aravalli Range runs southwest to northeast, almost parallel to the moisture-laden southwest monsoon winds from the Arabian Sea.
- Because of this alignment, the range does not block the monsoon winds, so most of Rajasthan, especially the northwest including the Thar Desert, receives very little rainfall and remains arid.
- Since the Aravalli Range fails to block the monsoon winds and induce rainfall, Western Rajasthan continues to experience a dry and arid climate.

So, Statement-II is correct and Statement-II explains Statement-I.



ADDITIONAL INFORMATION:

THE SOUTHWEST MONSOON	
About	➤ As temperatures rise rapidly in May over the northwestern plains, the low-pressure conditions there intensify. ➤ By early June, these low-pressure zones become strong enough to attract the trade winds from the Southern Hemisphere over the Indian Ocean. ➤ These southeast trade winds cross the equator and enter the Bay of Bengal and the Arabian Sea, getting caught in the Indian air circulation. ➤ Passing over warm equatorial waters, they carry abundant moisture. ➤ After crossing the equator, they shift to a southwesterly direction, which is why they are called southwest monsoons ➤ The onset of the southwest monsoon is abrupt. The first rains cause a substantial drop in temperature and are often accompanied by violent thunder and lightning, termed the “break” or “burst” of the monsoons. ➤ In coastal areas like Kerala, Karnataka, Goa, and Maharashtra, the monsoon may burst in the first week of June, while interior regions may experience its arrival by the first week of July. The day temperatures can drop by 5°C to 8°C between mid-June and mid-July.
Branches of Southwest Monsoon	Arabian Sea Branch: ➤ Originates over the Arabian Sea and splits into three branches: ➤ One branch is obstructed by the Western Ghats. ➤ Another strikes the coast north of Mumbai. ➤ The third reaches the Saurashtra Peninsula and Kachchh, passing over western Rajasthan and along the Aravallis, producing scanty rainfall. Bay of Bengal Branch: ➤ Strikes the coast of Myanmar and southeast Bangladesh. ➤ The Arakan Hills along the Myanmar coast deflect a large portion of this branch towards the Indian subcontinent, distributing rainfall across eastern and northeastern India.

47. Consider the following statements:

Statement I:

During the cold weather season, high pressure develops over the northern plains of India.

Statement II:

This high-pressure area causes the movement of dry continental air from the land to the sea, leading to generally dry conditions over most parts of India.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

(b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I

(c) Statement-I is correct but Statement-II is not correct

(d) Statement-I is not correct but Statement-II is correct

EXPLANATION:

India experiences four main seasons, with some regional variations: the cold weather season (winter), the hot weather season (summer), the advancing monsoon (southwest monsoon), and the retreating monsoon (northeast monsoon).

The Cold Weather Season (Winter): In northern India, the cold weather season begins in late November, with January being the coldest month as the Sun is vertically over the Tropic of Capricorn in the southern hemisphere.

- During this period, the daytime temperatures in the northern plains and mountains remain below 21°C, while nighttime temperatures may drop below freezing, often causing frost damage to standing crops.
- The low temperatures over northern India leads to the development of a weak high-pressure region.
- This high-pressure system is responsible for the offshore northeast monsoon winds, which are cold, dry, and move westward across the northern plains. **So, Statement 1 is correct.**

During the winter season in India, a high-pressure system develops over the northern plains and also over Central and West Asia.

- This system pushes cold, dry air from the land toward the surrounding seas. As a result, most parts of India experience dry weather during this season.
- The cold, dense air moves southward beneath the Himalayas, resulting in dry continental air over the region.
- This is why India has clear skies and very little rainfall in winter, especially over the northern plains. **So, Statement II is correct and Statement II explains Statement I.**

ADDITIONAL INFORMATION:

THE HOT WEATHER SEASON	
About	As the sun appears to move northwards, temperatures in the northern plains rise, marking the onset of spring, which soon gives way to the hot weather season lasting until the end of June. By mid-May, temperatures often reach around 45°C in most parts of the northern plains. Key features of the hot season: ➤ Loo: Hot, dry winds blowing during May and June, especially over the northern plains, causing heat strokes and hundreds of deaths annually. ➤ Dust storms: Afternoon dust storms are common, sometimes accompanied by light rains. ➤ Regional pre-monsoon showers: • In Kerala, these are called “Mango Showers.” • In West Bengal and Assam, they are known as Northwesters or “Kal Baisakhi.” • These showers can occasionally cause significant damage due to strong winds.

48. Consider the following information:

Sl. no.	Type of Soil	Description	Regions found
1	Alluvial Soils	Formed by river deposits; rich in potash and lime but poor in nitrogen	Northern plains
2	Red and Yellow Soils	Reddish colour due to iron oxides; turns yellow when hydrated	Parts of Chotanagpur plateau
3	Laterite Soils	Rich in humus and nitrogen; found in regions of low rainfall and dry climate	Parts of Meghalaya and Assam

How many of the above rows are correctly matched?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

EXPLANATION:

Alluvial Soils:

- They are the most widely spread soil in India. In fact, the entire northern plains are made of alluvial soil. These have been deposited by three important Himalayan river systems the Indus, the Ganga and the Brahmaputra.
- These soils also extend in Rajasthan and Gujarat through a narrow corridor.
- Alluvial soil is also found in the eastern coastal plains particularly in the deltas of the Mahanadi, the Godavari, the Krishna and the Kaveri rivers.

- Alluvial soils are very fertile. Mostly these soils contain adequate proportion of potash and lime which are ideal for the growth of sugarcane, paddy, wheat and other cereal and pulse crops.
- But they are deficient in nitrogen, phosphoric acid and humus and are well supplied with lime. The pH varies from 7.0 to 8.0. **So, Pair 1 is correct.**

Red and Yellow Soils:

- Red and yellow soils are developed on crystalline igneous rocks under conditions of low to moderate rainfall.
- Their distinctive red colour is due to the presence of iron oxides, while the soil appears yellow when hydrated.
- These soils are generally poor in nitrogen, phosphorus, and humus, but rich in iron, and have a neutral pH ranging from 7.0 to 7.5.
- Red and yellow soils are widespread across India. They cover large parts of Tamil Nadu, Karnataka, Andhra Pradesh, Odisha, Chhattisgarh, Madhya Pradesh, southern Maharashtra, and the Chotanagpur plateau.
- Though naturally less fertile, these soils can support crops like cotton, wheat, pulses, millets, and tobacco with the help of irrigation and fertilizers.
- Their widespread distribution and adaptability make them significant for agriculture in peninsular and central India. **So, Pair 2 is correct.**

Laterite Soil:

- Laterite soils develop in areas of high temperature and heavy rainfall. Due to intense leaching, silica is removed, and iron and aluminium compounds accumulate, giving the soil a reddish-brown colour.
- They are generally poor in organic matter, nitrogen, phosphate, and calcium, but rich in iron and aluminium oxides.
- These soils are found in the Western Ghats, parts of Odisha, Jharkhand, Meghalaya, and Assam. **So, Pair 3 is not correct.**

49. Consider the following statements:

1. These soils are normally heavy and black in colour.
2. They are found in the areas of heavy rainfall and high humidity.
3. Organic matter in this type of soil may go up to fifty percent.
4. They can be found in the coastal areas of West Bengal, Odisha and Tamil Nadu.

Which of the following types of soil is described above?

- (a) Red and Yellow Soils
- (b) Black Soils
- (c) Peaty Soils**
- (d) Saline Soils

EXPLANATION:

Peaty or marshy soils are highly organic soils that form through the partial decomposition of plant material in waterlogged and oxygen-deficient environments, which slows down decay and leads to the accumulation of humus.

- These soils develop in regions with heavy rainfall and high humidity, where dense vegetation and continuous moisture promote the buildup of organic matter. **(Statement 2)**
- Such climatic conditions prevent complete oxidation of plant remains, favoring peat formation.

Characteristics of Peat Soil:

- Peaty soils are rich in organic matter and humus but deficient in essential nutrients like potash and phosphate.
- They are highly acidic, with a pH around 4.0, due to the formation of sulphuric acid from oxidized pyrites.
- Peaty soils are dominated by large amounts of decomposed organic material, giving them distinctive physical and chemical properties

Organic Matter Percentage:

- Peaty loam and peaty sand: 20–35% organic matter
- Loamy peat and sandy peat: 35–50% organic matter
- True peat: Over 50% organic matter **(Statement 3)**

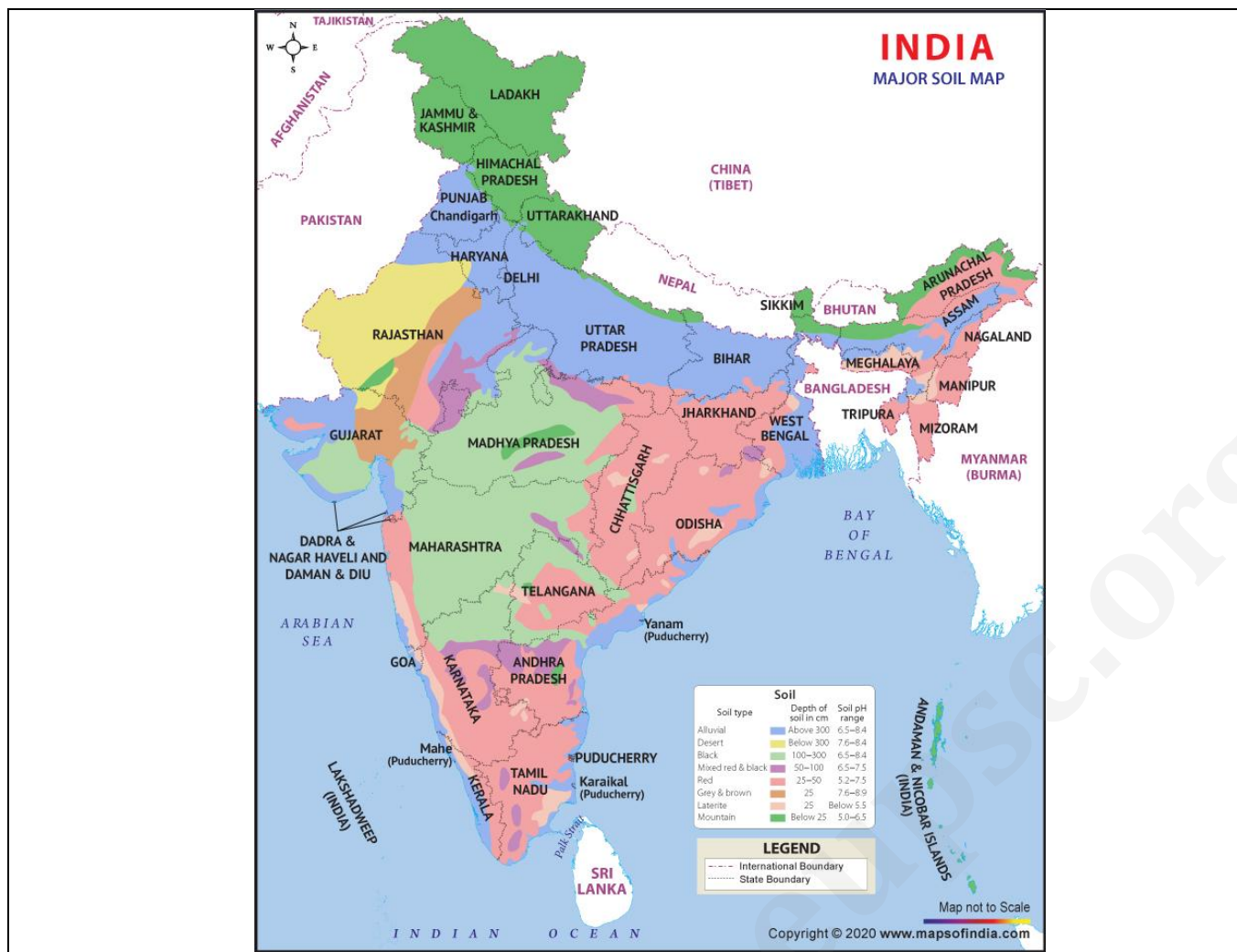
- These soils are typically black in colour, heavy, and sticky in texture. **(Statement 1)**
- They retain water well but have poor drainage and low aeration, which further supports peat accumulation.

Distribution:

- Peaty and marshy soils are found in several parts of India, including Northern Bihar and southern Assam
- Coastal regions of West Bengal, Odisha, and Tamil Nadu
- Kerala, especially in the western parts of Alappuzha and Kottayam districts, where they are locally known as Kari. **(Statement 4) So, Option (c) is correct.**

ADDITIONAL INFORMATION:

TYPES OF SOIL IN INDIA	
Alluvial Soil	➤ Regions: Uttar Pradesh, Bihar, Punjab, Haryana, Assam ➤ Crops: Wheat, rice, maize, sugarcane, oilseeds ➤ Alluvial soil is one of the most fertile soils in India. Deposited by rivers like the Ganga, Brahmaputra, and Indus, it is rich in potash and phosphoric acid, but deficient in nitrogen. It is light, easy to plough, and ideal for irrigation-based farming. ➤ Ideal for: Multiple cropping systems and high-yield crops.
Black Soil	➤ Regions: Maharashtra, Gujarat, Madhya Pradesh, Karnataka ➤ Crops: Cotton, soyabean, jowar, tur, sunflower ➤ Black soil is formed from volcanic rocks and is known for its excellent moisture retention. It develops wide cracks during summer which helps in natural aeration. It is rich in iron, lime, magnesium, but lacks nitrogen and phosphorus. ➤ Ideal for: Cotton farming (also called cotton soil)
Red Soil	➤ Regions: Odisha, Chhattisgarh, Jharkhand, Karnataka, Tamil Nadu ➤ Crops: Groundnut, millets, pulses, oilseeds ➤ Red soil gets its color due to high iron oxide content. It is formed from weathering of crystalline rocks. Red soils are less fertile but respond well to fertilizers and organic matter. ➤ Needs: Regular manuring and moisture management.
Laterite Soil	➤ Regions: Kerala, Goa, West Bengal, Eastern Ghats ➤ Crops: Tea, coffee, cashew, rubber ➤ Laterite soil is rich in iron and aluminum but lacks nitrogen, potassium, and organic matter. It forms in hot, wet tropical areas with heavy rainfall. It is acidic in nature and needs regular manuring. ➤ Ideal for: Plantation crops in hilly and coastal areas.
Desert Soil	➤ Regions: Rajasthan, Haryana, parts of Gujarat ➤ Crops: Bajra, guar, moth, moong ➤ Desert soil is dry, sandy, and low in organic content. It lacks moisture, nitrogen, and retains very little water. With proper irrigation systems like drip and sprinkler, this soil can be converted into arable land. ➤ Needs: Controlled irrigation & organic content boost.
Mountain Soil	➤ Regions: Himachal Pradesh, Uttarakhand, Northeast India ➤ Crops: Tea, fruits (apple, pear), spices, vegetables ➤ Mountain soil forms in steep, hilly terrain. It is rich in humus and organic matter, but prone to erosion. It supports terrace farming and horticultural crops. ➤ Ideal for: Organic farming & fruits.
Peaty and Marshy Soil	➤ Regions: Kerala, coastal West Bengal, parts of Bihar ➤ Crops: Paddy, coconut ➤ Peaty soil is formed in waterlogged and swampy areas. It is high in organic matter, but acidic in nature. Good for paddy and wet crops.



50. Consider the following:

1. Varkala Cliffs
2. Natural Heritage of Tirumala Hills
3. Red Sand Hills, Andhra Pradesh
4. Naga Hill Ophiolite
5. Meghalayan Age Caves

Which of the above-mentioned Natural heritage sites from India have been added to the UNESCO's Tentative List of World Heritage?

- (a) 1, 2 and 5
- (b) 2, 3, 4 and 5
- (c) 1, 3, 4 and 5
- (d) 1, 2, 3, 4 and 5

EXPLANATION:

The United Nations Educational, Scientific and Cultural Organization (UNESCO) plays a vital role in safeguarding the cultural and natural heritage of the world. Its primary objective is to identify, protect, and preserve sites of outstanding universal value to humanity.

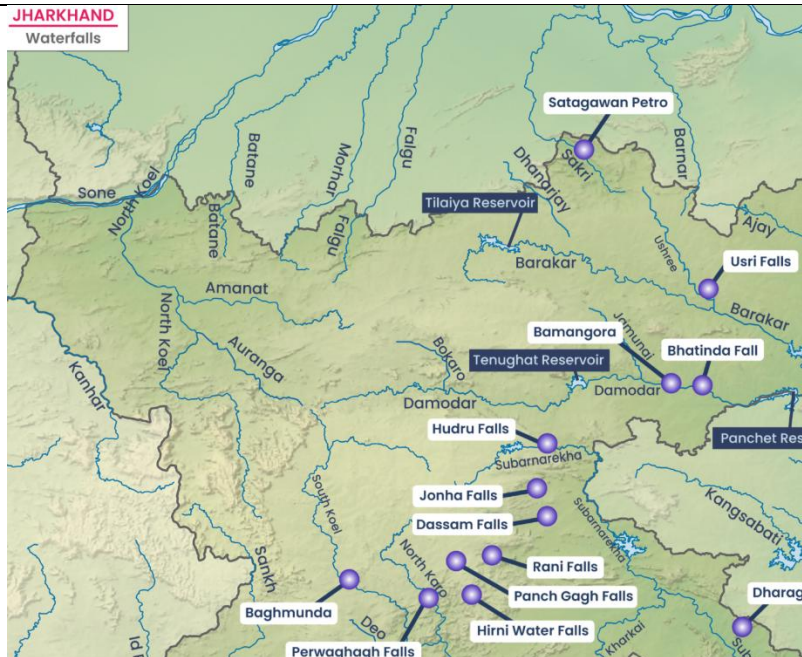
The organization operates under the Convention Concerning the Protection of the World Cultural and Natural Heritage, an international treaty adopted in 1972.

As per UNESCO's protocol, inclusion in a country's Tentative List is a mandatory prerequisite for any site to be nominated for the prestigious World Heritage List. The following are the details of the newly added sites in India:

- **Deccan Traps at Panchgani and Mahabaleshwar, Maharashtra:** Located within the Koyna Wildlife Sanctuary (already a UNESCO World Heritage Site), these areas feature some of the best-preserved lava flows in the world and form part of the vast Deccan Traps.
- **Geological Heritage of St. Mary's Island Cluster, Karnataka:** Famous for its rare columnar basaltic rock formations, this island cluster dates back to the Late Cretaceous period, around 85 million years ago.
- **Meghalayan Age Caves, Meghalaya:** The cave systems, especially the Mawmluh Cave, serve as the global reference point for the Meghalayan Age in the Holocene Epoch, reflecting major climate and geological transitions.
- **Naga Hill Ophiolite, Nagaland:** These hills expose ophiolite rocks, representing oceanic crust uplifted onto continental plates, offering insights into tectonic processes and mid-ocean ridge dynamics.
- **Erra Matti Dibbalu (Red Sand Hills), Andhra Pradesh:** Located near Visakhapatnam, these striking red sand formations display unique paleo-climatic and coastal geomorphological features, revealing Earth's climatic history.
- **Natural Heritage of Tirumala Hills, Andhra Pradesh:** Featuring the Eparchaeon Unconformity and the iconic Silathoranam (Natural Arch), this site represents over 1.5 billion years of Earth's geological history.
- **Varkala Cliffs, Kerala:** The scenic cliffs along Kerala's coastline expose the Warkalli Formation of the Mio-Pliocene age, with natural springs and erosional landforms that hold both scientific and touristic value. **So, Option (d) is correct.**

ADDITIONAL INFORMATION:

UNESCO'S TENTATIVE LIST OF WORLD HERITAGE	
Recently in news	➤ Recently, seven new natural heritage sites from across the country have been included in UNESCO's Tentative List of World Heritage Sites, increasing India's count on the Tentative List from 62 to 69 properties. ➤ With this inclusion, India now has a total of 69 sites under consideration by UNESCO, comprising 49 cultural, 17 natural, and 3 mixed heritage properties.
Tentative list	➤ According to the World Heritage Convention's operational guidelines, a tentative list is an "inventory" of properties a country believes deserves to be a World Heritage Site. ➤ After UNESCO includes a property in the Tentative List, that country has to prepare a nomination document that the UNESCO World Heritage Committee will consider. ➤ In India, the Indian National Commission for Co-operation with UNESCO (INCCU), and the Archaeological Survey of India (ASI) are the bodies which play a key role in this regard.
UNESCO World Heritage Committee	The UNESCO World Heritage Committee meets at least once every year, generally in June/July, to deliberate on the addition, removal, or modification of items on the list of World Heritage Sites. The Committee comprises of 21 members selected from amongst 196 States Parties of the 1972 World Heritage Convention.



Dhuandhar Falls, also known as Duchess Falls, is located in Madhya Pradesh. The falls are formed by the Narmada River, which flows through a narrow gorge before plunging from a height of about 98 feet (30 metres).

- The name “Dhuandhar” is derived from the Hindi words “Dhuan” meaning smoke and “Dhar” meaning waterfall, referring to the mist that rises from the cascading water, creating a smoky appearance.
- The falls also hold cultural significance, being situated near the renowned Marble Rocks of Bhedaghat, which are estimated to be over 1 billion years old. **So, Pair (2) is correct.**



Jog Falls, also locally known as, Geruoppe Falls, Gersoppa Falls, and Jogada Gundi is the second-highest waterfall in India, after Nohkalikai Falls in Meghalaya.

- The term “Jog” itself is derived from the Kannada word meaning “falls.”
- Jog Falls comprises four distinct streams — Raja, Rani, Roarer, and Rocket — which merge to form the majestic cascade.
- It cascades from a height of about 830 feet (253 metres) amidst the dense forests of the Western Ghats.
- The falls are formed by the Sharavathi River, which originates from the Ambuthirtha hills and flows northwest through the Western Ghats before plunging down to create this spectacular waterfall.

So, Pair (3) is correct.



Shivasamudra is a popular waterfall on the river Kaveri (not the Tungabhadra river), located in the Chamarajanagar district, bordering the Mandya district of Karnataka.

- It is the second-largest fall in India and the sixteenth-largest in the world.
- Formerly famous as the Kaveri Falls, it is surrounded by deep forests of the Kaveri Wildlife Sanctuary.
- The Kaveri River forms two branches while flowing down the hill, forming Barachukki and Gaganachukki Falls. Together they form the Shivasamudra Falls. **So, Pair (4) is not correct.**

52. Which among the following protected areas have a higher tiger density in India?

- (a) Kaziranga Tiger Reserve
- (b) Bandipur Tiger Reserve**
- (c) Corbett National Park
- (d) Rathambore National Park

EXPLANATION:

As per the “Status of Tigers in Kaziranga, 2024” report released on International Tiger Day, July 29, 2025, the tiger population at Kaziranga National Park and Tiger Reserve (KNPTR) in Assam has increased by 27, reaching a total of 148 tigers.

- Tiger density refers to the number of tigers living within a specific area, usually expressed as the number of tigers per 100 square kilometres.
- India has 58 tiger reserves spread across 18 states as of March 2025
- With a tiger density of 18.65 per 100 sq km, Kaziranga ranks third globally in tiger density, following closely behind Bandipur Tiger Reserve (19.83) and Corbett National Park (19.56).
- Karnataka’s Bandipur Tiger Reserve tops the chart with a tiger density of 19.83 per 100 sq km, followed by Corbett National Park in Uttarakhand (19.56)
- Corbett, however, has the highest tiger population of 260 to 319, while Bandipur hosts 154 to 191 tigers.

Therefore, among the given options, Bandipur Tiger Reserve has the highest tiger density in India. **So, Option (b) is correct.**



ADDITIONAL INFORMATION:

PROJECT TIGER	
Recently in news	A new study has found that the tiger population in India has increased by 30% over the past two decades.
About	➤ Project Tiger is a flagship conservation initiative launched by the Government of India in 1973 to protect the country's declining tiger population, which was threatened by habitat loss, poaching, and human encroachment. ➤ Over the years, it has evolved into one of the largest and most successful wildlife conservation programs in the world, leading to the establishment of numerous tiger reserves across India. ➤ The project has significantly increased the tiger population, making India home to nearly 75% of the world's wild tigers today.
Key Points of Project Tiger	➤ Launched: 1973 by the Government of India to protect the declining tiger population. ➤ Nodal Agency: Implemented by the National Tiger Conservation Authority (NTCA) under the Ministry of Environment, Forest and Climate Change (MoEFCC). ➤ Objective: Ensure the maintenance of viable tiger populations in their natural habitats and preserve areas of biological importance as part of the natural heritage. ➤ Coverage: As of 2024, India has 57 tiger reserves spread across approximately 83,000 sq km (around 2.5% of India's total geographical area). ➤ Tiger Population Trend: From just 1,411 tigers in 2006, India's wild tiger population surged to 3,682 in 2022, making it home to nearly 75 per cent of the world's wild tigers. ➤ Global Recognition: India achieved the target of doubling its tiger population (as per the St. Petersburg Declaration on Tiger Conservation, 2010) four years ahead of the 2022 deadline. ➤ Recent Initiative: In 2023, India launched the International Big Cats Alliance (IBCA) to promote conservation of seven major big cats globally.

53. Consider the following statements:

Statement I:

The Peninsular rivers are older than the Himalayan rivers.

Statement II:

Peninsular rivers are non-perennial and flow over ancient crystalline rocks.

Statement III:

They exhibit youthful topographic features such as V-shaped valleys and gorges.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Only one of the Statements II and III is correct and that explains Statement I**
- (d) Neither Statement II nor Statement III is correct

EXPLANATION:

The Peninsular drainage system is older than the Himalayan one. This is evident from the broad, largely graded shallow valleys and the maturity of the rivers.

The Western Ghats running close to the western coast act as the water divide between the major Peninsular rivers, discharging their water in the Bay of Bengal and as small rivulets joining the Arabian Sea. **So, Statement I is correct.**

In general, the Peninsular rivers are seasonal (non-perennial) as they primarily depend on rainfall for their flow.

- These rivers traverse ancient crystalline rocks of the Deccan Plateau, which is one of the oldest and most stable landmasses in the world.

- Over time, they have reached a mature stage of geomorphic development, characterized by broad, shallow valleys and well-graded river profiles.
- The fact that Peninsular rivers flow over such ancient crystalline terrain provides clear geological evidence of their greater age compared to the Himalayan rivers, which are much younger and flow through recently uplifted fold mountains.

Therefore, the ancient and stable nature of the landmass on which they flow logically explains why Peninsular rivers are older than the Himalayan ones. **So, Statement II is correct and Statement II explains Statement I.**

The Himalayan (not the Peninsular) drainage system exhibits youthful topographic features like deep gorges; these rivers also form V-shaped valleys, rapids and waterfalls in their mountainous course.

While entering the plains, they form depositional features like flat valleys, ox-bow lakes, flood plains, braided channels, and deltas near the river mouth.

Peninsular rivers are characterised by fixed course, absence of meanders and nonperennial flow of water, which are characteristics of a mature river system. **So, Statement III is not correct.**

ADDITIONAL INFORMATION:

THE EVOLUTION OF PENINSULAR DRAINAGE SYSTEM	
About	Three major geological events in the distant past have shaped the present drainage pattern of Peninsular India: ➤ Subsidence of the Western Flank: During the early Tertiary period, the western part of the Peninsula sank below sea level. This disturbed the original balance of rivers on both sides of the main watershed. ➤ Upheaval of the Himalayas: When the Himalayas were formed, the northern part of the Peninsular block sank, creating deep cracks or trough faults. Rivers like the Narmada and Tapi flow through these faults, carrying rock debris instead of forming deltas or alluvial plains. ➤ Tilting of the Peninsula: A gentle tilt of the land from northwest to southeast caused most rivers to flow eastward towards the Bay of Bengal.
Major Peninsular River Systems	India's Peninsular region has many important rivers. Most of them flow eastward into the Bay of Bengal, while a few flow westward into the Arabian Sea. Below is a brief account of the major river systems: Mahanadi River: The Mahanadi rises near Sihawa in Raipur district, Chhattisgarh, and flows through Odisha to join the Bay of Bengal. • Length: About 851 km • Catchment area: 1.42 lakh sq. km • Basin distribution: 53% in Madhya Pradesh and Chhattisgarh, 47% in Odisha Godavari River: The Godavari, also called the Dakshin Ganga, is the largest Peninsular river. It rises near Trimbak in Nasik district, Maharashtra, and flows eastward to the Bay of Bengal. The river often floods in its lower course near Polavaram and forms a large delta near Rajahmundry • Length: About 1,465 k • Catchment area: 3.13 lakh sq. km • Basin distribution: 49% in Maharashtra, 20% in Madhya Pradesh and Chhattisgarh, rest in Andhra Pradesh • Main tributaries: Penganga, Pranhita, Indravati, and Manjra Krishna River: The Krishna is the second-largest east-flowing Peninsular river. It rises near Mahabaleshwar in the Western Ghats and joins the Bay of Bengal. • Length: About 1,400 k • Catchment area: 2.59 lakh sq. km • Basin distribution: 27% in Maharashtra, 44% in Karnataka, and 29% in Andhra Pradesh and Telangana • Main tributaries: Koyna, Bhima, and Tungabhadra

	Kaveri River: The Kaveri originates from the Brahmagiri Hills in Kodagu (Coorg) district, Karnataka, and flows southeast to the Bay of Bengal. The river flows throughout the year as its basin receives rain from both southwest and northeast monsoons. • Length: About 800 km • Catchment area: 81,155 sq. k • Basin distribution: 3% in Kerala, 41% in Karnataka, and 56% in Tamil Nadu • Main tributaries: Kabini, Bhavani, and Amravati Narmada River: The Narmada rises from the Amarkantak Plateau in Madhya Pradesh at about 1,057 m elevation. It flows through a rift valley between the Satpura and Vindhya ranges and joins the Arabian Sea near Bharuch in Gujarat. It forms the famous Marble Rocks and Dhuandhar Falls near Jabalpur and a 27 km long estuary near its mouth. The Sardar Sarovar Project is built on this river. • Length: About 1,312 km • Catchment area: 98,796 sq. km Tapi River: The Tapi also flows westward. It originates near Multai in Betul district, Madhya Pradesh, and joins the Arabian Sea • Length: About 724 k • Catchment area: 65,145 sq. km • Basin distribution: 79% in Maharashtra, 15% in Madhya Pradesh, and 6% in Gujarat Luni River: The Luni is the largest river of western Rajasthan, lying west of the Aravalli range. It starts near Pushkar, where its two branches, the Saraswati and Sabarmati, meet at Govindgarh. It flows southwest and finally ends in the Rann of Kachchh. The river is ephemeral, meaning it flows only during the monsoon.
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54. Consider the following statements:

Statement I:

Cloudbursts occur when saturated clouds suddenly release heavy rainfall in a short period over a small area.

Statement II:

Cloudbursts are most common in hilly regions due to orographic uplift of moist air.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

(b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I

(c) Statement-I is correct but Statement-II is not correct

(d) Statement-I is not correct but Statement-II is correct

EXPLANATION:

A cloudburst is an extreme weather phenomenon characterized by an intense and sudden downpour of rain, often exceeding 100 mm (4 inches) within an hour over a small area.

- The process begins when warm, moisture-laden air rises and collides with cooler air at higher altitudes.
- As the moist air cools, condensation forms dense, rain-bearing clouds.
- In mountainous regions, these clouds often become trapped by the terrain, preventing the moisture from dispersing gradually.
- Strong upward air currents keep the water droplets suspended within the cloud, and when the cloud reaches its saturation point, it releases the accumulated water suddenly in a violent downpour. **So, Statement I is correct.**

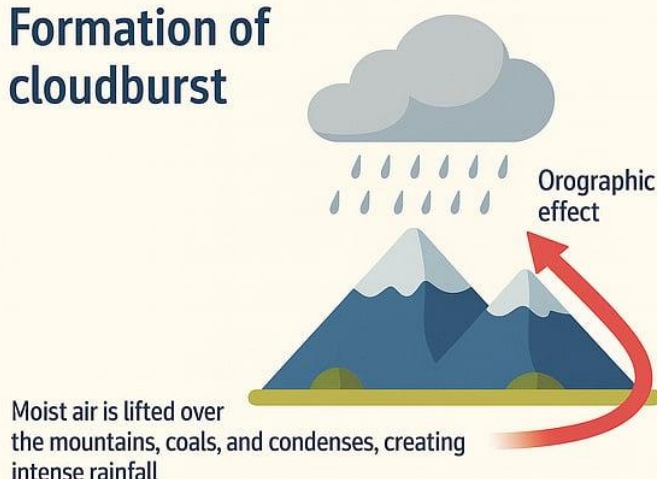
Cloudbursts are most common in hilly regions due to the orographic uplift of moist air.

- While cloudbursts can also occur in plains, they are more frequent in mountainous areas because of the terrain.

- Hilly regions facilitate the vertical rise of heated, moisture-laden air currents, which increases the likelihood of intense condensation and sudden rainfall, leading to a cloudburst.
- Moreover, cloudbursts are generally recorded and recognized when they cause large-scale destruction of life and property, a phenomenon that is more common in mountainous regions due to the steep slopes and concentrated flow of runoff.

Thus, the orographic uplift of moist air in hilly regions is the main physical mechanism behind the formation of cloudbursts. **So, Statement-II is correct, and Statement-II explains Statement-I.**

Formation of cloudburst



ADDITIONAL INFORMATION:

CLOUDBURSTS	
Recently in news	Recently, a cloudburst occurred in Chennai due to intense convective activity — a rarest-of-rare climatic phenomenon for the region.
Types Of Cloudbursts	Category 'A' (CBa): ➤ An intense rainfall event that occurs in the Himalayan mountain ranges and results in flash floods, landslides, and loss of life and property is classified as a Category 'A' cloudburst. ➤ This classification is based on the impact rather than the amount of rainfall. ➤ An example of such an event is the Uttarkashi cloudburst that occurred in the first week of August 2025. Category 'B' (CBb): ➤ Category 'B' cloudbursts are defined as events where the hourly accumulated rainfall is 100 mm or more over a small geographical area. Mini Cloudbursts (MCB): ➤ Mini cloudbursts refer to rainfall events where the two-hourly accumulated rainfall is 50 mm or more. ➤ Although smaller in scale, they can still trigger flash floods and other disasters similar to major cloudburst events.
Impacts of cloud burst	➤ The events of cloud burst can cause flash floods and landslides in hilly regions, as well as large-scale destruction downstream, often with little or no warning. ➤ In the Himalayas, cloudbursts are closely linked with sudden debris flows and flash floods occurring amidst intense rainfall.

Other Forms of Extreme Rainfall	Feature	Cloudburst	Heavy Rainfall Event	Flash Flood
	Definition	≥100 mm/hr. over small area (20–30 km ²)	Intense rainfall but over a larger area and/or longer duration	Sudden flooding caused by heavy rain or dam break
	Scale	Highly localised	Regional or sub-regional	Local or regional
	Duration	Minutes to a few hours	Hours to days	Minutes to hours
	Primary cause	Orographic convection and rapid condensation	Monsoon systems, depressions	Heavy rain + topography + hydrology
	Hazard link	Direct cause of flash floods and landslides	Flooding, waterlogging	May be triggered by cloudbursts or prolonged rainfall

55. Consider the following statements regarding climatic conditions in India:

1. The Great Himalaya Range blocks the cold continental winds from entering India.
2. Easterly jet stream helps in the sudden onset of the monsoon.
3. India's interior region experiences a continental type of climate.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

EXPLANATION:

Temperature decreases with altitude, so the northern end of India, where the Himalayas are, is much colder. Moreover, the Himalayas act as a great climatic divide and determine meteorological conditions in the Indian subcontinent to their south and in the Central Asian highlands to their north. The Great Himalaya Range obstructs the passage of cold continental air from the north into India in winter and also forces the southwesterly monsoon (rain-bearing) winds to give up most of their moisture before crossing the range northward. The result is heavy precipitation (both rain and snow) on the Indian side but arid conditions in Tibet. **So, Statement 1 is correct.**

During summer, due to the apparent shift of the sun in the northern hemisphere, the reversal in upper air circulation takes place. The westerly stream is replaced by the easterly jet stream, which owes its origin to the heating of the Tibetan plateau. This leads to the development of an easterly cold jet stream centred around 15°N latitude and blowing over peninsular India. This helps in the sudden onset of monsoons. **So, Statement 2 is correct.**

The climate of the regions in the country's interior is cut off from the oceanic influence. As a result, they have an extreme or continental type of climate. The Arabian Sea, the Indian Ocean, and the Bay of Bengal surround southern or peninsular India. Hence the climate of coastal regions of India is equable or maritime. **So, Statement 3 is correct.**

ADDITIONAL INFORMATION:

FACTORS INFLUENCING THE CLIMATE OF INDIA	
Location and Latitudinal Extent	➤ India is located roughly between latitudes 6°N and 37°N. The Tropic of Cancer passes through the middle of the country. Due to their proximity to the equator, the southern regions have hot temperatures all year round. On the other hand, the northern regions are located in warm temperate regions. ➤ They consequently endure cold conditions, especially throughout the winter. The climate is milder near the coast of peninsular India because of the water bodies surrounding it.
The Northern Mountain Ranges	➤ India and the rest of Asia are divided by the Himalayan and nearby mountain ranges, which stretch from Kashmir in the north west to Arunachal Pradesh in the north east. ➤ During winter, these hills shield India from the savagely chilly and dry winds of Central Asia. Additionally, they serve as a strong physical barrier that prevents rain-bearing Southwest monsoon winds from entering India's northern borders. These ranges act as a climate barrier between Central Asia and the Indian Subcontinent.
Physiography	➤ In various regions of the nation, physical characteristics affect the air temperature, atmospheric pressure, wind speed, and rainfall.
Monsoon Winds	➤ The complete reversal in the direction of winds over India brings about a sudden change in seasons - the harsh summer season suddenly giving way to the eagerly awaited monsoon or rainy season. These winds, which change their direction completely, are called monsoon winds. ➤ The nature of these winds can be described concerning the surface distribution of pressure in different regions of India during the winter and summer seasons.
Western Disturbances and Tropical Cyclones	➤ Westerly jet streams from the Mediterranean Sea impact the entrance of western disturbances. It affects most of the Northern Plains and Western Himalayan region's winter weather conditions. In the winter, it doesn't rain much. The northern plains' wheat Harvests are thought to benefit significantly from this rain. ➤ Additionally, the Bay of Bengal is where tropical cyclones form. In October, November, and December, these cyclones' frequency and trajectory have an impact on the weather along the eastern coast.
El-Nino	➤ Weather conditions in India are also influenced by El Niño, which causes widespread floods and droughts in tropical regions of the world. El Niño is a narrow warm current that sometimes appears off the coast of Peru in South America. ➤ It is a temporary replacement for the cold Peru current, which generally flows along this coast. Sometimes, it becomes more intense, increasing the surface water temperatures of the sea by 10°C. This warming of tropical Pacific waters affects the global pattern of pressure and wind systems, including the monsoon winds in the Indian Ocean.

56. Consider the following statements:

1. The Aravalli range extends from Gujarat to Delhi, passing through Rajasthan and Haryana.
2. The Satpura Range, part of the Deccan Plateau, spans Maharashtra and Madhya Pradesh.
3. Ajanta is located entirely within the state of Maharashtra.
4. Sahyadri stretches across the states of Gujarat, Maharashtra and Goa only.

How many of the above statements is/are correct?

- (a) Only one
- (b) Only two
- (c) **Only three**
- (d) All four

EXPLANATION:

The Aravallis are the oldest fold mountains on Earth. It spans over 800km from Gujarat to Delhi (through Rajasthan and Haryana). The highest peak in the Aravalli Range is Guru Peak on Mount Abu. The Aravalli Range is rich in natural resources (including minerals) and serves as a check to the growth of the western desert. It gives rise to several rivers, including the Banas, Luni, Sakhi, and Sabarmati. Though heavily forested in the south, it is generally bare and thinly populated, consisting of large areas of sand and stone and of masses of rose-coloured quartzite. **So, Statement 1 is correct.**



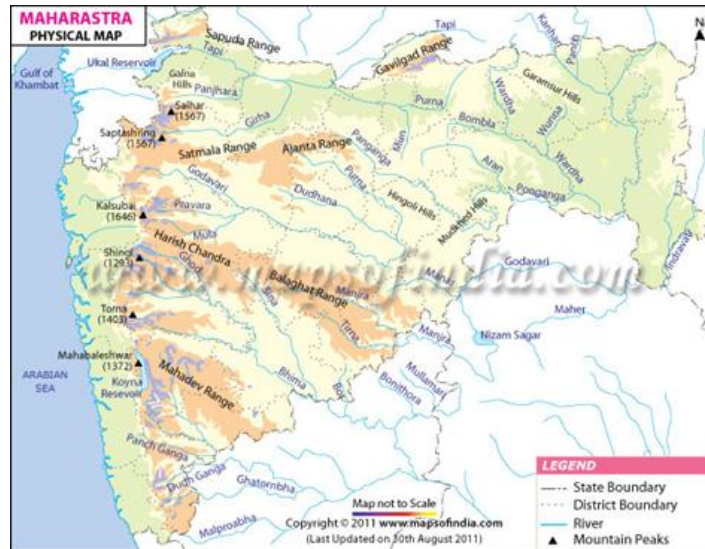
Satpura Range, range of hills, part of the Deccan plateau, western India. The hills stretch for some 560 miles (900 km) across the widest part of peninsular India, through Maharashtra and Madhya Pradesh states. The range, the name of which means “Seven Folds,” forms the watershed between the Narmada (north) and Tapi (south) rivers. With peaks more than 4,000 feet (1,200 metres) high, the Satpura Range includes the Mahadeo Hills to the north, the Maikala Range to the east, and the Rajpipla Hills to the west. **So, Statement 2 is correct.**



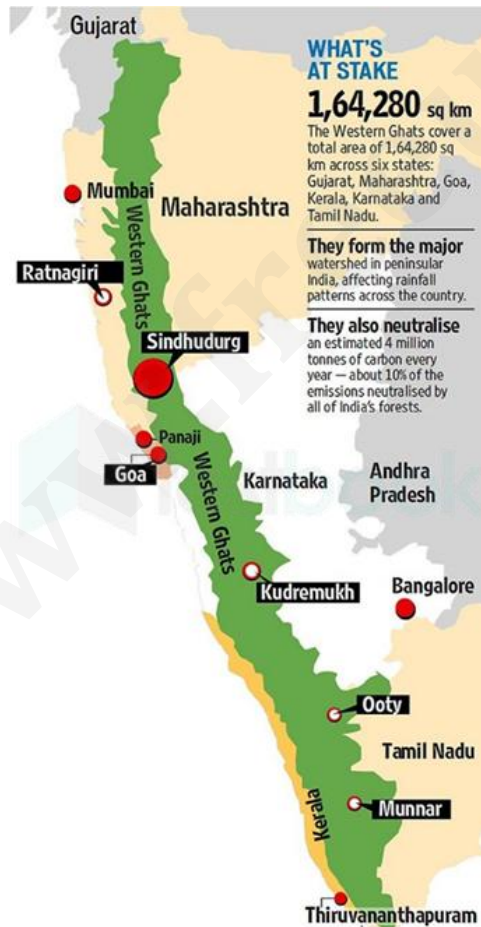
Satpura range



Ajanta Hills or Ajanta Range are rounded elevations of limited extent rising above the surrounding land with local relief of less than 300m. It's entirely located within the state of Maharashtra. Ajanta Hills experience a Tropical dry savanna climate. **So, Statement 3 is correct.**



Sahyadri, also known as the Western Ghats, is a mountain range that runs parallel to the western coast of India. It stretches approximately 1,600 kilometres across the states of Maharashtra, Goa, Karnataka, Tamil Nadu, and Kerala. The Sahyadri range is characterized by rugged terrain, rolling hills, and lush forests. It plays a crucial role in shaping the climate patterns of the region, influencing rainfall and temperature. **So, Statement 4 is not correct.**



57. Consider the following pairs:

Sl. no.	River	Major Tributary
1	Mahanadi	Seonath
2	Godavari	Tungabhadra
3	Krishna	Bhima
4	Cauvery	Hemavati

How many of the above pairs is/are **not** correctly matched?

- (a) **Only one**
- (b) Only two
- (c) Only three
- (d) All four

EXPLANATION:

Mahanadi River, a river in central India, rising in the hills of Chhattisgarh state and flowing eastward through Odisha state.

- The Mahanadi is one of the most active silt-depositing streams on the Indian subcontinent.
- Its upper course runs northward as an insignificant stream, draining the eastern Chhattisgarh Plain and flowing past the state's capital, Raipur.
- After receiving the Seonath or Shivenath River (Major tributary), below Baloda Bazar, the Mahanadi turns eastward and enters Odisha state, its flow augmented by the drainage of hills to the north and south.
- In this part of its course, the river is joined by the Jonk, Hasdeo, and Mand tributaries. **So, Pair 1 is correct.**



The Godavari River is the largest river in peninsular India and known as the 'Dakshina Ganga'. The River rises in the Sahyadris, at an altitude of 1,067 m above mean sea level near Trimbakeshwar in the Nashik district of Maharashtra and flows across the Deccan Plateau from the Western to the Eastern Ghats.

The main river forms the inter-state boundary between the States of Telangana and Maharashtra, and Telangana and Chhattisgarh.

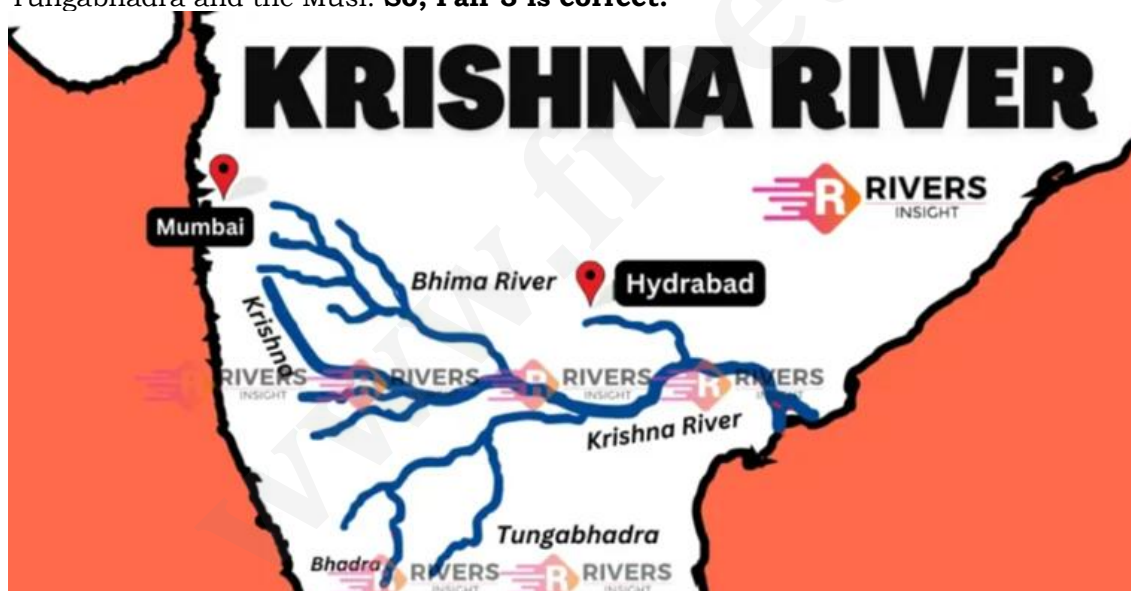
The Pravara, Manjira and Maner are right bank tributaries covering about 16.14%, the Purna, Pranhita, Indravathi, and Sabari are important left bank tributaries, covering nearly 59.7% of the total catchment area of the basin.

Tungabhadra is a tributary of the river Krishna. **So, Pair 2 is not correct.**



Krishna River, a river of south-central India. The river rises in western Maharashtra state in the Western Ghats range near the town of Mahabaleshwar, not far from the coast of the Arabian Sea.

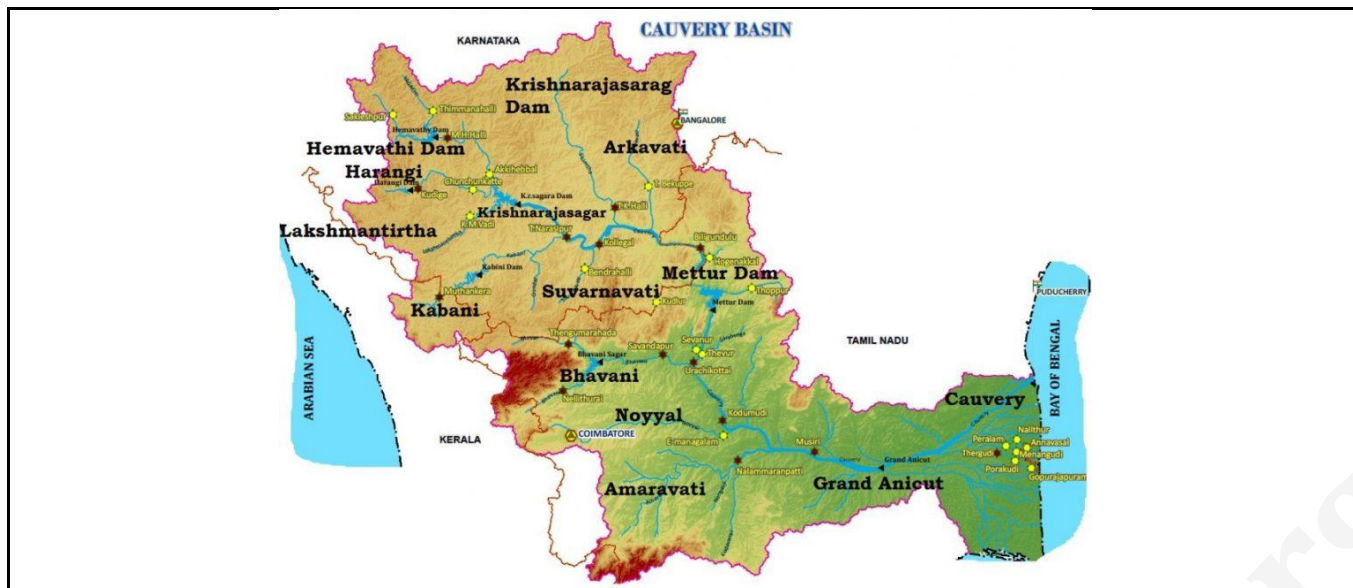
- It flows east to Wai and then in a generally southeasterly direction past Sangli to the border of Karnataka state. There the river turns east and flows in an irregular course across north-central Karnataka and then to the southeast and into southwestern Telangana state.
- It then veers southeast and then northeast, forming a portion of the border with Andhra Pradesh state. Turning east it flows into Andhra Pradesh to its delta head at Vijayawada, and from there flows southeast and then south until it enters the Bay of Bengal.
- The principal tributaries joining Krishna are the Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra and the Musi. **So, Pair 3 is correct.**



The Cauvery rises at Talakaveri on the Brahmagiri Range of Hill in the Western Ghats, presently in the Coorg district of the State of Karnataka, at an elevation of 1,341m (4,400 ft.) above mean sea level.

The principal tributaries of Cauvery in Karnataka are the Harangi, the Hemavathy, the Lakshmanathirtha, the Kabini, the Shimsha, the Arkavathi and the Suvarnavathy.

All these rivers except the Kabini River, Arkavathy River and Suvarnavathy River rise and flow fully in Karnataka. **So, Pair 4 is correct.**



58. Which one of the following is the correct sequence of the given hills starting from the north and going towards the south?
- Nallamalai Hills – Nilgiri Hills – Javadi Hills – Anaimalai Hills
 - Anaimalai Hills – Javadi Hills – Nilgiri Hills – Nallamalai Hills
 - Nallamalai Hills – Javadi Hills – Nilgiri Hills – Anaimalai Hills**
 - Anaimalai Hills – Nilgiri Hills – Javadi Hills – Nallamalai Hills

EXPLANATION:

Nallamala Range is a series of parallel hills and valleys forming part of the Eastern Ghats in eastern Andhra Pradesh, southern India.

- Located south of the Krishna River, the hills run in a north–south direction, parallel to the Coromandel Coast along the Bay of Bengal.
- The range stretches for about 430 km, with its northern boundary in the Palnad Basin and the southern boundary in the Tirupati Hills.
- Approximately 31 km wide, the Nallamala Range rises to an average elevation of 900–1,100 metres.
- The rugged, sparsely populated hills are composed mainly of jumbled quartzites and slates, exemplifying the mountain scenery of the Eastern Ghats.



Jawadhu Hills, one of the largest hill ranges of the Eastern Ghats, lie in northern Tamil Nadu.

- About 80 km wide and 32 km long, they are divided into eastern and western sections by the Cheyyar and Agaram rivers, both tributaries of the Palar River.
- The hills consist of bluish-grey granites, with peaks averaging 1,100–1,150 metres.
- Their steep southeastern slopes are forested with sandalwood. The region is sparsely populated, and grains, legumes, and oilseeds are the chief crops.



Nilgiri Hills, a mountainous region of Tamil Nadu state located in southeastern India.

- The peaks of the Nilgiri rise abruptly from the surrounding plains to an elevation of about 1,800–2,400 meters; one of them, Doda Betta, 2,637 meters, is the highest point in Tamil Nadu.
- Part of the Western Ghats, the hills are separated from the Karnataka Plateau (north) by the Noyar River and from the Anaimalai and Palni hills (south) by the Palghat Gap.
- They are considerably cooler and wetter than the surrounding plains, the upper hills forming undulating grassy downs.
- Tea, cinchona (whose bark yields quinine), coffee, and vegetables are grown extensively.



Anamalai Hills, a mountain range in the Western Ghats of Tamil Nadu, lie at the junction of the Eastern and Western Ghats.

- They have a general northwest–southeast trend.
- Anamudi (2,695 m), located at the southwestern end, is the highest peak in southern India.
- The range was formed by fault-block movements during the Holocene Epoch (about the last 11,700 years).
- The hills descend in a series of terraces about 1,000 metres high, and are largely covered by dense monsoon forests containing rosewood, sandalwood, teak, and sago palms.
- Tea, coffee, and rubber plantations are found where the forests have been cleared.



Therefore, from the above description and map, the correct sequence of the given hills starting from the north and going towards the south is **Nallamala Hills → Javadi Hills → Nilgiri Hills → Anaimalai Hills. So, Option (c) is correct.**

59. Which one of the following is the correct sequence of the given Indian cities in the decreasing order of their average annual rainfall?

- (a) Kochi – Kolkata – Delhi – Patna
- (b) Kolkata – Kochi – Patna – Delhi
- (c) **Kochi – Kolkata – Patna – Delhi**
- (d) Kolkata – Kochi – Delhi – Patna

EXPLANATION:

Kochi, a city and major port on the Malabar Coast of the Arabian Sea, is in west-central Kerala.

- Also, the name of a former princely state, “Kochi”, is sometimes used to refer to a cluster of islands and towns, including Ernakulam, Mattancheri, Fort Cochin, Willingdon Island, Vypin Island, and Gundu Island.
- The urban agglomeration includes the localities of Trikkakara, Eloor, Kalamassery, and Trippunithura.
- In Kochi, summers are hot, and winters are mild.
- The average annual rainfall is **3099.1 mm** with 132 average annual rainy days.

Kolkata, city, capital of West Bengal state, and former capital (1772–1911) of British India. It is one of India’s largest cities and one of its major ports.

- The city is centred on the east bank of the Hugli (Hooghly) River, once the main channel of the Ganges (Ganga) River, about 154 km upstream from the head of the Bay of Bengal; there, the port city developed as a point of transshipment from water to land and from river to sea.
- A city of commerce, transport, and manufacture, Kolkata is the dominant urban centre of eastern India.
- The city experiences a tropical wet and dry climate.
- It gets its annual rainfall in the months of July and August and is cyclone-prone.
- The annual average rainfall of Kolkata is around **1600 mm**.

Patna, city, capital of Bihar state, northern India. It lies about 290 miles (470 km) northwest of Kolkata (Calcutta). Patna is one of the oldest cities in India. During the Mughal period, it was known as Azimabad.

- It is a riverside city that extends along the south bank of the Ganges (Ganga) River for about 19 km.
- The city has a humid subtropical climate.
- The city experiences extremely hot summers between March and June, and from late June to late September is the monsoon season.
- And freezing winter is between late October and early February.
- The city receives rainfall from both the southwest and northeast monsoons and has an annual average precipitation of **1,100 mm**.
- Patna falls under Seismic Zone IV, which is a high-risk earthquake zone.

Delhi, city and national capital, and union territory, north-central India. The city of Delhi actually consists of two components: Old Delhi, in the north, the historic city; and New Delhi, in the south, since 1947, the capital of India, built in the first part of the 20th century as the capital of British India.

- One of the country's largest urban agglomerations, Delhi sits astride (but primarily on the west bank of) the Yamuna River, a tributary of the Ganges (Ganga) River, about 160 km south of the Himalayas.
- The climate of Delhi is characterised by extreme dryness, with intensely hot summers.
- It is associated with a general prevalence of continental air, which moves in from the west or northwest, except during the season of the monsoon, when an easterly to southeasterly influx of oceanic air brings rain and increased humidity.
- The monsoon season normally begins in July and continues until the end of September.
- It is during these months that Delhi receives the bulk of its rainfall—roughly 23 inches (600 mm), or nearly three-fourths of the annual average.
- The dry winter season extends from late November to mid-March.
- The Annual average rainfall of Delhi is around **775 mm**.

Therefore, from the above, the correct sequence of the given Indian cities in the decreasing order of their normal annual rainfall is

- Kochi with annual rainfall of **3099.1 mm**
- Kolkata with annual rainfall of **1600 mm**
- Patna with annual rainfall of **1100 mm**
- Delhi with annual rainfall of **775 mm** So, **Option (c) is correct.**

60. Consider the following statements:

1. Assam Shares a border with Bhutan and Bangladesh.
2. West Bengal shares a border with Bhutan and Nepal.
3. Mizoram shares a border with Bangladesh and Myanmar.

Which of the statements given above are correct?

- (a) **1, 2 and 3**
- (b) 1 and 2
- (c) 2 and 3
- (d) 1 and 3

EXPLANATION:

- Assam, a state in northeastern India, is bounded:
 - North: by Bhutan and Arunachal Pradesh
 - East: by Nagaland and Manipur
 - South: by Mizoram and Tripura
 - West: by Bangladesh, Meghalaya, and West Bengal (via a narrow corridor near the Siliguri region).
- The name Assam is said to be derived from the word asama, meaning “peerless” in the now extinct Ahom language.
- The neighbouring states of Arunachal Pradesh, Nagaland, Mizoram, and Meghalaya were once part of Assam.
- The capital, formerly Shillong (now the capital of Meghalaya), was shifted to Dispur, a suburb of Guwahati.
- Assam shares an International Boundary with Bhutan and Bangladesh.
 - The India (Assam)-Bhutan Boundary stretches to a total of 265.8 KM
 - The India (Assam)-Bangladesh boundary stretches a total of 263 KM. **So, Statement 1 is correct.**



- West Bengal, a state in eastern India, is bounded:
 - North: by Sikkim and Bhutan
 - Northeast: by Assam
 - East: by Bangladesh
 - South: by the Bay of Bengal
 - Southwest: by Odisha
 - West: by Jharkhand and Bihar
 - Northwest: by Nepal
- West Bengal has a peculiar configuration; its breadth varies from 320 km at one point to hardly 16 km at another. Its roughly 2,200-km frontier with Bangladesh, neither natural nor well defined, is of strategic importance.
- It shares international borders with three countries: Bangladesh to the east, Nepal to the northwest, and Bhutan to the north. **So, Statement 2 is correct.**



- Mizoram, located in northeastern India, is bounded:
 - East and South: by Myanmar (Burma)
 - West: by Bangladesh
 - Northwest: by Tripura
 - North: by Assam
 - Northeast: by Manipur
- Mizoram ("Land of the Mizos") was known as the Lushai Hills District of Assam before it was renamed the Mizo Hills District in 1954.
- In 1972, it became a centrally administered union territory under the name of Mizoram, and in 1987, it achieved statehood. **So, Statement 3 is correct.**



61. Which one of the following is the most widespread type of forest in India?

- (a) Tropical wet evergreen
- (b) Thron scrub
- (c) Mangrove
- (d) **Tropical dry deciduous**

EXPLANATION:

Tropical Wet Evergreen Forests:

- Found mainly in the Western Ghats, Andaman and Nicobar Islands, and parts of northeastern India (including Assam, Arunachal Pradesh, Nagaland, and Meghalaya).
- Occur in regions receiving more than 200 cm of annual rainfall.
- Occupy a limited area, primarily along the windward slopes of the Western Ghats and in northeastern hill regions. **So, Option (a) is not correct.**

Thorn (Scrub) Forests and Shrubs:

- Found in arid and semi-arid regions, particularly in Rajasthan, parts of Gujarat, southwest Punjab, and southwest Haryana.
- Develop in regions receiving less than 70 cm of rainfall.
- Vegetation consists mainly of thorny trees and bushes such as babul, acacia, and khejri. **So, Option (b) is not correct.**

Mangrove Forests:

- Found along coastal areas and river deltas, especially in the Sundarbans (West Bengal), Mahanadi, Godavari, Krishna, and Kaveri deltas, as well as along the Andaman and Nicobar coasts.
- Occupy a very limited area, adapted to saline and tidal conditions.
- Characterized by species like sundari, rhizophora, and avicennia. **So, Option (c) is not correct.**

With respect to India, tropical deciduous forests are the most widespread forests in the country. They are also known as monsoon forests and occur in regions receiving 70 to 200 cm of annual rainfall. The trees of this forest type shed their leaves for about six to eight weeks during the dry summer. Based on the availability of water, these forests are further divided into moist deciduous and dry deciduous types..

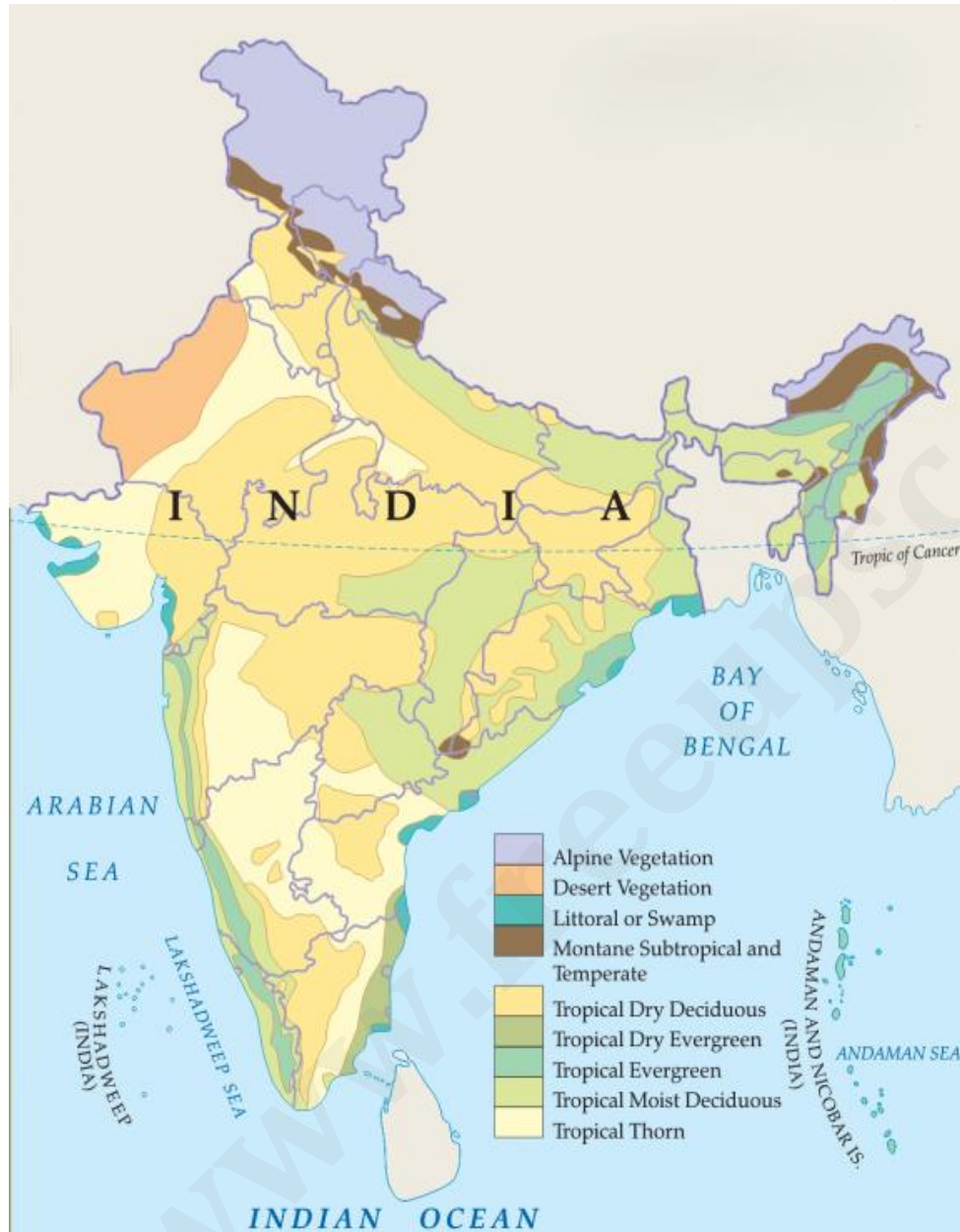
The Tropical moist deciduous:

- Found in areas receiving 200–100 cm rainfall.
- Major regions: Northeastern states, foothills of the Himalayas, Jharkhand, West Odisha, Chhattisgarh, and the eastern slopes of the Western Ghats.
- Teak is the dominant species.
- Other important trees: bamboo, sal, shisham, sandalwood, khair, kusum, arjun, and mulberry.commercially important species.

The Tropical dry deciduous forests:

- Found in regions with 100–70 cm rainfall.

- Common in the rainier parts of the Peninsular plateau and the plains of Bihar and Uttar Pradesh.
 - These forests have open stretches with teak, sal, peepal, and neem.
 - Large areas have been cleared for agriculture or used for grazing.
 - Wildlife: lion, tiger, pig, deer, elephant, and a variety of birds, lizards, snakes, and tortoises..
- Therefore, from the above description and the map, it can be concluded that among all forest types in India, the Tropical Dry Deciduous Forests are the most widespread. **So, Option (d) is correct.**



62. Consider the following conditions:

- Mean annual temperature of about 22°C
 - Annual precipitation exceeding 200 cm
 - Vegetation dominated by broad-leaved trees forming a dense upper canopy
- Which one of the following forest types is most likely to be found under the above conditions?

- Semi-evergreen forest
- Tropical evergreen forest**
- Tropical deciduous forest
- None of the above

EXPLANATION:

- Semi-evergreen forests (west coast semi-evergreen forests) are generally considered as a transitional stage between evergreen and moist deciduous forests.
- The semi evergreen forests are found in the less rainy parts of these regions.
- It is also found in localities where the evergreen forests are subjected to high disturbances.
- The undergrowing climbers provide an evergreen character to these forests.
- Main species are white cedar, hollock and kail. **So, Option (a) is not correct.**

Tropical evergreen forests are mainly found on the western slopes of the Western Ghats, the hills of northeastern India, and the Andaman and Nicobar Islands.

- They occur in warm and humid regions with annual rainfall above 200 cm and a mean temperature over 22°C.
- These are luxuriant, dense forests that remain green throughout the year.
- The trees are broad-leaved and form a thick upper canopy, allowing little sunlight to reach the ground.
- The forests are well stratified, consisting of shrubs and creepers at the lower level, medium-sized trees in the middle, and tall trees (often reaching 60 m or more) at the top.
- There is no fixed season for leaf shedding, flowering, or fruiting.

Common species include rosewood, mahogany, aini, and ebony.

Therefore, the above-mentioned conditions are found only the tropical evergreen forest. **So, Option (b) is correct.**

- Tropical Deciduous Forests are also known as Monsoon Forests.
- These forests are found in areas where a long dry season is followed by a heavy rainfall season is one of the characteristics of the region.
- The rainfall in Tropical Deciduous Forests ranges from 70 to 200 cm.
- Tropical deciduous forests are found along the Equator belt between the Tropic of Cancer and the Tropic of Capricorn.
- Major States where tropical deciduous forests are found:
 - Madhya Pradesh
 - Uttar Pradesh
 - Chhattisgarh
 - Odisha
 - Maharashtra **So, Option (c) is not correct.**

63. Consider the following islands:

1. Cannanore islands
2. Minicoy
3. Amindivi

Select the correct order of island from South to North:

- (a) 2, 3, 1
- (b) 2, 1, 3**
- (c) 3, 1, 2
- (d) 1, 3, 2

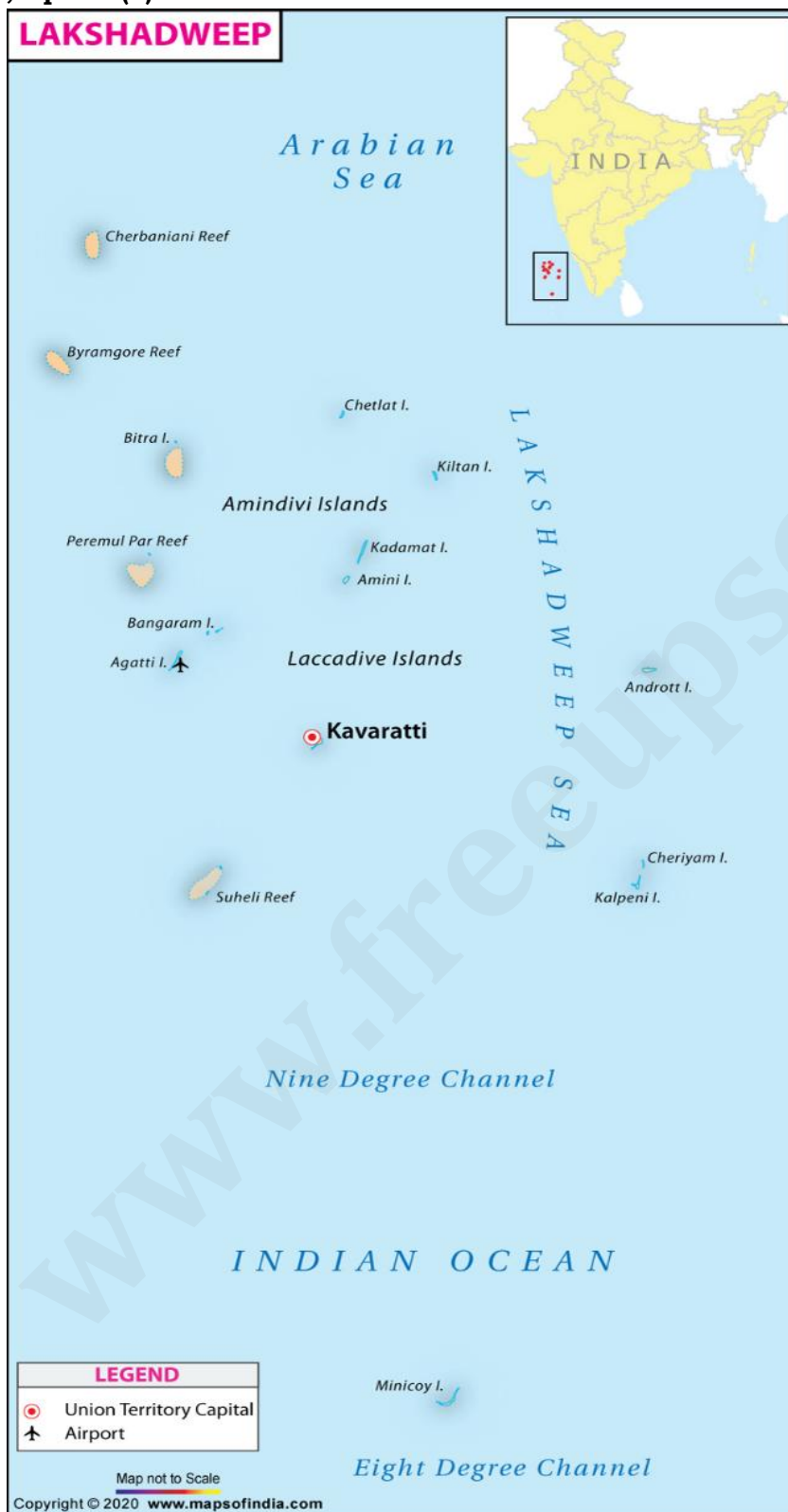
EXPLANATION:

The Lakshadweep Islands, located in the Arabian Sea near the Malabar Coast of Kerala, are a group of small coral islands formed primarily by coral deposits. These islands are separated into two main parts by the 9° Channel.

- Earlier known as the Laccadive (Cannanore), Minicoy, and Amindivi Islands, the group was officially renamed Lakshadweep in 1973.
- Kavaratti Island serves as the Administrative Headquarters of Lakshadweep.
- The Minicoy Island, the southernmost island, is separated from the rest of Lakshadweep by the 9° Channel, while the 8° Channel separates it from the Maldives.
- The Amindivi Islands form the northern group, the Cannanore (Laccadive) Islands form the central group, and Minicoy stands alone as the southernmost atoll.

- The Laccadive or Cannanore subgroup is separated from the Amindivi subgroup by approximately the 11° parallel north, and from Minicoy by the 9° Channel (also known as the Mamala Channel).

Therefore, the correct sequence of islands from South to North are Minicoy **(2)**, Cannanore islands **(1)** and Amindivi **(3)**. So, **Option (b) is correct.**



ADDITIONAL INFORMATION:

LAKSHADWEEP	
About	➤ Lakshadweep is India's smallest Union Territory, located in the Arabian Sea near the Kerala coast. ➤ It is a group of 12 atolls, 3 reefs, and 5 submerged banks, covering an area of about 32 sq. km. ➤ There are 10 inhabited islands and 17 uninhabited ones with some islets and reefs. ➤ The inhabited islands are Kavaratti, Agatti, Amini, Kadmat, Kiltan, Chetlat, Bitra, Andrott, Kalpeni, and Minicoy. ➤ Kavaratti is the administrative headquarters. ➤ Bitra is the smallest inhabited island with only 271 people (Census 2011), while Bangaram is an uninhabited island with 61 people recorded in 2011. ➤ Main occupations: fishing, coconut farming, and coir making; tourism is growing.
Relief, soils, and climate	➤ Most islands are coral atolls. ➤ The eastern sides are higher and suitable for living, while the western lagoons protect from southwest monsoon winds. ➤ The soil is sandy, made from coral. ➤ The climate is warm and humid all year, with temperatures between 20°C and 32°C. ➤ Cyclones rarely hit the islands, but strong winds and waves can change their shape.
Plant and animal life	➤ Main plants: coconut palms, banyan, casuarina, screw pine, breadfruit, tamarind, and tropical almond. ➤ Betel nut and betel leaf are also grown. ➤ The surrounding sea has sharks, tunas, snappers, flying fish, manta rays, turtles, crabs, and octopuses. ➤ Common birds include herons, teals, and gulls.

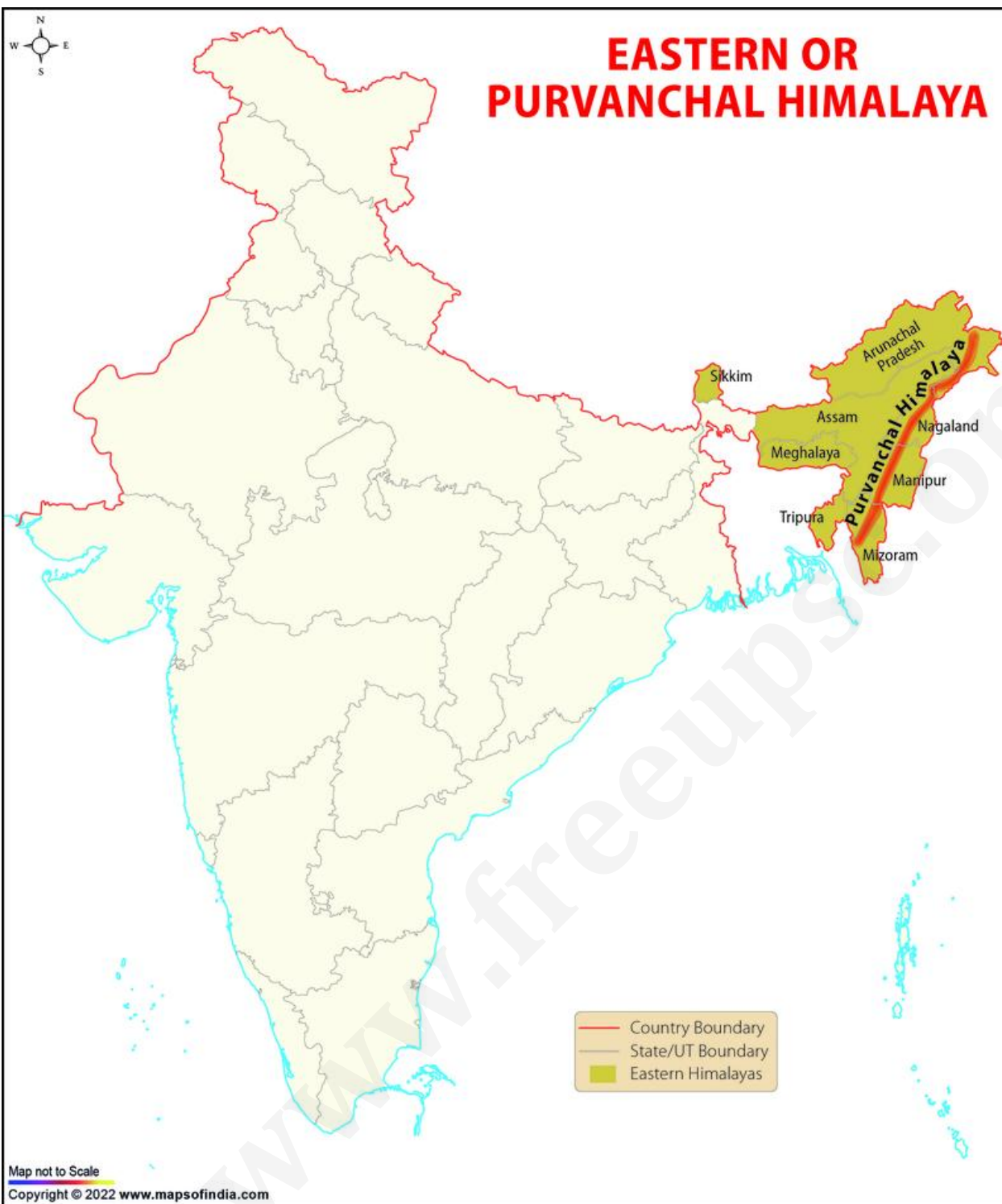
64. Which one of the following hills is not a part of the Purvanchal ?

- (a) Patkai Bum range
- (b) Lushai hills
- (c) **Mikir hills**
- (d) Naga hills

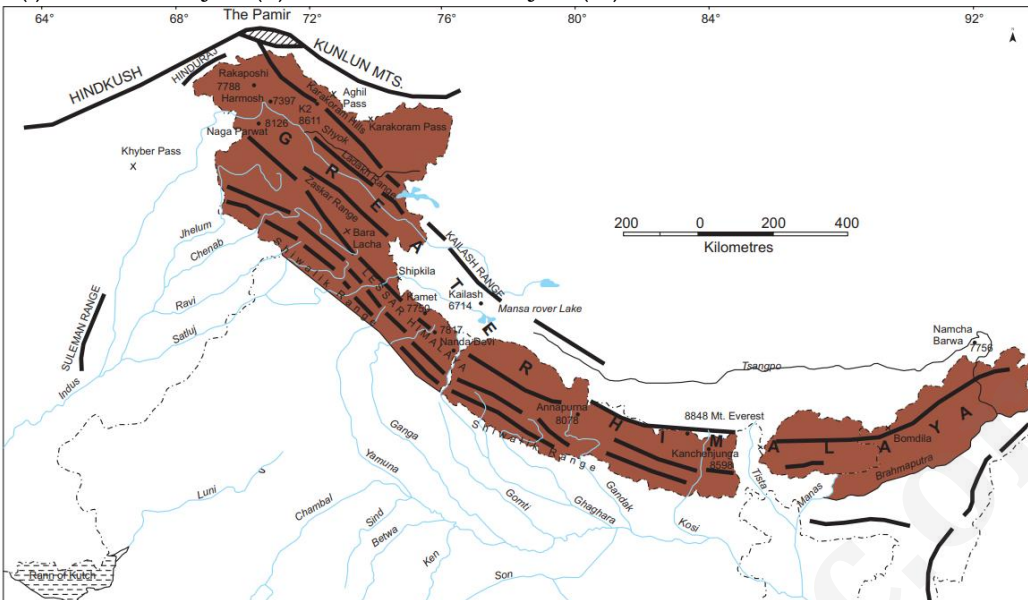
EXPLANATION:

Purvanchal, mountain ranges in eastern India, it is the name given to all the hills of northeast India beyond Brahmaputra gorge. The average height of these hills from sea level is 500 to 3000 metres. These hills are located in Southern Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, and Meghalaya. Mishmi, Patkai Bum, Naga, Manipur, Mizo (Lushai), and Tirupur are the major hilly ranges of this region.

- **Patkai Bum Hills:** These hills extend along the border of India and Myanmar and are formed by tectonic activities in the Mesozoic era during the origin of the Himalayas. Like the Himalayas, steep slopes, sharp peaks, and deep valleys are found here.
- **Mizo Hills:** The Mizo Hills are located in the south-eastern state of Mizoram. These giant hills are also known as the Lushai Hills. The Mizo hills form the northern part of the Arakan Yoma system.
- **Naga Hills:** These hills form the border of India and Myanmar. The extension of these hills is found in the state of Nagaland in India.
- **Mikir Hills:** These hills are located to the south of the Kaziranga National Park in Assam and are a part of the Karbi-Anglong plateau. Dhansiri and Jamuna rivers flow in this region. Therefore, Mikir hills are not a part of Purvanchal. **So, Option (c) is correct.**



ADDITIONAL INFORMATION:

THE NORTHERN MOUNTAIN	
About	It is divided into three groups. They are: (i) The Himalayas (ii) The Trans Himalayas (iii) The Purvanchal hills 
The Himalayan Mountains	➤ The Himalayas are the young fold mountains and also the highest mountain range in the world. ➤ The Himalayas act as a natural barrier. The extreme cold, snow and rugged topography discourage the neighbors to enter India through Himalayas. ➤ They run from west-east direction from Indus to Brahmaputra along the northern boundary of India covering a distance of 2500 KM. ➤ The Himalayas may be divided into three parallel ranges: • Greater Himalayas or Himadri • Lesser Himalayas or Himachal • Outer Himalayas or Siwaliks.
The Trans-Himalayan ranges	It extends north of the greater Himalaya and parallel to it is called Zaskar range. North of Zaskar range lies the Ladakh range. The Indus River flows between Zaskar and Ladakh range. The Karakoram range lies extreme north of the country. K2 is the second highest peak in the world.

65. Which of the following rivers of Peninsular India have the Amarkantak region as their source?

- (a) Chambal, Betwa, Luni
- (b) Godavari, Krishna, Cauvery
- (c) Son, Johila, Narmada**
- (d) None of the above

EXPLANATION:

- **Chambal River (Malwa plateau):** The Chambal rises near Mhow in the Malwa plateau of Madhya Pradesh and flows northwards through a gorge upwards of Kota in Rajasthan. The Chambal is famous for its badland topography called the Chambal ravines.
- **Betwa River (Malwa plateau):** Originating in the Kumra village in Raisen district of Madhya Pradesh, the river Betwa flows for 380km. After meandering through Madhya Pradesh, it enters the neighbouring state, Uttar Pradesh, and joins the river Yamuna in Hamirpur. The Betwa takes along with it the water of the eastern Malwa plateau. The tributaries of Betwa are Bina, Yamini, Dhasan and Ken. In ancient times, Betwa was known as Vetravati.
- **Luni River (Aravalli ranges):** It is the only river basin of any significance in Western Rajasthan, which forms the bulk of the arid zone. Luni originates from the western slopes of the Aravalli

ranges. near Ajmer flowing in the Southwest direction and traversing a course of 511 km in Rajasthan, it finally flows into the Rann of Kachchh.

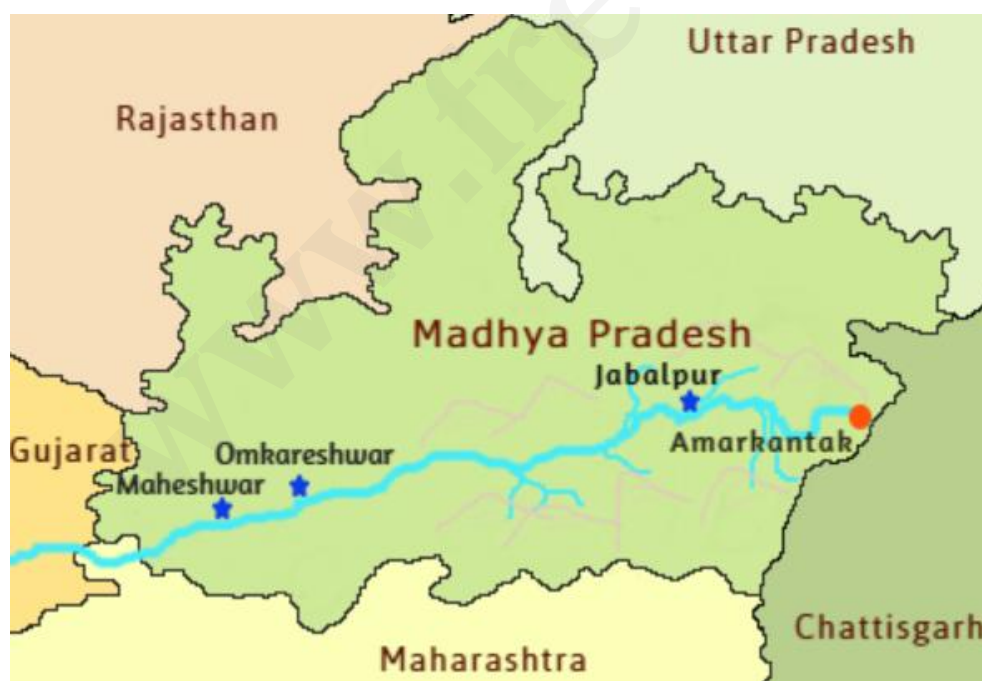
Here, the rivers Chambal, Betwa, and Luni do not have their source in the Amarkantak region. **So, Option (a) is not correct.**

- **The Godavari River (Trimbakeshwar):** River of central and southeastern India, primarily in Maharashtra, Telangana, and Andhra Pradesh states. It rises from Trimbakeshwar in the Nashik district of Maharashtra. The principal tributaries of the river are the Pravara, the Purna, the Manjra, the Penganga, the Wardha, the Wainganga, the Pranhita (combined flow of Wainganga, Penganga, Wardha), the Indravati, the Maner and the Sabri.
- **The Krishna River (Mahabaleshwar):** This river is an Inter-State river in Southern India. It is the second largest river in Peninsular India, rises in the Western Ghats at an altitude of 1337 m. near Mahabaleshwar in Maharashtra State. The principal tributaries of Krishna in Karnataka are Ghataprabha, Malaprabha, Bhima and Tungabhadra. All these rivers except the Malaprabha River have their catchment area both in Karnataka and Maharashtra.
- **The Cauvery River (Brahmagiri Range):** This river originates at Talakaveri in Coorg District of Karnataka in Brahmagiri Range of hills in the Western ghats. The Cauvery basin is fan shaped in Karnataka and leaf shaped in Tamil Nadu. The run-off does not drain quickly because of its shape and therefore no fast raising floods occur in the basin.

Here, the rivers of Godavari, Krishna and Cauvery do not have their source in the Amarkantak region. **So, Option (b) is not correct.**

The Amarkantak region has a rich natural heritage. It is the meeting point of the Vindhya and the Satpura Ranges, with the Maikal Hills being the fulcrum. Three rivers, the Narmada, the Son, and the Johila are originate from this region. **So, Option (c) is correct.**

- **The Johila River (Amarkantak):** It originates from the Amarkantak hills of Anuppur district of Madhya Pradesh. Its actual point of origin is 10 km from Amarkantak in Jwaleshwar. This river originates from the hills of Javleshwar and passes through Rajendragram and joins the Sone river in Kelhari village of Umaria district.
- **The Son River (Amarkantak):** This river is a large south bank tributary of the Ganga, originating in the Amarkantak plateau. After forming a series of waterfalls at the edge of the plateau, it reaches Arrah, west of Patna, to join the Ganga.
- **The Narmada River (Amarkantak):** This river originates on the western flank of the Amarkantak plateau. Flowing in a rift valley between the Satpura in the south and the Vindhyan range in the north, it forms a picturesque gorge in marble rocks and Dhuandhar waterfall near Jabalpur.



66. How many of the following countries borders both Israel and Iran?

1. Iraq
2. Syria
3. Jordan

Select the correct answer using the codes given below:

- (a) Only one
- (b) Only two
- (c) All three
- (d) **None**

EXPLANATION:

- Israel shares borders with Lebanon in the north, Syria in the northeast, Jordan in the east, Egypt in the southwest, and the Palestinian territories (West Bank and Gaza Strip) in the east and west. Israel is situated on the southeastern coasts of the Mediterranean Sea and the northern coasts of the Red Sea. Hence, Israel is bordered by four neighbouring countries: Lebanon, Syria, Jordan, and Egypt.
- Iran shares borders with Armenia and Azerbaijan in the northwest; Turkmenistan in the northeast; Afghanistan and Pakistan in the east; Iraq and Turkey in the west. Iran is bounded by the Caspian Sea in the north and by the Persian Gulf and the Gulf of Oman in the south.

None of the listed countries, nor any other country, borders both Israel and Iran. Israel and Iran do not share a border with each other. **So, Option (d) is correct.**



ADDITIONAL INFORMATION:

OTHER MIDDLE EAST COUNTRIES



- Iraq is a sovereign Western Asian country. It is located in the Northern and Eastern hemispheres of the Earth.
- It is bordered by six nations: Iran to the East, Kuwait to the southeast, Turkey to the north, Syria to the west, Jordan to the southwest, and Saudi Arabia to the south.
- The country has a short 36 miles (58 km) coastline along the northern end of the Persian Gulf.

Iraq Bordering Countries: Saudi Arabia, Jordan, Syria, Turkey, Kuwait, Iran.

Syria 	➤ Syria is a Western Asian country located in Northern and Eastern hemispheres of the Earth. ➤ It is bordered by five Asian Nations: Turkey in the north, Lebanon in the west, Iraq in the east, Jordan in the south and Israel in the southwest. ➤ Located to the west is the Mediterranean Sea, which stretches along the entire Syrian coastline. Syrian Arab Republic Bordering Countries: Iraq, Israel, Jordan, Lebanon, Turkey.
Jordan 	➤ Jordan is a small, semi-arid Arab country in Southwest Asia. ➤ It is located in the rocky desert of the northern Arabian Peninsula, in the Northern and Eastern hemispheres of the Earth. ➤ It is a landlocked country, bordered by 5 Nations: Syria in the north, Iraq in the east, Saudi Arabia in the south and southeast and Israel and Palestine in the west. ➤ The Dead Sea is located along the western borders of the country. ➤ Al-Aqabah, the only port of Jordan, is located in the south-western part of the country along the coasts of the Gulf of Aqaba (Red Sea). Jordan Bordering Countries: Saudi Arabia, Palestine, Iraq, Israel, Syria.

67. Consider the following islands in the Pacific Ocean:

1. Luzon
2. Sakhalin
3. Ryukyu
4. Timor

Select the correct order of the islands as they occur from north to south:

- (a) 2-3-1-4
(b) 2-1-3-4
(c) 3-2-1-4
(d) 1-3-4-2

EXPLANATION:

Pacific Islands, an island geographic region of the Pacific Ocean. It comprises three ethnogeographic groupings: Melanesia, Micronesia, and Polynesia, but conventionally excludes the neighbouring island continent of Australia, the Asia-related Indonesian, Philippine, and Japanese archipelagoes, and the Ryukyu, Bonin, Volcano, and Kuril island arcs that project seaward from Japan.

The following are the islands that are arranged them from North to South:

- **Sakhalin:** it is an island at the far eastern end of Russia. It is located between the Tatar Strait and the Sea of Okhotsk, north of the Japanese island of Hokkaido. The Kuril Islands form the Sakhalin oblast (region).



- **Ryukyu:** This Island archipelago, extending some 700 miles (1,100 km) southwestward from the southern Japanese island of Kyushu to northeastern Taiwan. The archipelago defines the boundary between the East China Sea (west) and the Philippine Sea (east).



- **Luzon:** This Island is the largest in the Philippines and the 15th largest island in the world. Located in the northern part of the Philippines (south of Taiwan, north of the Visayas Islands, east of the South China Sea, and west of the Philippine Sea), is home to the capital Manila.



- **Timor:** It is an island of the Malay Archipelago, easternmost of the Lesser Sunda Islands between the Savu and Timor seas. Western Timor is administered as part of Nusa Tenggara Timur province, Indonesia. The eastern half of the island is the independent state of East Timor; East Timor also includes the enclave of Ambeno on the western half of the island, as well as two small islands.
- Recently, the 10-member Association of Southeast Asian Nations (ASEAN) welcomed East Timor as its newest member.



So, the correct north-to-south order is **2 – 3 – 1 – 4**. Sakhalin → Ryukyu → Luzon → Timor. **So, Option (a) is correct.**

68. Consider the following statements on Dugong:

1. They are classified as Vulnerable to extinction by IUCN.
2. They are present in Chilika Lake.
3. They live in deep waters.

How many of the above statement is/are correct?

- (a) **Only one**
 (b) Only two
 (c) All three
 (d) None

EXPLANATION:

Dugong (Dugong dugon), a marine mammal that inhabits the warm coastal waters of the Indian and Pacific Oceans, feeds on seagrasses and is similar to the manatee.

- Commonly known as sea cows, dugongs (Dugong dugon) are often referred to as the “farmers or gardeners of the sea” for their important role in preserving the coastal ecosystems and aiding fish production.
- Growing up to three metres long and weighing over 400 kg, these gentle giants are found in warm waters along coastlines, mainly confined to seagrass beds which occur in calm sheltered habitats such as bays and lagoons.
- They are found in the Gulf of Mannar, the Palk Bay, the Gulf of Kutch and the Andaman and Nicobar Islands in India. Dugongs are primarily herbivorous, grazing on 30 kg-40 kg of seagrass a day.
- The species is listed as Vulnerable to Extinction on the International Union for Conservation of Nature (IUCN) Red List. Once abundant in Indian waters, dugongs are protected under Schedule I of the Wildlife (Protection) Act, 1972. **So, Statement 1 is correct.**
- Dugongs generally inhabit shallow waters, remaining at depths of around 10 m, although they occasionally dive to depths of 39 m to feed. These shallow areas are typically located in protected bays, wide mangrove channels and in sheltered areas of inshore islands. **So, Statement 3 is not correct.**
- Seagrass in Odisha’s Chilika Lake is a proper habitat for dugongs. However, there is not extant population in Chilika. **So, Statement 2 is not correct.**



ADDITIONAL INFORMATION:

DUGONG (DUGONG DUGON)	
Recently in news	A multi-pronged conservation effort by the government, supported by the Wildlife Institute of India (WII), focusing on prevention of poaching, rescue and release, community involvement and habitat restoration, has contributed to the recovery of the mammals in the Palk Bay and the Gulf of Mannar (the PB-GoM region) along the Tamil Nadu coast.
About	➤ Dugongs are large, solid mammals with short, paddle-like front flippers and a tail with a straight or concave perimeter that is used as a propeller. ➤ Their tail differentiates them from manatees, the tail of which is paddle-shaped. Dugong fins resemble those of dolphins, but unlike dolphins, dugongs lack a dorsal fin. ➤ Females have mammary glands under the fins from which their calves suckle. ➤ Adult dugongs weigh from 230 to 400 kg and can range from 2.4 to 4 m in length. Their thick skin is brownish-grey, and its colour can vary when algae grows on it. ➤ Tusks are present in all dugongs, but they are usually only visible through the skin in mature males, whose tusks are prominent, and in old females. ➤ Dugongs are suspected to have high auditory acuity to compensate for poor eyesight. ➤ Dugongs are a very social species and are found in groups varying from 2 to 200 individuals. ➤ Dugongs are a semi-nomadic species. They may migrate long distances in order to find a specific seagrass bed, but they may also inhabit a single range for most of their life. ➤ Dugongs are primary consumers and the only completely herbivorous marine mammals.

69. Consider the following statements on Apiculture:

1. India is the largest exporter of honey in the world.
2. In India, Uttar Pradesh ranks among the leading states in honey production.

Which of the above statement is/are correct?

- (a) 1 only
- (b) 2 only**
- (c) Both 1 and 2
- (d) Neither 1 nor 2

EXPLANATION:

Beekeeping, also known as apiculture, is vital in enhancing food resources and agricultural ecosystems worldwide. As bees pollinate a wide variety of crops, they contribute to the production of fruits, vegetables, and nuts. By maintaining colonies of honeybees, beekeepers produce honey, beeswax, and other hive products.

- India exports a variety of natural honey, like Rapeseed/Mustard Honey, Eucalyptus Honey, Lychee Honey, Sunflower Honey, etc.
- Major Indian states producing honey are Uttar Pradesh (17%), West Bengal (16%), Punjab (14%), Bihar (12%) and Rajasthan (9%). **So, Statement 2 is correct.**
- As per the July 2025 Monthly Dashboard for Honey, prepared jointly by the Agricultural and Processed Food Products Export Development Authority (APEDA) and Crisil, globally, India is the second largest exporter of honey, after China, as of marketing year 2024, up from the 9th rank in 2020. **So, Statement 1 is not correct.**
- Major export destinations included the U.S.A, UAE, Saudi Arabia, Qatar and Libya.

ADDITIONAL INFORMATION:

NATIONAL BEEKEEPING & HONEY MISSION

About	➤ National Beekeeping and Honey Mission (NBHM) is a Central Sector Scheme for promoting scientific beekeeping for the holistic growth of the beekeeping sector. The goal is to bring about a "Sweet Revolution". ➤ Implemented through the National Bee Board (NBB), the scheme was announced under the banner of Atmanirbhar Bharat. ➤ Beekeeping: It is an agro-based activity undertaken by farmers and landless labourers in rural areas and forms an integral part of the Integrated Farming System. It plays a crucial role in pollination, thereby enhancing crop yields and farmers' income while providing honey and other high-value beehive products such as beeswax, bee pollen, propolis, royal jelly, bee venom, etc., all of which serve as important sources of livelihood for rural communities. • In Nongthymmai village of Meghalaya, beekeeping has long been a traditional practice, believed to bring health and vitality to households. • In Kupwara district of Jammu and Kashmir, beekeeping has emerged as a major income diversification initiative through both administrative support and individual enterprise. ➤ Integrated farming (or integrated agriculture) is a commonly and broadly used term to explain a more integrated approach to farming as compared to existing monoculture approaches. It refers to agricultural systems that integrate livestock, fisheries, crop production, horticulture, etc.
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70. Which of the following countries share a border with Thailand?

1. China
2. Myanmar
3. Cambodia
4. Laos
5. Vietnam
6. Malaysia

Select the correct answer using the codes given below:

- (a) Only two
- (b) Only three
- (c) Only four**
- (d) Only five

EXPLANATION:

Thailand is a country located at the centre of the Indo-Chinese Peninsula in Southeast Asia. It is located in the Northern and Eastern hemispheres of the Earth.

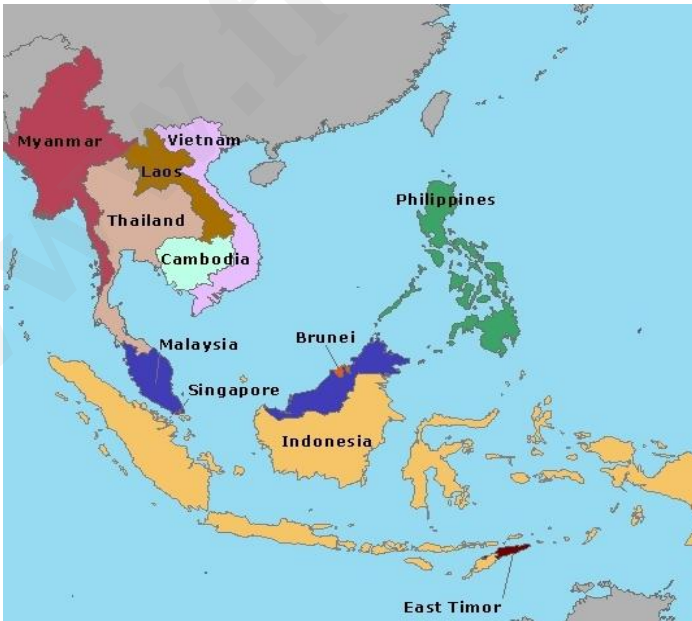
- Thailand is bordered by five countries. Myanmar to the north, Laos to the north and east, Cambodia to the east, and Malaysia to the south. The Gulf of Thailand and the Andaman Sea lie to the south and west of Thailand, respectively.
- The country shares its maritime borders with Vietnam in the Gulf of Thailand in the Southeast, and Indonesia and India on the Andaman Sea in the Southwest.

Thailand Bordering Countries: Malaysia, Myanmar, Cambodia, Laos. *It does not share a land border with China or Vietnam.*

So, Option (c) is correct.



ADDITIONAL INFORMATION:

SOUTHEAST ASIA	
About	The Southeast Asian region comprises 11 sovereign states. These countries are Indonesia, Thailand, Myanmar, Vietnam, the Philippines, Malaysia, Laos, East Timor, Cambodia, Singapore, and Brunei. 

Border Countries of South east Asian Nation	Indonesia • Borders (land): East Timor (Timor-Leste), Malaysia, Papua New Guinea • Maritime neighbours: Philippines, Singapore, Thailand, Vietnam, Australia, India (via Andaman & Nicobar Islands) • Seas/Oceans: Indian Ocean, Pacific Ocean, South China Sea Philippines • Borders (maritime only): Taiwan (north), Vietnam (west), Malaysia (southwest), Indonesia (south), Palau (east) • Seas/Oceans: Philippine Sea, South China Sea, Celebes Sea, Pacific Ocean Vietnam • Borders: China (north), Laos (west), Cambodia (southwest) • Coastline: South China Sea (east) Thailand • Borders: Myanmar (west and northwest), Laos (north and northeast), Cambodia (southeast), Malaysia (south) • Coastline: Gulf of Thailand (south), Andaman Sea (southwest) Myanmar (Burma) • Borders: China (north and northeast), Laos (east), Thailand (southeast), Bangladesh (west), India (northwest) • Coastline: Bay of Bengal, Andaman Sea Malaysia • Borders: Thailand (north), Indonesia (south — on Borneo and across the strait), Brunei (on Borneo) • Maritime neighbours: Singapore, Vietnam, Philippines • Coastline: South China Sea (east), Strait of Malacca (west) Cambodia • Borders: Thailand (west and northwest), Laos (north), Vietnam (east and southeast) • Coastline: Gulf of Thailand (southwest) Laos • Borders: China (north), Vietnam (east), Cambodia (south), Thailand (west), Myanmar (northwest) • Landlocked (no coastline) Singapore ➤ Borders (maritime only): Malaysia (north, across Johor Strait), Indonesia (south, across Singapore Strait) Timor-Leste (East Timor) • Borders (land): Indonesia (on Timor Island) • Maritime neighbours: Australia (south), Indonesia (north and west) Brunei Darussalam • Borders (land): Malaysia (Sarawak state surrounds it on Borneo) • Coastline: South China Sea (north)
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71. Consider the following National Parks:

1. Moiling
2. Hemis
3. Kaziranga
4. Valley of Flowers

Arrange the above-mentioned national parks from the West to East:

- (a) 2-4-3-1
(b) 1-3-4-2
(c) 2-3-4-1
(d) 1-4-3-2

EXPLANATION:

- **Mouling National Park** was established in 1982 with the objective of creating a favourable habitat for plants and animals. It is located on the right bank of the river Siang, covering an area of 483 Sq. KM.
 - It is located in Upper Siang, Arunachal Pradesh.
 - This park is a reserve for diverse flora and fauna. The vegetation of the area varies according to the altitude.
 - Temperate alpine and coniferous forest at the upper reaches, whereas the lower area is covered with tropical evergreen forest.
 - Ornamental plants like foxtail, orchids are abundant in this area. Many endangered species like takins, snowclouded leopard, golden langur, hornbill, monal scaly, and serow are spotted here.
 - **Hemis National Park** was first established as a national park in 1981.
 - Hemis National Park is located in Ladakh.
 - It is the largest national park in South Asia. Hemis National Park is one of the most important natural habitats for the snow leopard.
 - At present, there are about 200 snow leopards that share this national park with other animal species like the Tibetan wolf, Eurasian brown bear, red fox, Himalayan marmot, Argali or the great Tibetan sheep, bharal or the blue sheep, shapu or the Ladakhi wild sheep, and Asiatic ibex.
 - **Kaziranga National Park** is located in Assam. It was declared a National Park in 1974 and a Tiger Reserve in 2007. Kaziranga National Park was declared a UNESCO World Heritage site in 1985. It is also recognized by Birdlife International as an Important Bird Area. Kaziranga National Park is home to many one-horned rhinos.
 - **The Valley of Flowers National Park** is a UNESCO World Heritage Site located in Uttarakhand, India. It has a diverse range of flowers, including rare species like the Brahma Kamal and Blue Poppy. It is home to several endangered species such as the snow leopard, musk deer, and the Himalayan Monal.
- So, the correct order of the national park from west to east is 2 -> 4 -> 3 -> 1.



ADDITIONAL INFORMATION:

NATIONAL PARK	
Recently in news	Global Conservation, in partnership with the Ashoka Trust for Ecology and Environment (ATREE), has embarked on a new initiative focused on Global Park Defense and Community Protection in the forested areas adjacent to Mouling National Park (MNP) in the Siang Valley of Eastern Arunachal Pradesh, located in the Eastern Himalayan landscape of India. Recently, a survey to record the grassland bird population in Kaziranga National Park was undertaken by a team of forest officials, scientists, and conservationists.
About	➤ An area, notified by the State/Central government by reason of its ecological, faunal, floral, geomorphological, or zoological association or importance, needed for the purpose of protecting & propagating or developing wildlife therein or its environment. A National Park is the highest level of protection that can be given to an area under the Wildlife (Protection) Act, 1972. ➤ At present, there are 106 national parks across the country.
Economic Importance of National Parks	➤ The money that the government allocates for national parks and hiking trails benefits local companies since it creates several jobs and returns to society. ➤ Building and maintaining hiking infrastructure in national parks and hiking areas are funded by government budgets. ➤ Around these sites, the private sector develops tourism-related businesses. ➤ The infrastructure of national parks and hiking areas, such as the roads and campfire sites, is funded by the government. ➤ In the area surrounding the protected areas, these facilities aid in the development of the tourism sector.

72. With reference to the Sea of Marmara, consider the following statements:

1. The Dardanelles Strait connects it to the Black Sea.
2. The North Anatolian Fault runs beneath the sea.
3. The salinity of the sea is high due to the non-availability of any freshwater source.

How many of the above statements is/are correct?

- (a) Only one
 (b) Only two
 (c) All three
 (d) None

EXPLANATION:

Sea of Marmara, an inland sea partly separating the Asian and European parts of Turkey.

- The Bosphorus Strait connects the Sea of Marmara to the Black Sea.
- The Dardanelles Strait connects the Sea of Marmara to the Aegean Sea (Not the Black Sea). **So, Statement 1 is not correct.**



The North Anatolian fault is a right-lateral strike-slip fault. It separates the Anatolian block (Turkey) from the Eurasian plate, and runs from the Karlova Triple Junction to the Marmara Sea at Izmit. There it dives underneath the sea and re-emerges on the Gelibolu peninsula, along the Dardanelles Straits. **So, Statement 2 is correct.**

The Sea of Marmara has an average surface salinity of 22 parts per 1,000, which is a bit higher than the Black Sea's salinity.

However, the water at the bottom of the Sea of Marmara is highly saline with an average salinity of 38 parts per 1,000 and is quite similar to the salinity of the Mediterranean Sea.

The constant inflow of water from the Biga, Gonen, and Susurluk rivers greatly reduces the salinity of the Sea of Marmara. **So, Statement 3 is not correct.**

ADDITIONAL INFORMATION:

THE MAJOR SEAS BORDERING EUROPE

The Baltic Sea

The Baltic Sea is part of the North Atlantic Ocean, situated in Northern Europe. It has a coastline of approximately 8,000 km, shared by several countries, including Sweden, Poland, Lithuania, Latvia, Finland, Estonia, Germany, Denmark, and Russia.



The Black Sea

The Black Sea lies between the continents of Asia and Europe. It is bound to the west by the Balkan Peninsula in Southeastern Europe, to the east by the Caucasus, north by the East European Plains, and south by Anatolia of Western Asia.

- The black Sea drainage basin drains several countries, including the six countries that share its coast.
- The sea is bordered to the north by Russia and Ukraine, Turkey to the south, Bulgaria to the west, and Georgia to the east. Romania also has an opening to the Black Sea.



Gulf of Finland

The Gulf of Finland is the easternmost extension of the Baltic Sea, bordered by the countries of Finland, Russia, and Estonia.

Gulf of Riga

The Gulf of Riga is an enormous gulf of the Baltic Sea, which is located between the countries of Latvia and Estonia. Some of the major islands in the Gulf of Riga include Ruhnu, Saaremaa, and Kihnu.



73. Consider the following countries:

1. The Netherlands
2. Norway
3. Germany
4. The United Kingdom
5. Estonia

How many of the above countries shares their border with the North Sea?

- (a) Only two
- (b) Only three
- (c) Only four**
- (d) All five

EXPLANATION:

The North Sea is one of the numerous seas in the Atlantic Ocean. It is part of the North-East Atlantic Region and opens into the Atlantic Ocean via the English Channel. The sea is one of the world's most utilised seas, with extensive fishing, shipping, power production, recreation, and defence. It also hosts two of the world's largest ports (Hamburg and Rotterdam).

- The North Sea region borders some of the strongest economies in Europe. To the west of the sea is Great Britain (Scotland and England). The Northern and Central European countries, such as Germany, Belgium, Denmark, the Netherlands, and Norway, border the sea to the east and west.
- Estonia does not border the North Sea; it borders the Baltic Sea.
- The North Sea connects to the Atlantic Ocean via the English Channel in the southwest and the Baltic Sea in the east via the Kattegat and Skagerrak straits. **So, Option (c) is correct.**



74. With reference to the Menhirs of Mudumal, consider the following statements:

1. It is located in the state of Telangana.
2. The River Krishna flows near the site.
3. It is believed to be a megalithic astronomical observatory.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3**

EXPLANATION:

The Menhirs or the standing stones of Mudumal in Narayanpet in Telangana have made it to the tentative list of UNESCO World Heritage Sites.

The stones, numbering about 1,200 large-sized ones, stand vertically to map the skies as they existed 3000 years ago. From them, we can infer the date and positions of the constellations of Leo, Ursa Major, Ursa Minor, Virgo, Taurus, etc. **So, Statement 1 is correct.**



Mudumal, on the banks of the river Krishna that separates the State from Karnataka, has been a well-known menhir site, but the real effort to get recognition began in 2021-22 when the area was fenced and documented by the Department of Archaeology and Museums (DAM), Telangana.

The site contains about 80 large menhirs (standing stones) and several hundred smaller alignment stones organised into rows and formations. These formations align with the sun during solstices, suggesting their use during solar observations. **So, Statement 2 is correct.**

The Mudumal menhirs represent one of India's most expansive and impeccably preserved megalithic astronomical observatory sites, showcasing an intricate and precise arrangement of boulder alignments, formations and stone circles.

Within a central area, a concentration of two distinct types of menhirs further enhances the site's uniqueness. Notably, a specific menhir, revered as Thimmappa in the northern section and locally known as Nilurallu Thimmappa, meaning 'Thimmappa of the Standing Stones', underscores the site's cultural significance. **So, Statement 3 is correct.**

ADDITIONAL INFORMATION:

UNESCO TENTATIVE LIST IN INDIA	
About	A World Heritage Site is any area or object included on the UNESCO World Heritage List, recognized for its outstanding universal value to humanity. ➤ The concept was established under the Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972 and implemented in 1975 after ratification by 20 countries. ➤ This convention provides a global framework for cooperation in preserving and protecting cultural monuments and natural areas of international importance. Categories of World Heritage Sites: • Cultural Heritage Sites – Include historic buildings, towns, archaeological sites, monuments, and significant works of art or architecture. • Natural Heritage Sites – Comprise natural areas that represent outstanding examples of Earth's geological history, biodiversity, or natural beauty. • Mixed Heritage Sites – Possess both cultural and natural significance.
UNESCO Tentative list of INDIA	India, as a signatory to the UNESCO World Heritage Convention, maintains a Tentative List of cultural and natural sites that are being considered for nomination to the World Heritage List. ➤ This list serves as a preliminary inventory of properties that India may propose for inscription in the coming years. ➤ The Tentative List reflects the rich cultural diversity, architectural heritage, and ecological significance of India — encompassing ancient monuments, temples, forts, megalithic sites, fossil parks, and natural reserves. ➤ Between 2021 and 2025, India has added over 25 sites to its Tentative List, reflecting an expanding focus on: • Ancient civilizational heritage (Ashokan Edicts, Gupta Temples, Megaliths), • Natural landscapes and biodiversity (Satpura Tiger Reserve, Kanger Valley National Park), and • Unique cultural landscapes (Living Root Bridges, Modhera Sun Temple, Coastal Forts).
UNESCO Tentative List (India) 2025	➤ Salkhan Fossil Park, Sonbhadra 04/06/2025 ➤ Kanger Valley National Park 11/02/2025 ➤ Mudumal Megalithic Menhirs 11/02/2025 ➤ Serial nomination for Ashokan Edict sites along the Mauryan Routes 11/02/2025 ➤ Serial nomination of Chausath Yogini Temples 11/02/2025 ➤ Serial nomination of Gupta Temples in North India 11/02/2025 ➤ The Palace-Fortresses of the Bundelas 11/02/2025

75. Which of the following countries is involved in the Sandy Cay reef dispute?

- (a) China and Japan
- (b) China and the Philippines**
- (c) China and Taiwan
- (d) Taiwan and Japan

EXPLANATION:

China and the Philippines dispute ownership of the Sandy Cay reef in the South China Sea. The Sandy Cay reef lies near Thitu Island, or Pag-asa, where the Philippines stations troops and maintains a coast guard monitoring base.

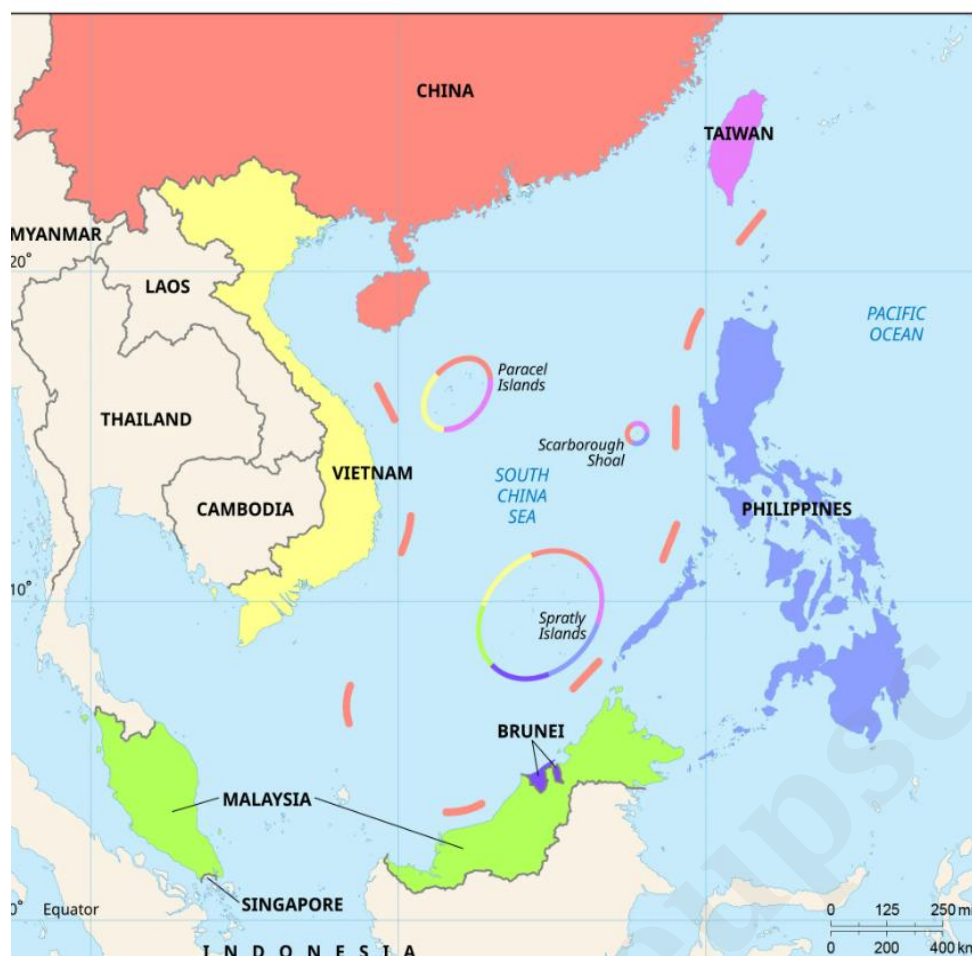
Recently, the dispute over the ownership of the Sandy Cay reef in the South China Sea escalated tensions between China and the Philippines. **So, Option (b) is correct.**



ADDITIONAL INFORMATION:

SOUTH CHINA SEA DISPUTE	
About	The South China Sea is situated just south of the Chinese mainland and is bordered by the countries of Brunei, China, Indonesia, Malaysia, the Philippines, Taiwan and Vietnam. The countries have bickered over territorial control in the sea for centuries, but in recent years, tensions have soared to new heights.
Reason	China's rise as a global power. The South China Sea is one of the most strategically critical maritime areas (more on this later), and China seeks to assert control over the region.
Nine-Dash Line	The nine-dash line demarcates China's territorial claims in the sea on Chinese maps. It was initially the "eleven-dash line" but in 1953, the CCP-led government removed "the portion encompassing the Gulf of Tonkin, simplifying the border to nine dashes,". ➤ The line runs as far as 2,000 km from the Chinese mainland to within a few hundred kilometres of the Philippines, Malaysia and Vietnam. ➤ China's claim on the waters and islands within the boundary is based on its "historical maritime rights". ➤ China says it has centuries-old ties with the Paracel and Spratly island chains, as they were once an integral part of the Chinese nation. But Vietnam disputes the claim, saying it has actively ruled over both the Paracels and the Spratlys since the 17th Century — and has the documents to prove it.

CHINA'S NINE-DASH LINE



76. Consider the following information:

Sl.no.	Country	Largest producer of
1.	Chile	Copper
2.	Botswana	Diamond
3.	Argentina	Lithium

How many of the above pairs is/are correctly matched?

- (a) Only one
(b) Only two
(c) All three
(d) None

EXPLANATION:

The world's leading copper-producing countries include Chile, Peru, and the Democratic Republic of the Congo. Chile produces nearly one quarter of the world's copper, and is also by far the country with the largest copper reserves. Escondida, located in the Atacama Desert in Northern Chile and owned by BHP, is the world's largest copper mine based on its total copper reserves, its production capacity, and its actual copper output. **So, Pair (1) is correct.**

As of 2022, Russia is the world's largest producer of diamonds, mining over 40 million carats annually. It is also the largest exporter in the world.

The country has about 12 open-pit mines, the most in the world. Russia's diamond industry is dominated by the state-owned company Alrosa, which is responsible for more than 95% of the country's diamond output. **So, Pair (2) is not correct.**

In 2024, Australia produced 88,000 metric tons of lithium, making it the world's largest producer of lithium. Although the country tops the list, year-over-year production decreased just over 4 per cent from 91,700 MT in 2023 to 88,000 MT in 2024.

Chile holds the largest lithium reserves in the world at 9.3 million metric tons. But Chile is the second biggest producer of lithium in 2024 at 44,000 metric tons (MT). **So, Pair (3) is not correct.**

77. Consider the following statements:

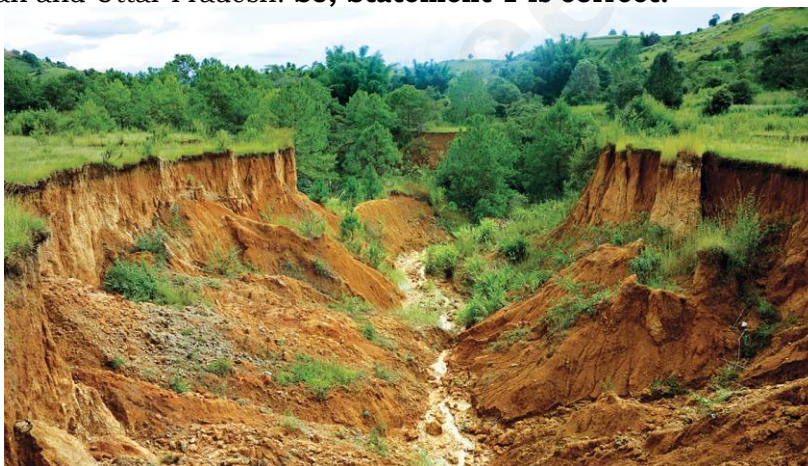
1. Chos of northern Haryana and Punjab and the badlands of Madhya Pradesh are the results of gully erosion.
 2. More than two-thirds of saline and alkaline soils of India occur in Tamil Nadu and Kerala.
- Which of the statements given above is/are correct?

- (a) **1 only**
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

EXPLANATION:

Gully erosion is the removal of soil along drainage lines by surface water runoff. Unless steps are taken to stabilise the disturbance, gullies will continue to move by headward erosion or by slumping of the side walls.

- With the increase in volume of concentrated runoff and increase in velocity on slopes, the rills are enlarged into gullies, the most destructive form of soil erosion in India.
- At an advanced stage, gullies are transformed into ravines, which are about 50 ft. to 100 ft. deep.
- The common areas of gully erosion are 'Chos' of northern Haryana and Punjab, badlands of Madhya Pradesh, Rajasthan and Uttar Pradesh. **So, Statement 1 is correct.**



Alkali, or alkaline, soils are clay soils with high pH (> 9), a poor soil structure and a low infiltration capacity.

- Alkali soils owe their unfavourable physico-chemical properties mainly to the dominating presence of sodium carbonate, which causes the soil to swell.
- Alkaline soils are difficult to incorporate into agricultural production.
- According to the Ministry of Agriculture, more saline and alkaline soils of India occur in Uttar Pradesh, Punjab and Gujarat.

Tamil Nadu, Kerala and Bihar represent only a small fraction of the salt-affected area. **So, Statement 2 is not correct.**

S.No	Name of State	Alkali Area
1	2	3
1	Andhra Pradesh	64.00
2	Bihar	4.00
3	Gujarat	610.00
4	Haryana	450.00
5	Karnataka	76.00
6	Madhya Pradesh	164.00
7	Maharashtra	59.00
8	Punjab	718.00
9	Rajasthan	332.00
10	Tamilnadu	4.00
11	Uttar Pradesh	1100.00

ADDITIONAL INFORMATION:

WATER EROSION	
About	➤ Water erosion is the most widespread and destructive form of soil erosion in India, caused mainly by rainfall, runoff, rivers, and waves. ➤ It removes the fertile topsoil and reduces agricultural productivity. ➤ Water erosion is common in hilly regions, river valleys, and areas of intense monsoon rainfall.
Stream-Bank Erosion	During sudden floods, stream-bank erosion becomes very much evident, particularly at curves. ➤ Within the last 100 years, the Koshi River of Bihar has changed its course westward by about 65 miles. ➤ In the past, the River Damodar has caused severe stream-bank erosion while spilling over. ➤ Most of the rivers flowing through the Great Plains, particularly the Lower Bengal Rivers, are often engaged in stream-bank erosion. ➤ This type of erosion is also known as riparian erosion.
Seashore Erosion	➤ This type of erosion gets momentum through the striking effects of the strong sea-waves. ➤ The coastal parts of Gujarat, Maharashtra and Kerala are very much affected by this type of erosion. ➤ Out of the 380 miles of the Kerala coast, about 200 miles have been threatened by seashore erosion, in which the worst affected places are Quilon and Aleppy.
Splash Erosion	➤ This erosion is caused by the splashing of soil through falling raindrops. The velocity of raindrops may be as high as 30 kph. On sloping land, splash may cause considerable soil movement. ➤ Splash can break down the soil aggregates and clog the pores of surface soil with finer particles, thereby retarding water infiltration into the soil and increasing surface runoff. ➤ Splash erosion is very common in northern India, Bihar, West Bengal, Orissa, the northeastern parts, particularly Assam, Meghalaya and Tripura.
Sheet Erosion	➤ Removal of soil in a thin layer by rain from the entire surface of a large area, which is particularly observed on gently sloping land.

	➤ This type of erosion is common in the Himalayan foothills, the northeastern parts of the Peninsula, Assam, Western and Eastern Ghats, N-E hills, including Shillong plateau, Mikir hills, Nagaland, Manipur and Tripura.
Rill Erosion	➤ It is a type of erosion in which water-laden soils flow along the slopes, forming small fingerlike channels. ➤ This is an intermediary stage between sheet and gully erosion. ➤ Mainly, the northeast Indian States and mid-Indian States like Madhya Pradesh, southwestern U. P., eastern Rajasthan, eastern Orissa and northeastern Maharashtra are subjected to intensive rill erosion.
Slip Erosion	➤ Landslides are the main cause of slip erosion. ➤ It is often caused by rainwater soaking into the soil and earthy material on a steep slope. ➤ Their weight is much increased, and they have become more mobile. ➤ Large masses of soil are slipping down and damaging the field and habitats. ➤ This is mainly common in the Himalayan slopes and some slopes of the Nilgiri and Western Ghats.

78. Dandakaryna uplands region includes which of the following?

1. Tel – Jonk Valley Region
2. Bastur Upland
3. Indravati – Sabari Plain

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) **1, 2 and 3**

EXPLANATION:

Dandakaranya is a physiographic region located in east-central India. Covering an area of about 92,300 square kilometres, it includes the Abujhmar Hills in the west and borders the Eastern Ghats in the east.

The region spans parts of Chhattisgarh, Odisha, Telangana, and Andhra Pradesh, extending roughly 320 km from north to south and 480 km from east to west.

The drainage of Dandakaranya can be classified into two major systems:

The Mahanadi River System (Northern Drainage):

- The Mahanadi river system drains the northern parts of both the Bastar Upland (Kanker Basin) and the Kalahandi (Tel Valley) districts.
- The Tel, Jonk, Udanti, Hatti, and Sandul rivers — tributaries of the Mahanadi — drain a major portion of the Kalahandi district.
- The Tel and Jonk are the most important tributaries, originating from the hills of the Eastern Ghats. **So, Statement 1 is correct.**
- The Ret and Udanti rivers rise in the northwestern hills of Nawapara Tahsil in Kalahandi district and flow eastward.
- The Bastar Upland is a plateau region in southern Chhattisgarh and forms a part of the larger Dandakaranya Uplands. The region is predominantly inhabited by sub-tribes of the Gond, particularly the Maria and Muria tribes. **So, Statement 2 is correct.**

The Godavari River System (Southern Drainage):

- The Godavari river system drains about three-fourths of the Dandakaranya region, including the Central Plateaus and Southern Plains. A smaller portion is drained directly into the Bay of Bengal by the Nagawati and Vamsadhara rivers
- The Godavari, the largest east-flowing river of Peninsular India, touches the southwestern boundary of the Dandakaranya region for about 16 km, coinciding with the Bastar district boundary near Bhadrakali.
- The Godavari River and its major tributaries, the Indravati and Sabari, drain a significant portion of the southern region. **So, Statement 3 is correct.**



79. Consider the following:

1. Planting salt-tolerant plants
2. Adopting crop rotation
3. Mulching
4. Application of Gypsum

Which of the above methods can be used to treat saline soil?

- (a) 1, 2 and 4 only
- (b) 2, 3 and 4 only
- (c) 1, 3 and 4 only
- (d) **1, 2, 3 and 4**

EXPLANATION:

Salt accumulation in soil directly affects the soil structure and soil properties, which causes plant growth-related problems. Managing these soils is a great challenge and involves various techniques to reduce the salt content and improve soil fertility.

- **Planting Salt-Tolerant Crops:** Planting crops that can withstand high salinity levels is crucial. Some salt-tolerant crops include barley, certain wheat varieties, and certain grasses. **So, Statement 1 is correct.**
- **Crop Rotation:** Following a proper crop rotation and cultivating diverse crops in affected areas may help break the salt accumulation cycle in soil. **So, Statement 2 is correct.**
- **Avoiding Over-fertilisation:** Excessive use of fertilisers can contribute to soil salinity. Proper fertilisation practices based on soil nutrient tests help maintain a balanced nutrient profile.

- **Mulching:** Mulching with organic materials or cover crops helps conserve soil moisture, reduce soil temperature, and minimise salt accumulation at the soil surface. **So, Statement 3 is correct.**
- **Applying Gypsum:** Gypsum (calcium sulfate) can be applied to saline soil to help displace sodium ions and improve soil structure. It also reduces the harmful effects of sodium on soil permeability. **So, Statement 4 is correct.**
- **Soil Testing:** Test the soil to determine its salt content and composition. This helps in devising a tailored management plan.
- **Improving Drainage:** Poor drainage exacerbates salinity. Installing drainage systems like tiles, ditches, or subsurface drainage can help remove excess salts from the soil profile.
- Leaching involves applying large amounts of water to flush out salts from the soil profile. This water carries the salts downward, away from the root zone. However, this method requires proper water management to prevent waterlogging.
- **Application of organic matter:** Organic materials like compost, farm yard manure, or green manure improve the soil structure, increasing the water infiltration rate. Organic matter promotes soil microbial activity, which may help reduce salinity by breaking down salts.

80. Match List I with List II and select the correct answer using the code given below:

	List I (Dam)		List II (River)
(A)	Nagarjunasagar	1.	Mahanadi
(B)	Matatilla	2.	Barakar
(C)	Maithon	3.	Krishna
(D)	Hirakud	4.	Betwa

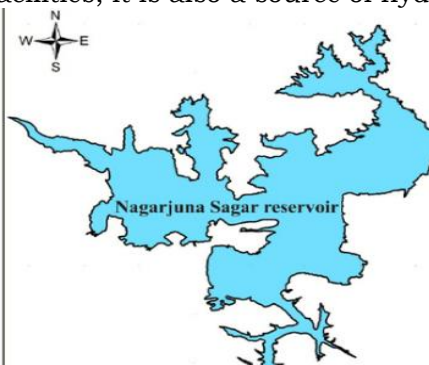
Codes:

- (a) A-1, B-2, C-3, D-4
- (b) A-3, B-4, C-2, D-1**
- (c) A-2, B-1, C-4, D-3
- (d) A-4, B-3, C-2, D-1

EXPLANATION:

Nagarjunasagar Dam, located in Nalgonda District, is built across the **River Krishna**.

- It is the largest and highest masonry dam in the world, built between the Nalgonda district of Telangana and the Palnadu district (previously part of the Guntur district) of Andhra Pradesh.
- It is among the first irrigation projects started by the Indian Government as an element of the Green Revolution.
- The dam has a storage capacity of nearly 11,472 million cubic meters with an irrigation capacity for 9.81 lac acres of land. The dam measures 150m tall and 16 kms in length.
- Today, apart from offering not only irrigation facilities, it is also a source of hydroelectricity. **A-3.**



The **Matatila Dam** is a dam in India that was built in 1958 on the **Betwa River**.

- Situated in the Lalitpur district of Uttar Pradesh, this earthen dam is 35 m high.
- The catchment area is around 20 sq km with a maximum storage capacity of 1132 mcm. Nestled between a large number of small hills, this place is popular among tourists.
- The dam generates about 45 MW of power. **B-4.**

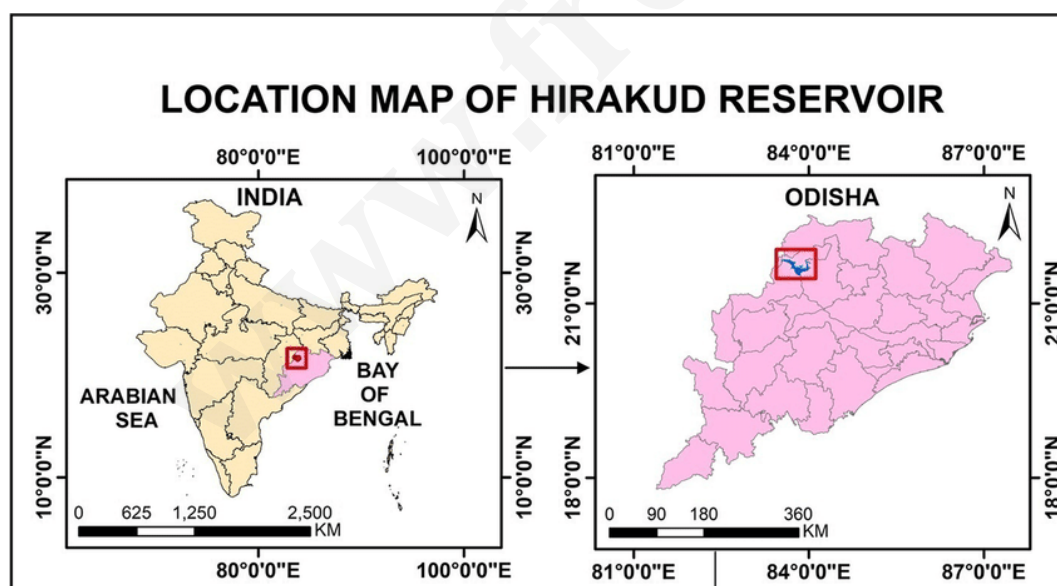
The Maithon Dam is located on the banks of **the river Barakar**.

- The Maithon Dam is located in Dhanbad, Jharkhand.
- The dam with an underground power station is one of its kind in the whole of South East Asia. The lake on which it is built is spread over 65 square kilometres.
- This dam was developed by the Damodar Valley Corporation (DVC Ltd) way back in the year 1948.
- The dam is about 15712 ft long and about 165 ft long. The underground power station has a capacity to generate around 60,000 KW of electric power. **C-2.**



Hirakud, the longest earthen dam of the world, stands in its lone majesty across the great **river Mahanadi**, which drains an area of 1,33,090 Sq. Kms.

- Hirakud Dam Project is a multipurpose scheme intended for flood control, irrigation and power generation.
- The dam is built across the river Mahanadi at about 15 km upstream of Sambalpur town in the state of Odisha.
- This is one of the oldest hydel projects of India, being the first post-independence major multipurpose river valley project in the country. The dam generates about 347 MW of electricity.
- The Gross storage capacity of the dam stands at 8.136 billion cubic meters (BCM). **D-1.**



81. Match List I with List II and select the correct answer using the code given below the lists:

	List I (Power Plants)		List II (State)
(A)	Thal	1.	Andhra Pradesh
(B)	Manuguru	2.	Gujarat
(C)	Kakrapar	3.	Maharashtra
(D)	Kaiga	4.	Karnataka

Codes:

- (a) A-1, B-2, C-3, D-4
(b) A-3, B-1, C-2, D-4
(c) A-2, B-1, C-4, D-3
(d) A-4, B-3, C-2, D-1

EXPLANATION:

Heavy Water Plant Thal is the first of the second-generation plants in India and is made completely with indigenous efforts. It is located at Thal-Vaishet village in Raigad district of **Maharashtra** and is about 100 kms south of Mumbai. It is about 20 kms away from Pen railway station on the Panvel - Roha section.

- The Plant is Operated by Heavy Water Board (HWB) under the Department of Atomic Energy (DAE), Government of India.
- The Plant uses the Ammonia-Hydrogen exchange process to produce heavy water (D_2O) that is used as a moderator and coolant in Pressurised Heavy Water Reactors (PHWRs), which are a major part of India's nuclear power program.
- HWP Thal was commissioned in 1987.
- The Plant adopts the latest technology using a microprocessor-based distributed digital control system for instrumentation and process control instead of the conventional pneumatic analogue system.
- The system provides supervisory and monitoring functions for feed control stations. **A-3.**

Heavy Water Plant, Manuguru (HWPM) is the largest Heavy Water Production facility in India. It is situated on the banks of the river Godavari at Mittagudem village near Bhadrachalam, **Andhra Pradesh** and 12 KM away from Manuguru, in Bhadrachalam-Kothagudem district of Telangana state.

- The Plant is Operated by Heavy Water Board (HWB), under the Department of Atomic Energy (DAE), Government of India.
- The Plant uses the Hydrogen-Ammonia exchange process that produces Heavy Water (D_2O) — used as a moderator and coolant in Pressurised Heavy Water Reactors (PHWRs) of India's nuclear power program.
- The Plant was commissioned in 1991. **B-1.**

Kakrapar Atomic Power Station is a nuclear power station in India, located on the banks of the River Tapi in the city of Vyara in the state of **Gujarat**.

It consists of two 220 MW pressurised water reactors with heavy water as moderator (PHWR). The Plant uses Uranium as fuel.

Recently, India's second home-built 700 MW nuclear power reactor at Kakrapar Atomic Power Station (KAPS) in Gujarat started operating at its full capacity from 2024. **C-2.**

Kaiga Generating Station, located near the Kali River in Uttara Kannada district, **Karnataka**, India, is a nuclear power plant operated by the Nuclear Power Corporation of India.

Operational since March 2000, it features four pressurised heavy water reactors, each with a 220 MW gross capacity. **D-4.**

82. Consider the following statements:

1. Sugarcane is a temperate crop which largely grows in Uttar Pradesh and Tamil Nadu.
2. Soil with a pH of 6.5 to 7.5 is most suitable for sugarcane growth

Which of the above statements is/are correct?

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

EXPLANATION:

Sugarcane is a most important cash crop of India. Sugarcane is grown in various states in **subtropical and tropical regions of the country**. Main sugarcane growing States are:

- **Sub Tropical: Uttar Pradesh**, Uttarakhand, Haryana, Punjab, Bihar, with an annual rainfall of 180 to 2000 mm. The climate ranges from humid, moist sub-humid and dry sub-humid to cold arid, semiarid and arid.
- **Tropical region: Karnataka, Tamil Nadu**, Maharashtra, Andhra Pradesh, Gujarat, Madhya Pradesh, with an annual rainfall of 602 to 3640 mm, having moist to dry subhumid and semiarid to dry semiarid climates. **So, Statement 1 is not correct.**

Heavy soils with good drainage are preferred for sugarcane cultivation, though it grows well on medium & light-textured soils also with assured irrigation.

- Soils with 0.5- 0.6 % carbon content & pH 6.5 to 7.5 are most suitable for sugarcane growth. **So, Statement 2 is correct.**
- In northern India, it is cultivated largely on the loams & clay loams of Gangetic & other alluviums, and in peninsular India, it is grown on brown or reddish loams, laterites and black cotton soils.

ADDITIONAL INFORMATION:

SUGARCANE	
About	➤ The sugarcane-based Sugar industry is one of the largest and important industries in tropical and sub-tropical countries of the world. ➤ The Sugarcane plant offers a huge potential, not only as a source of sucrose, a very important food, but also as a source of energy and valuable commercial products from fermentation and chemical synthesis. ➤ Sugarcane processing is focused on the production of cane sugar from sugarcane. ➤ Sugarcane is considered one of the best converters of solar energy into biomass and Sugar. ➤ Sugarcane is a rich source of food (Sucrose, jiggery and syrups), fibre (cellulose), fodder (green top, bagasse, molasses), fuel and chemicals (Bagasse molasses & alcohol). ➤ During the process of sugar production, the main byproducts of the cane sugar industry are Bagasse, Molasses and Press mud. ➤ The other co-products and byproducts of less commercial value are green leaves, green tops, trash, Boiler ash and effluents generated by the sugar industry and distillery. ➤ There are many other industries which are based on sugarcane by diversification and utilisation of co-products and byproducts of the sugar industry, instead of merely depending on the production of Sugar.

83. Consider the following peaks:

1. Dhaulagiri
2. Kanchenjunga
3. Nanda-Devi
4. Kamet peak

The correct sequence of the peaks from west to east will be

- (a) 3, 1, 4, 2
- (b) 3, 4, 1, 2
- (c) 1, 3, 2, 4
- (d) 4, 3, 1, 2**

EXPLANATION:

Dhaulagiri is a mountain massif of the Himalayas, located in west-central Nepal.

- The mountain is situated on the western side of the deep Kali (Kali Gandak) River gorge, about 40 miles (65 km) northwest of the Annapurna mountain range.
- The Dhaulagiri mountain range is known as the White Mountain.
- Many of Dhaulagiri's snow and glacier-covered peaks exceed 7,620 metres, including Dhaulagiri I, II, III, and IV. The tallest, Dhaulagiri I, reaches an elevation of 8,167 metres and is the world's seventh-highest mountain.
- The Dhaulagiri massif lies northwest of Pokhara, an important tourist centre. It is located in the Gandaki Province of Nepal.



Kanchenjunga is the world's third-highest mountain, with an elevation of 8,586 metres.

- It is the highest peak in India.
- This mountain is situated in the eastern Himalayas on the border between Sikkim state, northeastern India, and eastern Nepal, 74 km north-northwest of Darjiling, Sikkim. The mountain is part of the Great Himalaya Range.
- The Kanchenjunga massif is in the form of a gigantic cross, the arms of which extend north, south, east, and west.
- It is called Five Treasures of Snow after its five high peaks, and is worshipped by the people of Darjeeling and Sikkim.



Nanda Devi is the second-highest mountain in India, with a height of 7,817 metres and the highest entirely within the country (Kangchenjunga being on the border of India and Nepal).

- It is part of the Kumaon Himalayas, and is located in the state of Uttarakhand, between the Rishiganga valley on the west and the Goriganga valley on the east.
- The peak is regarded as the patron goddess of the Uttarakhand Himalaya.
- The surrounding Nanda Devi National Park was declared a UNESCO World Heritage Site in 1988.
- Nanda Devi is a two-peaked massif, forming a 2 kilometres (1.2 mi) long high ridge, oriented east-west. The west summit is higher, and the eastern summit is called Nanda Devi East. Together, the peaks are referred to as the twin peaks of the goddess Nanda.



Kamet Peak lies in the Chamoli district of Uttarakhand with an inspiring elevation of 7,756m above sea level.

- After Nanda Devi, it is considered to be the second-tallest peak in the Garhwal region of Uttarakhand.
- It is the third-highest mountain in India and 29th highest in the world.
- When seen from a distance, the geographical structure of the peak resembles a giant pyramid topped by a flat summit area with two peaks.
- Kamet peak is surrounded by the Paschim Kamet glacier in the west, the Purbi Kamet glacier in the east and the Raikana glacier system.



Thus, from the above maps, we can infer that the correct sequence of the peaks from west to east will be Kamet peak, Nanda Devi, Dhaulagiri and Kanchenjunga (4-3-1-2). **So, Option (d) is correct.**

84. Which of the following towns are **not** associated with the silk weaving industry in India?

1. Murshidabad
2. Ludhiana
3. Vadodara
4. Ambala

Select the correct answer using the codes given below:

- (a) 2, 3 and 4 only
(b) 1, 2 and 4 only
(c) 1, 2 and 3 only
(d) 1, 3 and 4 only

EXPLANATION:

The silk weaving industry was the principal cottage industry in Murshidabad, West Bengal. The silk industry in West Bengal is concentrated in Murshidabad. The brand "Murshidabad silk" is not only famous across India, but also has a great demand throughout the world. Murshidabad silk is very fine, lightweight and easy to drape. The sericulture industry is the principal agro-based rural industry in Murshidabad. **So, Statement 1 is not correct.**

Ludhiana is a city in the central Punjab, India. The city stands on the former bank of the Sutlej River, 13 km south of its present course and about 270 km northwest of Delhi. Ludhiana is famous for its hosiery industry (not associated with the silk weaving industry). The city is known as the Manchester of Punjab. The city produces a substantial portion of India's hosiery and knitwear, supplying domestic and international markets. **So, Statement 2 is correct.**

Vadodara is one of Gujarat's most vibrant cities — a blend of rich heritage, cultural diversity, and rapid urban development.

- The economy here is mainly based on Fertilisers, Cotton textiles, Machine tools, Pharmaceuticals, chemicals, Biotechnology, Engineering, Tobacco, Fisheries, glass and Dairy.
- Agriculture also plays an important role in the economy of Vadodara. Crops like Tobacco, Groundnut, wheat, Grams, Jowar, Oilseeds, and Sugarcane. Vadodara is the leading producer of pulses, fruits and flowers in the state of Gujarat.
- Thus, Vadodara is not associated with the silk weaving industry in India. **So, Statement 3 is correct.**

Ambala is a city in northern Haryana state, northwestern India. It lies just east of the Ghaggar River, about 40 km south of Chandigarh.

- Ambala is a major grain, cotton, and sugar trade centre and is connected by road and rail with Delhi (south) and Amritsar (northwest; Punjab state). Other rail lines run northward to Chandigarh, Shimla, and Kalka and southeastward to Saharanpur.
- Economically important industries include cotton ginning, flour milling, food processing, and various manufactures. Cloth weaving and bamboo furniture making are important handicrafts.
- Thus, Ambala is not associated with the silk weaving industry in India. **So, Statement 4 is correct.**

ADDITIONAL INFORMATION:

SILK INDUSTRY IN INDIA	
About	➤ India is the second largest producer of silk and also the largest consumer of silk in the world. ➤ In India, mulberry silk is produced mainly in the states of Karnataka, Andhra Pradesh, Tamil Nadu, Jammu & Kashmir and West Bengal, while the non-mulberry silks are produced in Jharkhand, Chhattisgarh, Odisha and northeastern states. ➤ Mulberry silk comes from silkworms that eat only mulberry leaves. It is soft, smooth, and shiny with a bright glow, making it perfect for luxury sarees and high-end fabrics. ➤ 92% of the country's total raw silk production comes from mulberry.

	➤ Non-mulberry silk (also known as Vanya silk) comes from wild silkworms that feed on leaves from trees like oak, castor and arjun. This silk has a natural, earthy feel with less shine but is strong, durable, and eco-friendly. ➤ Silk is a high-value but low-volume product accounting for only 0.2 % of the world's total textile production. Silk production is regarded as an important tool for economic development. The developing countries rely on it for employment generation, especially in the rural sector and also as a means to earn foreign exchange.
Life Cycle of a Moth	➤ Sericulture is the process of farming silkworms to make silk. ➤ Silkworms are raised on mulberry, oak, castor, and arjun leaves. ➤ After about a month, they spin cocoons. ➤ These cocoons are collected and boiled to soften the silk. ➤ The silk threads are then pulled out, twisted into yarn, and woven into fabric. This careful process turns small silkworms into shiny silk. Life Cycle of Moth 

85. Arrange the following passes from North to South.

- (a) **Bum La – Bomdi La – Chankan Pass**
 (b) Bomdi La – Bum La – Chankan Pass
 (c) Chankan Pass – Bumla – Bomdila
 (d) Chankan Pass – Bomdi La – Bum La

EXPLANATION:

- Bum La Pass, situated at a staggering altitude of 4,572 meters (15,000 feet) above sea level, serves as one of the most surreal and strategic passes along the Indo-China border in Arunachal Pradesh (northernmost). Located approximately 37 kms from Tawang town, this pass is not just a geographical entity but also a historical and political landmark, marking a critical point near the Line of Actual Control between India and China.
- Bomdi la Pass is situated in the West Kameng district of Arunachal Pradesh on the way to Bomdila. It is located at an altitude of 2,217 meters (7,274 ft) above sea level and connects Bomdila to the rest of the state. The pass offers stunning views of the surrounding valleys and hills. Bomdi La is slightly south of Bum La Pass, linking Tawang and West Kameng.
- Chaukan Pass is located at the southern tip of Arunachal Pradesh, near the Indo-Myanmar border, hence the southernmost. It is situated at an altitude of 2,400 meters (7,874 ft) above sea level and is located in the Lower Dibang Valley district of Arunachal Pradesh. Chankan Pass is an important

transportation route that connects the town of Roing in Arunachal Pradesh with Tezu in the neighbouring state of Assam.

From north to south, the correct sequence of passes is Bum La -> Bomdi La -> Chankhan Pass. **So, Option (a) is correct.**



86. Consider the following statements regarding the Peninsular plateau of India:

1. Ranchi and Malwa Plateaus are examples of patlands.
2. The Peninsular plateau is one of the most stable landmasses of India.
3. The general elevation of the peninsular plateau increases from west to east.

Which of the statements given above is/are correct?

- (a) 2 and 3 only
- (b) 3 only
- (c) 1, 2 and 3
- (d) 1 and 2 only**

EXPLANATION:

The Peninsular Plateau, rising from the height above the river plains up to an elevation of 600-900, is the irregular triangle known as the Peninsular Plateau.

Peninsular India is made up of a series of plateau landforms, such as the Hazaribagh plateau, the Palamu plateau, the Ranchi plateau, the Malwa plateau, the Coimbatore plateau and the Karnataka plateau, etc. This is one of the oldest and most stable landmasses of India. **So, Statement 1 is correct.**

The land of India displays great physical variation. Geologically, the Peninsular Plateau constitutes one of the ancient landmasses on the Earth's surface. It was supposed to be one of the most stable land blocks. The Himalayas and the Northern Plains are the most recent landforms. From the viewpoint of geology, the Himalayan mountains form an unstable zone. **So, Statement 2 is correct.**

The general elevation of the Peninsular plateau decreases from west to east (not increases), which is also proved by the pattern of the flow of rivers.

- Some of the important physiographic features of this region are tors, block mountains, rift valleys, spurs, bare rocky structures, a series of hummocky hills and wall-like quartzite dykes offering natural sites for water storage.

The western and northwestern part of the plateau has an emphatic presence of black soil. **So, Statement 3 is not correct.**

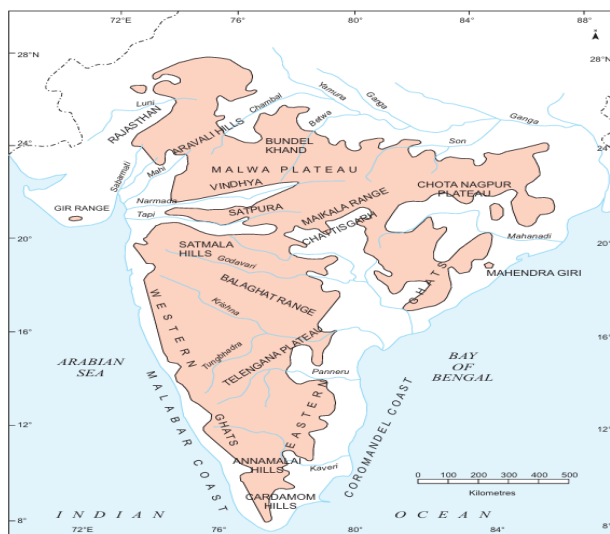


Figure 9.6 The Peninsular plateau of India

ADDITIONAL INFORMATION:

PENINSULAR PLATEAU OF INDIA	
About	The Peninsular plateau is a triangular-shaped tableland. It is part of an ancient land mass called the Gondwana level. It covers an area of nearly 5 lakh sq.km. It is spread over the states of Gujarat, Maharashtra, Bihar, Karnataka and Andhra Pradesh. <i>The River Narmada divides the peninsular plateau into two parts: The central highlands and the Deccan Plateau.</i>
The central Highlands	It extends from the Narmada River and the northern plains. A ravallis is an important mountain which extends from Gujarat through Rajasthan to Delhi. The highest peak of the Aravalli hills is Gurushikhar (1722m) near Mt. Abu. ➤ The Malwa Plateau and Chhota Nagpur Plateau are parts of the central highlands. ➤ River Betwa, Chambal and Ken are the important rivers of the Malwa plateau, while Mahadeo, Kaimur and Maikal are the important hills of the Chhota Nagpur plateau. ➤ The valley of Narmada lies between the Vindhya and the Satpura, which flows east to west and joins the Arabian Sea.
The Deccan Plateau	The Deccan plateau is separated by a fault (A fracture in the rock along which rocks have been relatively replaced) from the Chota Nagpur plateau. The black soil area in the Deccan Plateau is known as the Deccan Traps. It is formed due to volcanic eruptions. This soil is good for cotton & sugarcane cultivation.
The Deccan plateau is broadly divided into	The Western Ghats: ➤ The Western Ghats or Sahyadris lie on the Western edge of the Deccan plateau. It runs parallel to the western coast for about 1600 km. The average elevation of the Western Ghats is 1000 metres. ➤ The famous peaks in this area are Doda Betta, Anaimudi, and Makurti. The highest peak in this region is Anaimudi (2695m). ➤ Western Ghats are continuous and can be crossed through passes like Pal Ghat, Thal Ghat and Bhor Ghat. ➤ The rivers like Godavari, Bhima and Krishna flow eastward, while the river Tapi flows westward. The streams form rapids & waterfalls before entering the Arabian Sea. ➤ The famous waterfalls are Jogfalls on Sharavati, Shiva Samudram falls on Kaveri, etc.

The Eastern Ghats:

- The Eastern Ghats are a discontinuous low belt. Their average elevation is 600 m. They run parallel to the east coast from south of the Mahanadi valley to the Nilgiri hills.
- The highest peak in this region is Mahendragiri (1501 m). The famous hills are the Mahendragiri hills, the Nimaigiri hills in Orissa, the Nallamallai hills in Southern Andhra Pradesh, and the Kollimalai and Pachaimalai in Tamil Nadu.
- The area is drained by the Mahanadi, Godavari, Krishna and Kaveri river systems.
- The Nilgiri hills join the Western & Eastern Ghats in the south.

87. Consider the following statements regarding Natural disasters:

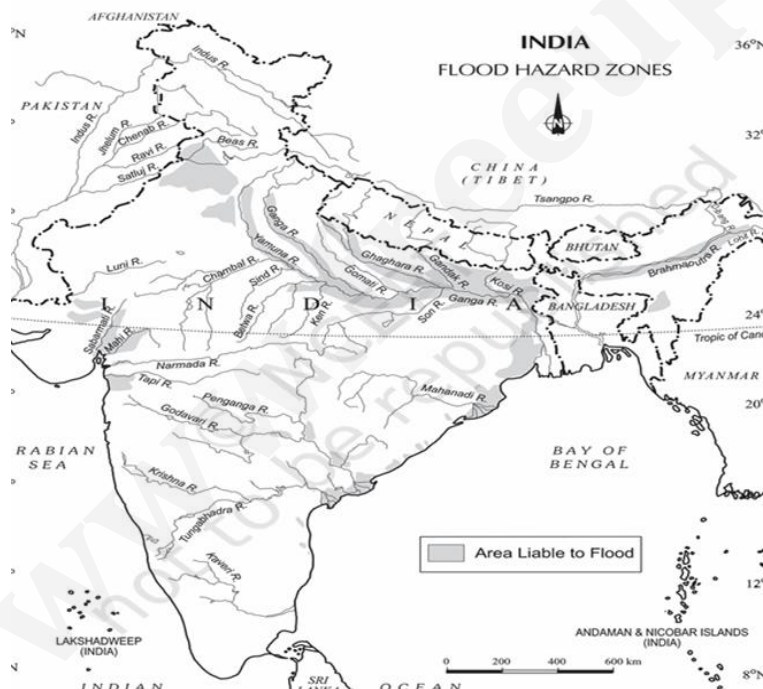
1. Drought is occasional, and floods are frequent.
 2. In India, more areas are affected by drought than by flood.
 3. All underwater earthquakes cause tsunamis because they discharge a huge amount of water.
- Which of the statements given above is/are correct?

- (a) 2 only
 (b) 3 only
(c) 1 and 2
 (d) 1, 2 and 3

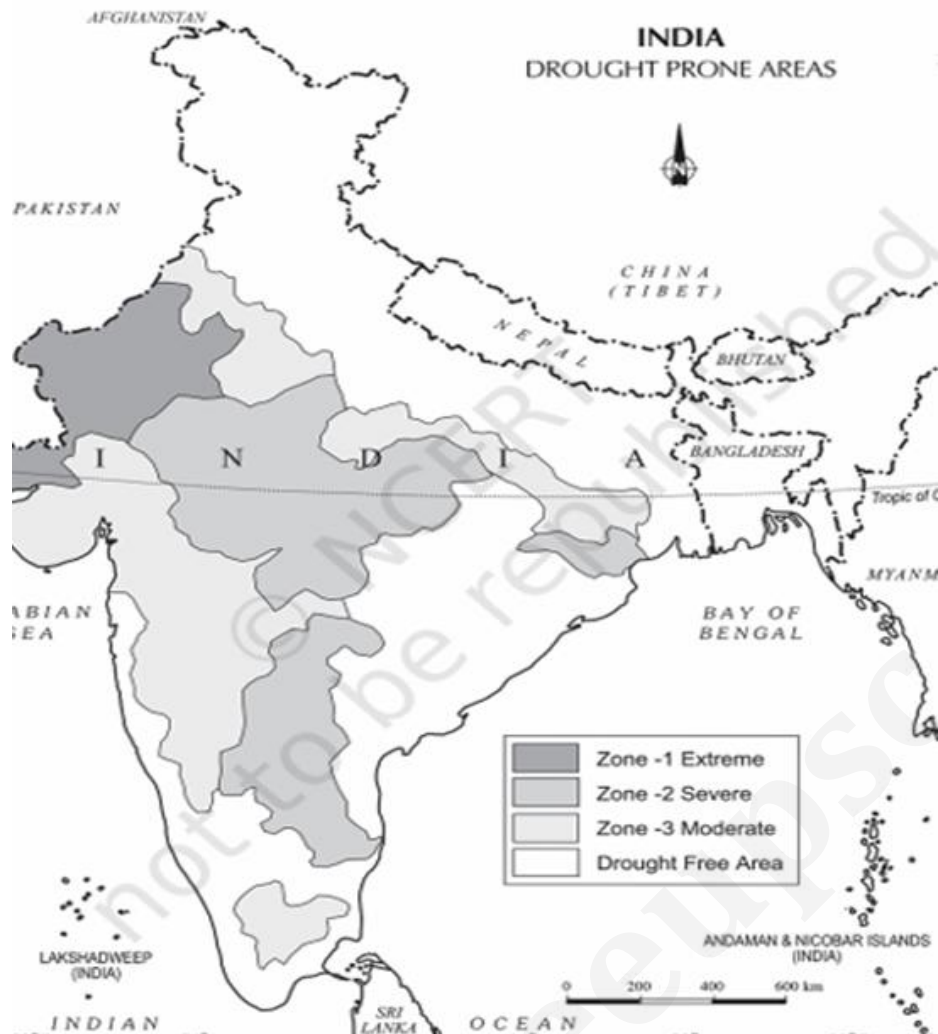
EXPLANATION:

Floods in India occur when surface run-off exceeds river capacity, mainly during the monsoon, affecting about 40 million hectares (According to the National Flood Commission).

Major flood-prone states include Assam, Bihar, and West Bengal, while flash floods have recently affected Rajasthan, Gujarat, and Punjab.



In contrast, droughts affect nearly 30% of India's area and 50 million people annually, caused by deficient Rainfall and overuse of water resources.



Thus, from the above data, a larger geographical area is affected by drought than by flood. **Statement 2 is correct.**

Floods occur more frequently and affect some part of India almost every year, whereas droughts are relatively occasional events that occur when there is a significant deficiency in monsoon rainfall. **So, Statement 1 is correct.**

- India's monsoon pattern and river systems make floods a recurring annual phenomenon in many regions such as the Indo-Gangetic plains, Assam, Bihar, and parts of eastern and coastal India.
- Droughts are episodic and occur when Rainfall is below the long-period average over large areas. They depend on monsoon failure, and thus, occur less frequently (for instance, once in 2–3 years in some parts).

Tsunamis are caused by violent disturbances of the seafloor associated with earthquakes, submarine landslides, volcanic eruptions (lava entering the sea), seamount collapse, or even meteorite impacts.

- The most common cause of tsunamis is undersea earthquakes, which account for about 72% of all recorded events. Any disturbance that vertically displaces a large mass of water from its equilibrium position can generate a tsunami.
- Earthquake magnitude plays a crucial role in tsunami generation. Underwater earthquakes of magnitude below 6.5 are very unlikely to trigger tsunamis.
- Earthquakes of magnitude between 7.6 and 7.8 (or higher) may produce destructive tsunamis, but only if their epicentre is shallow and involves vertical displacement of the seabed.

Therefore, not all underwater earthquakes cause tsunamis, as only those that involve significant vertical movement of the ocean floor and occur at shallow depths are capable of generating them. **So, Statement 3 is not correct.**

88. Which of the following is **not** a characteristic of monsoonal Rainfall in India?:

- (a) Sudden burst
- (b) Dry spell
- (c) On first week of July, coverage is almost all over the country
- (d) The East Coast gets more Rainfall than the other parts**

EXPLANATION:

The rain in the southwest monsoon season begins rather abruptly. One result of the first rain is that it brings down the temperature substantially. This sudden onset of the moisture-laden winds associated with violent thunder and lightning is often termed the “break” or “burst” of the monsoons.

So, Option (a) is correct.

During the south-west monsoon period, after having rains for a few days, if rain fails to occur for one or more weeks, it is known as a break in the monsoon.

These dry spells are quite common during the rainy season. These breaks in the different regions are due to different reasons: In northern India, rains are likely to fail if the rain-bearing storms are not very frequent along the monsoon trough or the ITCZ over this region. Over the west coast, the dry spells are associated with days when winds blow parallel to the coast. **So, Option (b) is correct.**

By the first week of July, the entire country is overrun by the humid monsoon season, and the rains get well established in all the regions. The monsoon trough (low pressure feature) stretching from the head of the Bay of Bengal to Rajasthan exists between the westerly winds on the Arabian Sea current, and the easterly wind of the deflected Bay of Bengal current. **So, Option (c) is correct.**

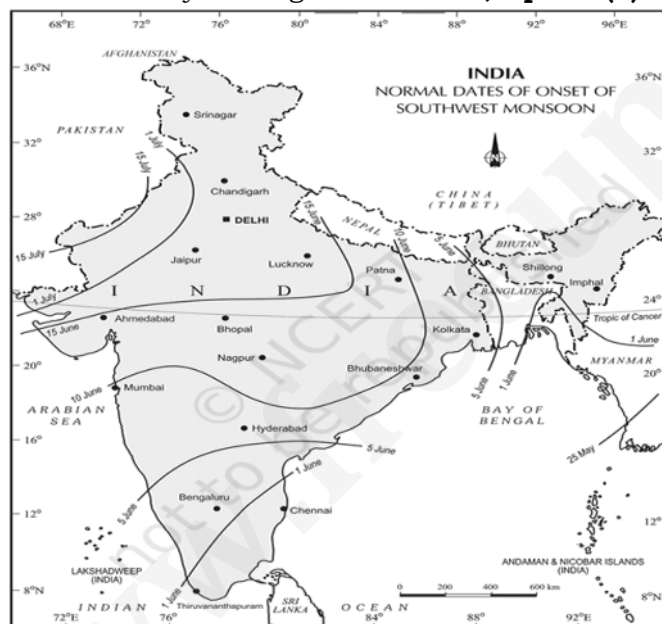


Figure 4.2 : India : Normal Dates of Onset of the Southwest Monsoon

India receives a major amount of Rainfall (75%) from the south-west (SW) monsoon in the monsoon season (June-September).

- The highest Rainfall occurs along the west coast, on the Western Ghats, as well as in the sub-Himalayan areas, in the northeast and the hills of Meghalaya. Here, the Rainfall exceeds 200 cm. In some parts of the Khasi and Jaintia hills, the Rainfall exceeds 1,000 cm. In the Brahmaputra valley and the adjoining hills, the Rainfall is less than 200 cm.
- As the southwest monsoon begins to fade, the northeast monsoon sets in by October. This is also called the *retreating monsoon*. It is shorter and less widespread but still important, especially for southern India. As they reach Tamil Nadu, south Andhra Pradesh and parts of Sri Lanka, they provide abundant moisture for rainfall activity. This rain is crucial for regions like Tamil Nadu that do not receive much during the southwest monsoon

Thus, the East Coast does not get more rainfall during the southwest monsoon season. **So, Option (d) is not correct.**

89. Among the following, select the suitable factors for wheat cultivation.:

1. Fertile, friable, loamy and clay soil
2. Sudden rise in temperature at the time of maturity
3. Cool climate with moderate Rainfall
4. Frost during flowering time

Select the correct answer using the code given below:

- (a) 1, 2 and 4 only
- (b) 1, 2 and 3 only
- (c) 1 and 4 only
- (d) 1 and 3 only**

EXPLANATION:

The cereals occupy about 54 per cent of the total cropped area in India. India produces a variety of cereals, which are classified as fine grains (rice, wheat) and coarse grains (jowar, bajra, maize, ragi), etc.

- Wheat is the second most important cereal crop in India after rice. India produces about 12 per cent of the world's total wheat production. It is primarily a crop of the temperate zone. Hence, its cultivation in India is done during winter, i.e. rabi season.
- Wheat can be grown in a variety of soils; well-drained, fertile, friable loams and clay loams are the best-suited soils for wheat cultivation. It also grows well in the black soil of the Deccan plateau. Wheat cultivation is an extensive type of farming which is highly mechanised and requires comparatively less labour. It is mainly grown in the flat alluvial plains of north India. **So, Statement 1 is correct.**

Wheat is primarily a crop of mid-latitude grasslands and requires a cool climate with moderate rainfall. The ideal wheat climate has winter temperatures of 10° to 15°C and summer temperatures varying from 21°C to 26°C.

- The temperature should be low at the time of sowing, but as the harvesting time approaches, higher temperatures are required for proper ripening of the crop. But a sudden rise in temperature at the time of maturity is harmful.
- Wheat thrives well in areas receiving an annual rainfall of about 75 cm. Annual rainfall of 100 cm is the highest limit of wheat cultivation. The isohyet of 100 cm marks the boundary between wheat-growing areas on one hand and rice-growing areas on the other. **So, Statement 2 is not correct, and Statement 3 is correct.**

In areas of less than 50 cm of annual rainfall, irrigation is necessary for its successful growth. In fact, wheat can be grown in areas with as little as 20-25 cm annual rainfall, provided proper irrigation facilities are available.

- About 5 to 7 waterings are required in irrigated areas, depending upon the amount of rainfall. While prolonged drought, especially in rainfed areas, at the time of maturity is harmful, light drizzles and cloudiness at the time of ripening help in increasing the yield.
- Frost at flowering time and hailstorms at the time of ripening can cause heavy damage to the wheat crop. **So, Statement 4 is not correct.**

ADDITIONAL INFORMATION:

WHEAT	
Recently in news	The government on (October 1, 2025) announced a 6.59% increase in the minimum support price (MSP) for wheat to ₹2,585 per quintal for 2026-27 marketing year.
About	Wheat is the main cereal crop of India. The total area under the crop is about 29.8 million hectares in the country. ➤ It can be grown not only in the tropical and sub-tropical zones, but also in the temperate zone and the cold tracts of the far north, even beyond the 60° N latitude. ➤ The best wheat is produced in areas favoured with cool, moist weather during the major portion of the growing period, followed by dry, warm weather to enable the grain to ripen properly.

- The ideal temperature for the cultivation is about 15°-20°C and requires moderate amounts of rainfall of 25-75 cms.
- The regions with a warm and damp climate are not suited for wheat growing. Production of wheat during 2019-20 was estimated at 107.18 million tons. It has increased by 3.58 million tons as compared to wheat production during 2018-19.
- The top four major wheat-producing states of India are Uttar Pradesh, Punjab, Madhya Pradesh and Haryana.

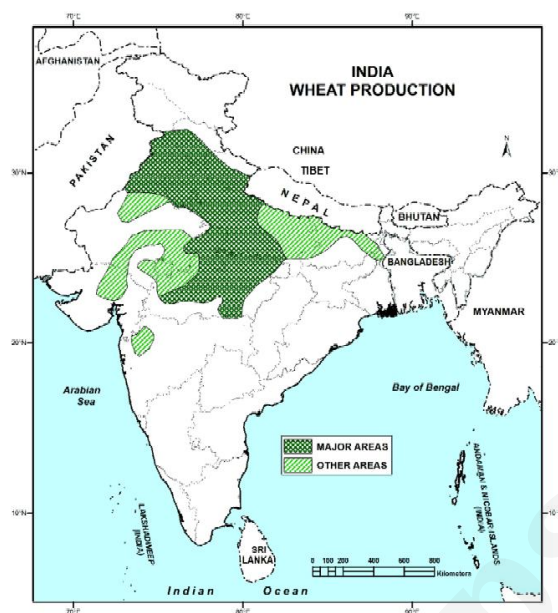


Fig. 17.2: Wheat Producing Areas

90. Consider the following statements :

1. Lower Gondwana possesses the most valuable and best coalfields and accounts for about 80% of total coal production in India.
 2. Anthracite coal is generally found in the Gondwana region.
- Which of the statements given above is/are correct?

- (a) 1 only
 (b) 2 only
 (c) Both 1 and 2
 (d) Neither 1 nor 2

EXPLANATION:

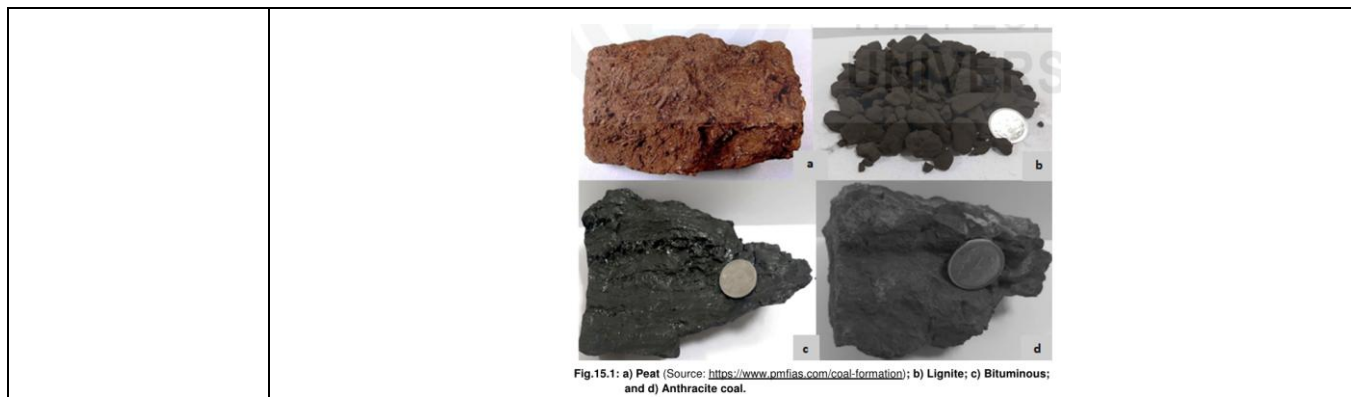
Gondwana coal makes up to 98 per cent of the total reserves and 99 per cent of the production of coal in India. Satpuras, denudation [weathering + erosion] has exposed coal-bearing Gondwana strata.

- The carbon content in Gondwana coal [250 million years old] is less compared to the Carboniferous coal [350 million years old] [Almost Absent in India] because of its much younger age.
- Gondwana coal forms India's metallurgical grade as well as superior quality coal.
- The Damuda series (i.e. Lower Gondwana) possesses the best worked coalfields accounting for 80 per cent of the total coal production in India.
- 80 out of 113 Indian coalfields are located in the rock systems of the Damuda series [lower Gondwana Age]. **So, Statement 1 is correct.**

Anthracite is generally not found in the Gondwana coal fields. Anthracite is the best quality of coal, which carries 80 to 95 per cent carbon content. It ignites slowly with a blue flame. It has the highest calorific value. It is found in small quantities in Jammu and Kashmir. Gondwana coal is 100 million years younger than Carboniferous coal. Gondwana coal is free from moisture, but it contains sulfur and phosphorus. **So, Statement 2 is not correct.**

ADDITIONAL INFORMATION:

COAL	
Recently in news	Coal production in India rose about 8% on a month-on-month basis, notwithstanding a lacklustre season owing to operational constraints triggered by monsoons and typically lower demand during the period.
About	Coal is divided into four major classes in order of progressive maturity: ➤ Peat ➤ Lignite ➤ Bituminous, and ➤ Anthracite
Peat	➤ Peat: It is the first stage in the formation of all coal types. It is an accumulation of partly decomposed and distinguished organic materials derived mainly from the woody parts of plants. Its colour varies from light brown to dark brown. It varies in consistency from a fibrous, matted, porous, turf-like material to a soft, plastic mud-type coal. ➤ Distribution: The important sources of peat in the country are in the Nilgiri hills of Tamil Nadu and the Sundarbans of West Bengal. ➤ Uses: Peat is a low-value fuel in its application. It finds uses where available in abundance as a domestic fuel, a gas purifier, for steam raising, in thermal power stations and also as a soil treatment material.
Lignite	➤ Lignite: It is the next stage in the formation of coal from peat. It is an immature coal. It is sometimes called 'brown coal' because of its characteristic brown colour. It is compact and earthy in texture and contains impressions and remains of woody matter and leaves. ➤ Distribution: In India lignite occurs in Neyveli area, South Arcot District, Tamil Nadu and at a number of places in Pondicherry, Palana area in Rajasthan, Kutch in Gujarat and Jammu and Kashmir, etc. ➤ Uses: Lignite is used as domestic fuel and also in industry for distillation and gasification. This variety of coal has also been used in steam locomotives and for producing gas.
Bituminous	➤ Bituminous: It is also known as common coal and is an important variety of commercial coals. Bituminous coals are brittle, dense, dark in colour, well-jointed and often show well-defined bands of bright and dull materials. They are compact in structure and usually break into prismatic and cubical blocks when struck with hammer. This coal does not disintegrate when exposed to air. They burn with a yellow smoky flame. On the basis of its carbon content, common bituminous coals are of three types: • sub-bituminous, • bituminous • semi-bituminous. ➤ Distribution: In India, bituminous coals are found in the Lower Gondwana, Raniganj and Jharia Coalfields. ➤ Uses: Usually, they are used in the manufacture of metallurgical coke. Bituminous coals are used as fuel in steam raising, heating and producing gas, besides making coke.
Anthracite	➤ Anthracite: It is a coal of the highest rank in which the organic source has been completely transformed into a carbonaceous substance. It is very hard and jet black in colour and compact in structure. Anthracite is very rare in India. Graphite is a crystalline form of the element carbon, with its atoms arranged in a hexagonal structure. Under high pressures and temperatures, it converts to diamond. ➤ Distribution: Semi anthracite is developed in some parts of Jammu and Kashmir and along the Northern and Eastern Himalayan region. ➤ Uses: Anthracite is a favourite domestic fuel in regions where it is available. It is also used for steam rising and other heating purposes. However, it is not suitable for making coke due to its low volatile matter content.



91. Arrange the following states in descending order with regard to their Natural gas production:

1. Rajasthan
2. Tripura
3. Andhra Pradesh
4. Assam

Select the correct answer using the code given below:

- (a) 1, 4, 2, 3
- (b) 2, 3, 4, 1
- (c) 3, 2, 1, 4
- (d) 4, 1, 2, 3**

EXPLANATION:

Natural gas – often simply described as ‘gas’ – is a fossil fuel that is widely used around the world for a range of essential purposes.

- Its primary uses include as a domestic fuel for cooking and heating, as a fuel that provides reliable power generation and as a key ingredient in chemical manufacturing processes, like fertiliser production.
- Natural gas is valued for power generation as the cleanest-burning fossil fuel.
- Natural gas is a mix of gaseous hydrocarbons, formed when layers of organic matter decompose and are subjected to intense heat and pressure underground over millions of years. It is literally a fuel made from fossils and is found in rock formations below the Earth’s surface and under the ocean.
- The hydrocarbon that makes up the biggest part of natural gas is methane (CH₄), ahead of ethane, propane, butane, and pentane.
- Traces of carbon dioxide (CO₂), nitrogen, hydrogen sulfide and helium are also often found in natural gas.
- Both methane and natural gas are odourless, and an additive like mercaptan (which smells like rotten eggs) is introduced so that leaks can be detected.
- Traditional methods for extracting natural gas are quite similar to oil production. Conventional gas resources are located deep underground in rock formations known as reservoirs. By drilling a well into rocks that have previously trapped the natural gas in the reservoir, it is possible to unlock a controlled gas flow.
- The other major method of extracting natural gas onshore is hydraulic fracturing – or fracking.
- State-wise Natural Gas Production (in Million Metric Standard Cubic Meter), in 2021-22, is as follows:
 - Assam – 3371
 - Rajasthan – 2619
 - Tripura – 1531
 - Tamil Nadu – 1067
 - Andhra Pradesh - 809

Therefore, states in descending order with regard to their Natural gas production are **Assam** → **Rajasthan** → **Tripura** → **Andhra Pradesh**. So, Option (d) is correct.

92. Consider the following statements:

1. Indira Gandhi Canal System irrigates around one-fifth of the agricultural land in Punjab.
2. Sirhind Canal is the longest Canal system in India.

Which of the statements given above is/are **not** correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

EXPLANATION:

Indira Gandhi Canal originates from the Harike Barrage near the confluence of the Satluj and Beas rivers in the Ferozepur district of Punjab. The plan for this canal was prepared in 1957-58, and the work on this project started on 31st March 1958. The canal does not do any irrigation in Punjab and is known as the Rajasthan Feeder.

- The total length of the Rajasthan Feeder is 204 km. The main canal is 40 metres wide at the bottom and 6.4 metres deep.
- The carrying capacity of the canal is 18,500 cusecs of water at its head. According to a proposal in 1981, Rajasthan was allocated 8.6 million acre feet of Ravi-Beas surplus water.

The Indira Gandhi Canal envisages the utilisation of 7.6 million acre feet of water allocated to Rajasthan. **So, Statement 1 is not correct.**

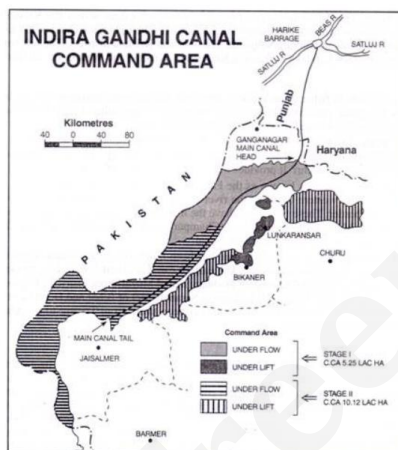


FIG. 17.8. Indira Gandhi Canal Command Area

The Indira Gandhi Canal irrigates a vast amount of the Thar Desert. It is the longest canal in India (not Sirhind). Stretching up to 650 kilometres, it starts at the Harike Barrage in Harike and draws water from the Satluj and Beas rivers in Punjab. Finally, it drains into the Thar Desert in northwest Rajasthan.

Carrying water directly from the Beas and Satluj, in Punjab, is useful in the growth of the flora of the desert, on which a large chunk of the Desert's economy depends, after tourism. It is also this Canal that is the main source of Hydroelectric power generation in the region. **So, Statement 2 is not correct.**

ADDITIONAL INFORMATION:

CANALS IRRIGATION IN INDIA	
Recently in news	India is advancing its Indus water strategy by initiating a feasibility study for a 113 km canal to transfer surplus water from Jammu & Kashmir to Punjab, Haryana, and Rajasthan. This project aims to fully utilise the eastern rivers and India's allocated share in the western rivers, potentially reducing water flow to Pakistan.
About	➤ Punjab and Haryana:

	• Sir Hind canal: Constructed in 1884 over Sutlej River at Roper. This canal system contributes substantial water to the Hissar, Ludhiana and Ferozepur districts. • Bhakra canal system: The construction work of the Bhakra canal was started during the First Five-Year Plan to irrigate large tracts of agricultural land in Punjab and Haryana. The districts of Hissar and Rohtak are getting maximum water from the Bhakra dam. • Nangal canal: Nangal canal is the continuation of the Bhakra canal. Mostly Jullundur and Patiala districts in Punjab and Rohtak and Karnal districts in Haryana are benefited by the irrigation water from this canal. ➤ Uttar Pradesh: • Sharda canal: This old canal irrigates large tracts of Gorakhpur, Lucknow, Faizabad districts. Other important canal systems of the state are Betwa canal, Agra canal, Ramganga canal etc. ➤ Orissa: The famous Hirakud project and the Mahanadi canal are supplying ample irrigated wa-ter to Puri, Cuttack and Sambalpur districts.
	
Indus Waters Treaty	➤ The Indus Waters Treaty was signed in 1960 after nine years of negotiations between India and Pakistan with the help of the World Bank, which is also a signatory. ➤ The Treaty allocates the Western Rivers (Indus, Jhelum, Chenab) to Pakistan and the Eastern Rivers (Ravi, Beas, Sutlej) to India. ➤ At the same time, the Treaty allows each country certain uses of the rivers allocated to the other.

93. Consider the following statements :

1. West Bengal is the largest producer of fish in India.
2. Smart and Eco-Friendly Fishing Harbours are being developed in the ports of Karaikal in Puduchery and Jakhau in Gujarat.
3. Indian Mackerel accounts for about one-third of the total fish catch in India.

Which of the statements given above are correct?

- (a) 1, 2 and 3
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1 and 3 only

EXPLANATION:

India is the second-largest fish-producing country with around 8% share in global fish production. The country is also home to more than 10% of the global fish biodiversity and is one of the 17 mega-biodiversity-rich countries. Around 14 million people are engaged in fisheries and their allied activities. Andhra Pradesh is the largest fish producer in the country, followed by West Bengal and Gujarat. **So, Statement 1 is not correct.**

India is developing "Smart and Eco-Friendly Fishing Harbours," known as "Blue Ports," as part of a modernisation initiative under the Pradhan Mantri Matsya Sampada Yojana (PMMSY). Three pilot harbours have been approved for development in Vanakbara (Diu), Karaikal (Puducherry), and Jakhau (Gujarat) with a total investment of ₹369.80 crore.

These modern harbours aim to revolutionize post-harvest fisheries infrastructure by ensuring safer, cleaner, and more efficient operations for India's fishing communities. Supported under the PMMSY, the initiative integrates smart technologies such as IoT devices, sensor networks, satellite communication, and data analytics to streamline harbour operations and enable real-time decision-making. **So, Statement 2 is correct.**

As per the Central Marine Fisheries Research Institute (CMFRI), India's marine fish catch fell slightly in 2024 to 3.47 million tonnes, down two per cent from the previous year.

- Indian mackerel topped the catch list at 263,000 tonnes, followed by oil sardine at 241,000 tonnes.
- Gujarat landed the most fish for the year at 754,000 tonnes, followed by Tamil Nadu with 679,000 tonnes and Kerala with 610,000 tonnes, CMFRI said in its annual estimates.
- Across the country, landings of mackerel, threadfin breams, oil sardine, ribbonfish, non-penaeid shrimps and cephalopods fell from 2023 levels. But catches of lesser sardines, penaeid shrimps, anchovies and tuna increased.

Thus, Indian Mackerel (*Rastrelliger kanagurta*) is contributing to nearly 30 % (about one third) of India's total marine fish landing. **So, Statement 3 is correct.**

94. Consider the following with respect to the Asian Elephant:

1. The highest densities of Asian Elephants are found in tropical deciduous forests.
2. According to the latest survey, Kerala harbours the largest population of the Asian Elephant in India.

Which of the statements given above is/are correct?

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

EXPLANATION:

The Asian elephant is the largest land mammal on the Asian continent. They inhabit dry to wet forest and grassland habitats in 13 range countries spanning South and Southeast Asia.

- In India, the Asian elephant was once widely distributed throughout the country, including in states like Punjab and Gujarat.
- Currently, they are found in four fragmented populations in the south, north, central and northeast India.
- Habitat generalists' habitat ranges from wet tropical evergreen forests to semi-arid thorn and scrub forests.
- However, the highest densities of the elephant population are found in tropical deciduous forests.
- Elephants are 'mega-herbivores' that require vast tracts of forests and grasslands rich in food and water to survive. **So, Statement 1 is correct.**

India's Asian elephant population is estimated to be 22,446, according to the results of the much-delayed Synchronous All India Elephant Estimation (SAIEE) 2021-25. Among states, Karnataka continues to harbour the largest population (6,013), followed by Assam (4,159), Tamil Nadu (3,136), Kerala (2,785), Uttarakhand (1,792), and Odisha (912). **So, Statement 2 is not correct.**

State/Landscape	Population
Karnataka	6,013
Tamil Nadu	3,136
Kerala	2,785
Western Ghats	11,934
Jharkhand	217
Odisha	912
Madhya Pradesh	97
Chhattisgarh	451
Maharashtra (Western Ghats & Gadchiroli)	63
West Bengal (South)	31
Andhra Pradesh	120
Central India & Eastern Ghats	1,891
Uttarakhand	1,792
Uttar Pradesh	257
Bihar	13
Shivalik Hills & Gangetic Plains	2,062
Arunachal Pradesh	617
Assam	4,159
Manipur	9
Meghalaya	677
Mizoram	16
Nagaland	252
Tripura	153
West Bengal (North)	676
North Eastern Hills & Brahmaputra Flood Plains	6,559
Total	22,446

ADDITIONAL INFORMATION:

ELEPHANT POPULATION IN INDIA 2025	
Recently in news	India's wild elephant population has been estimated at 22,446, lower than the 2017 figure of 27,312, according to the country's first-ever DNA-based count.
Asian Elephant: Key Facts	➤ Elephants are the largest terrestrial mammals. An Asian elephant bull can reach a height of about 11 feet and weigh over six tonnes. ➤ Record tusks have measured over 8 feet (240 cm), though they usually range between 3 to 6 feet (91–182 cm) in length. ➤ Females and some males (called makhnas) lack tusks but possess small, tusk-like teeth known as tushes. ➤ The ears of Asian elephants are smaller than those of African elephants, and the trunk tip has one finger-like projection, unlike the two found in African species. ➤ Being purely vegetarian, an adult elephant consumes around 150–200 kg of fodder and drinks up to 200 litres of water per day.
Population and Distribution	According to the latest Elephant Census, the highest elephant populations are found in: ➤ Western Ghats – 11,934 ➤ North Eastern Hills and Brahmaputra floodplains – 6,559 ➤ Shivalik Hills and Gangetic plains – 2,062 ➤ Central India and Eastern Ghats – 1,891
Conservation Concerns	➤ The Western Ghats, once home to a contiguous elephant population, now face fragmentation due to expanding plantations (coffee and tea), invasive species, farm fencing, and rapid developmental activities.

	➤ In the Western Ghats, Shivalik Hills, and Brahmaputra plains, major threats include habitat loss, corridor disruption due to railways, roads, and power infrastructure, and encroachments. ➤ In Central India, mining activities pose a serious threat to elephant habitats. ➤ Other persistent challenges include human–elephant conflicts, invasive plant species, and habitat degradation.
Way Forward	The report emphasizes the need for: ➤ Restoring habitat connectivity between fragmented elephant ranges. ➤ Strengthening law enforcement to protect corridors. ➤ Collaborative management with local communities to mitigate conflicts and ensure the species' long-term survival, especially in the Northeast region.

95. Consider the following:

Statement I:

Most of the peninsular river flows from west to east.

Statement II:

It is due to the Upheaval of the Himalayas when the Northern flank of the Peninsular block was subjected to subsidence.

Which one of the following is correct in respect of the above statements?

- (a) **Both Statement-I and Statement-II are correct and Statement-II explains Statement-I.**
 (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I.
 (c) Statement-I is correct but Statement-II is not correct
 (d) Statement-I is not correct but Statement-II is correct

EXPLANATION:

Most of the major rivers of the Peninsular India, except the Narmada and Tapi, flow from west to east and drain into the Bay of Bengal. This general pattern of drainage is the outcome of several geological events that shaped the plateau's topography over millions of years. **So, Statement I is correct.**

Three major geological events in the distant past have shaped the present drainage systems of Peninsular India

Subsidence of the Western Flank:

- During the early Tertiary period, the western part of the Peninsular block subsided and was partially submerged under the sea.
- This subsidence disturbed the original symmetry of drainage on either side of the main watershed, leading to a greater slope and flow direction towards the east.

Upheaval of the Himalayas and Trough Faulting:

- The uplift of the Himalayas caused the northern flank of the Peninsular block to undergo subsidence, resulting in trough faulting.
- The Narmada and Tapi rivers occupy these faulted troughs, flowing westward through rift valleys.
- These valleys are filled with detritus materials, which explains the absence of extensive alluvial and deltaic deposits along their courses.

Tilting of the Peninsular Block:

- A slight tilting of the Peninsular block from the northwest to the southeast during the same geological period further enhanced the eastward orientation of most rivers.
- This tilt directed their flow towards the Bay of Bengal, shaping the current drainage pattern of the region.

Thus, the present drainage system of Peninsular India is primarily a result of tectonic movements, faulting, and tilting of the crust. While the majority of rivers flow eastward due to the overall slope of the land, the Narmada and Tapi remain exceptions, flowing westward through faulted rift valleys into the Arabian Sea. **So, Both Statement-I and Statement-II are correct and Statement-II explains Statement-I.**

ADDITIONAL INFORMATION:

EVOLUTION OF THE HIMALAYAN DRAINAGE	
About	The river systems of northern India have a long and complex geological history shaped by tectonic movements, Himalayan uplift, and climatic changes. Geologists believe that the present-day drainage patterns of the Indus, Ganga, and Brahmaputra systems evolved through the disintegration of an ancient, unified river system during the Tertiary and Pleistocene periods.
The Indo-Brahma (Shiwalik) River	There are differing views on the origin of the Himalayan rivers. ➤ However, one widely accepted theory suggests the existence of a mighty river called the Indo-Brahma or Shiwalik River, which once flowed along the entire length of the Himalayas — from Assam in the east to Punjab and Sind in the west — and discharged into the Gulf of Sind near lower Punjab during the Miocene period (about 5–24 million years ago). ➤ The continuity of the Shiwalik formations and the presence of lacustrine and alluvial deposits—including sand, silt, clay, boulders, and conglomerates—support this theory.
Dismemberment of the Indo-Brahma River	Over time, tectonic activities led to the disintegration of the Indo-Brahma River into three major drainage systems: ➤ The Indus and its five tributaries in the western region, ➤ The Ganga and its Himalayan tributaries in the central region, and ➤ The Brahmaputra and its tributaries in the eastern region.
Causes of Dismemberment	➤ The breakup of this ancient river system was likely due to Pleistocene tectonic upheavals in the Himalayas. ➤ The uplift of the Potwar Plateau (Delhi Ridge) created a water divide between the Indus and Ganga drainage systems. ➤ The downthrusting of the Malda Gap between the Rajmahal Hills and the Meghalaya Plateau during the mid-Pleistocene period diverted the courses of the Ganga and Brahmaputra rivers towards the Bay of Bengal. Thus, the present drainage pattern of northern India is the result of prolonged geological processes, including uplift, subsidence, and erosion, which reshaped the ancient Indo-Brahma system into the modern river networks of Indus, Ganga, and Brahmaputra.

96. The term "Marusthali" denotes:

- World's largest river island located in the Brahmaputra River.
- Hot and dry winds that blow in the Northern India.
- Pre-Monsoon showers in the Malabar Coast.
- Northwest of Aravalli's range with arid topography.**

EXPLANATION:

The world's largest river island is Majuli, located in the Brahmaputra River in the state of Assam, India. It is a center of Neo-Vaishnavite culture, known for its religious Satras, and was made India's first island district in 2016. Covering an area of 475 sq km makes it the largest river island in Asia. So, Option (a) is not correct.
Loo is the warm and dry winds blow in northern part of Indian subcontinent. blow across the northern plains in the summer, affecting places such as Delhi, Punjab, Rajasthan, and Bihar. So, Option (b) is not correct.
Mango showers are Pre-Monsoon rainfall as they helps in the early ripening of mangoes. Towards the end of summer, there are pre-monsoon showers which are a common phenomenon in Kerala and coastal areas of Karnataka. Locally, they are known as mango showers since they help in the early ripening of mangoes. So, Option (c) is not correct.

To the northwest of the Aravalli Range lies the Great Indian Desert (Thar Desert). This region, known as Marusthali, is characterized by arid topography, undulating sand dunes, low rainfall (below 150 mm annually), and sparse vegetation.

Geological evidence suggests that during the Mesozoic era, this region was under the sea supported by marine fossil records at Aakal (Wood Fossil Park) and around Brahmsar near Jaisalmer, estimated to be around 180 million years old. **So, Option (d) is correct.**

ADDITIONAL INFORMATION:

THE ISLANDS OF INDIA	
About	India has two major island groups — one in the Bay of Bengal (Andaman and Nicobar Islands) and the other in the Arabian Sea (Lakshadweep Islands). Both groups differ in origin, structure, and vegetation.
Andaman and Nicobar Islands (Bay of Bengal)	➤ The Bay of Bengal island group consists of about 572 islands and islets, located roughly between 6°N–14°N latitudes and 92°E–94°E longitudes. ➤ The two main island groups are the Ritchie's Archipelago and the Labyrinth Islands. ➤ The entire group is divided into two major categories — the Andaman Islands in the north and the Nicobar Islands in the south — separated by the Ten Degree Channel. ➤ These islands are believed to be the elevated parts of submarine mountain ranges, while some smaller islands are of volcanic origin. ➤ Barren Island, located in the Andaman Sea, is India's only active volcano. ➤ The coastline has coral deposits and beautiful beaches. The islands experience convectional rainfall and support equatorial-type vegetation. ➤ Prominent peaks include: • Saddle Peak (North Andaman – 738 m) • Mount Diavolo (Middle Andaman – 515 m) • Mount Koyob (South Andaman – 460 m) • Mount Thuiller (Great Nicobar – 642 m)
Lakshwadeep	➤ The islands of the Arabian Sea include Lakshadweep and Minicoy, scattered between 8°N–12°N latitudes and 71°E–74°E longitudes. ➤ They lie about 220–440 km off the Kerala coast and are entirely formed of coral deposits. ➤ The group comprises 36 islands, of which 11 are inhabited. ➤ Minicoy is the largest island, with an area of about 4.53 sq. km (not 453 sq. km). ➤ The island group is divided by the Nine Degree Channel — Amini Island lies to the north and Cannanore (Kannur) Island to the south. ➤ The islands have storm beaches composed of unconsolidated pebbles, shingles, cobbles, and boulders along the eastern seaboard.

97. A cargo vessel is sent from Patna (Bihar) to Dhubri (Assam) through the Inland national Waterways of India and Bangladesh. During its journey, the vessel passes through which of the following cities?

1. Bhagalpur
2. Farakka
3. Haldia
4. Khulna
5. Sylhet

Select the correct answer using the code given below:

- (a) Only two
- (b) Only three
- (c) Only four**
- (d) All five

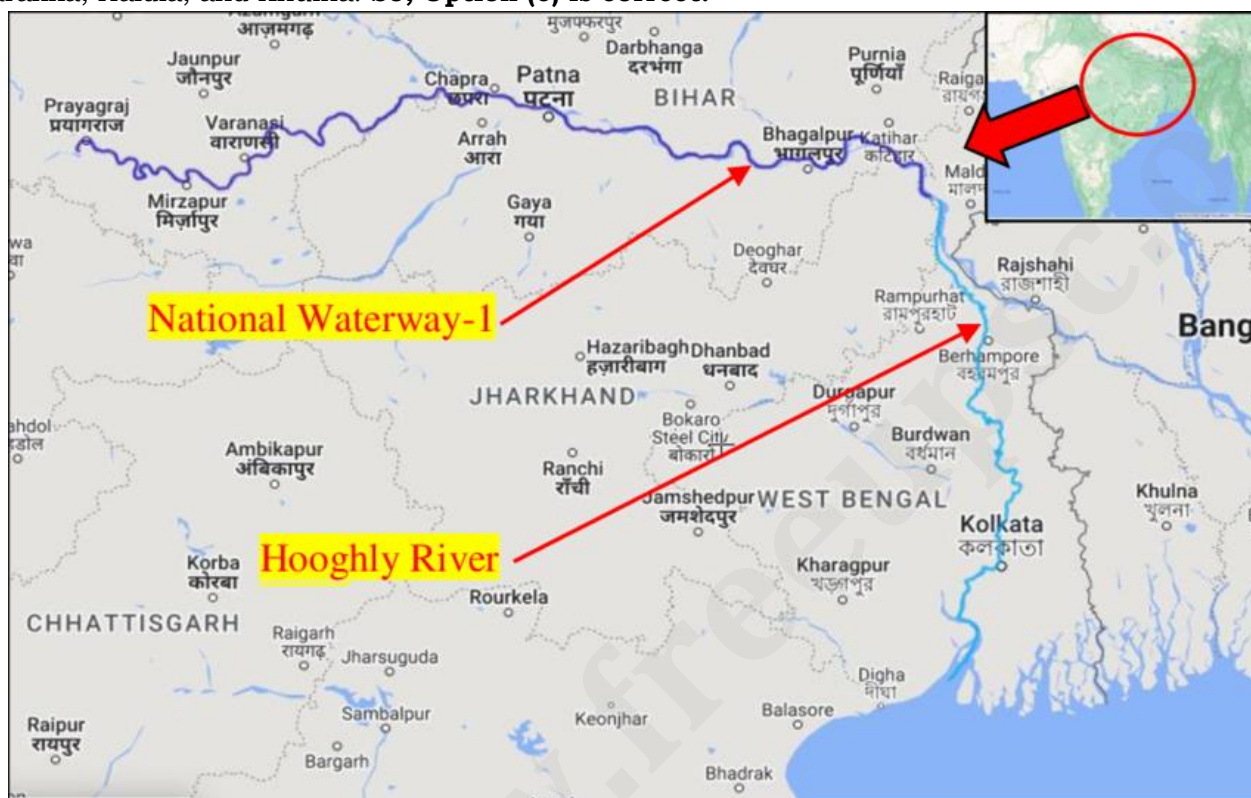
EXPLANATION:

India has designated a network of 111 National Waterways, managed by the Inland Waterways Authority of India (IWAI), to facilitate inland water transport and trade.

Key examples include the Ganga-Bhagirathi-Hooghly river system (NW-1), the Brahmaputra River (NW-2), and the West Coast Canal in Kerala (NW-3).

- The National Waterway-1 (Ganga-Bhagirathi-Hooghly) connects Patna to Haldia through Bhagalpur and Farakka.
- While, the National Waterway-2 (Brahmaputra) connects Sadiya to Dhubri.
- The Indo-Bangladesh Protocol Route provides navigational connectivity between these two waterways, through the cities of Khulna, Narayanganj, Sirajganj, Chilmari in Bangladesh.
- Sylhet is hill city and main channel of the Brahmaputra don't pass through it.

Therefore, cargo vessels passing through the Inland Waterways of India and Bangladesh (under the Indo-Bangladesh Protocol Route) travel through only four of the mentioned cities, namely Bhagalpur, Farakka, Haldia, and Khulna. **So, Option (c) is correct.**

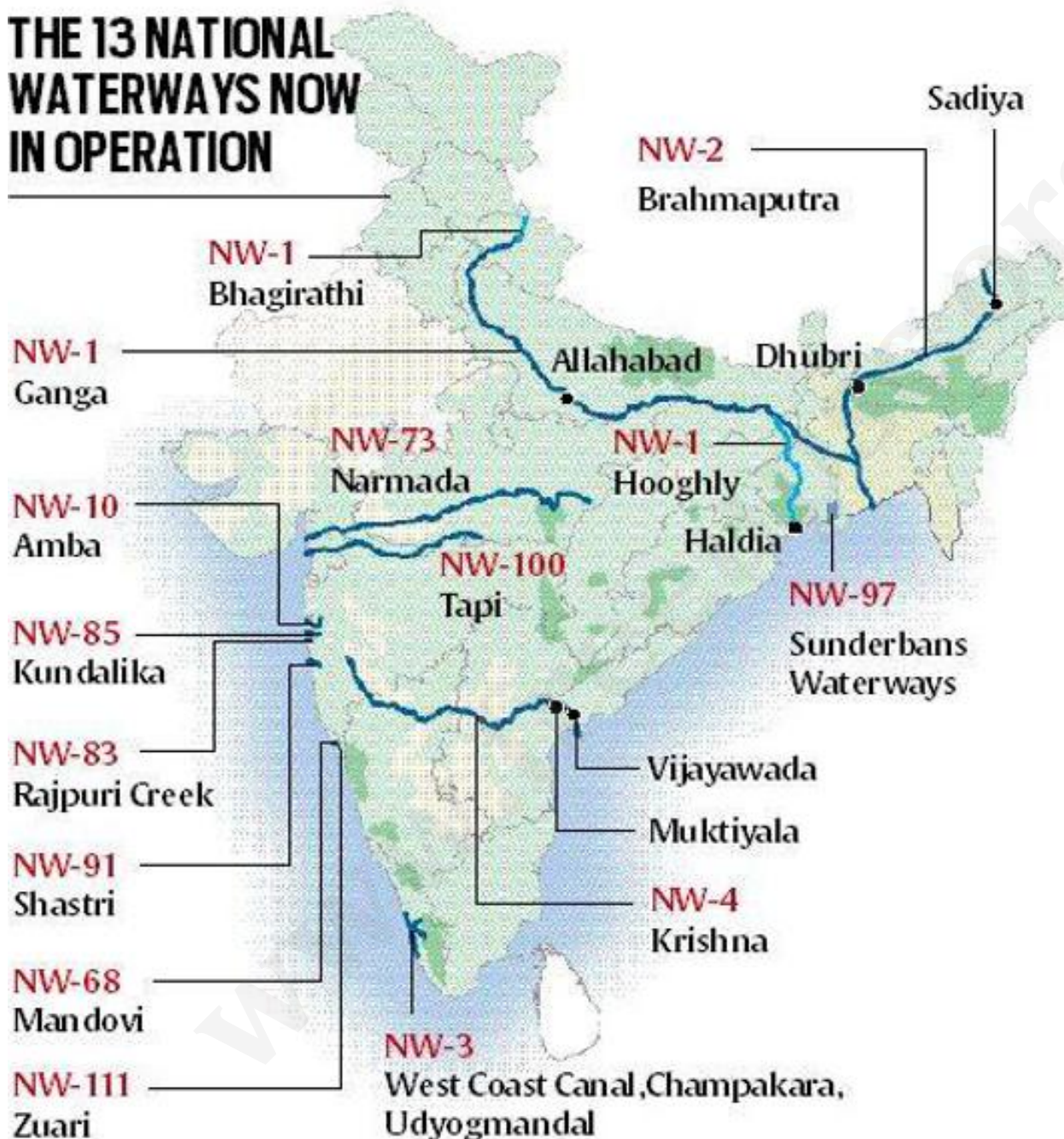


ADDITIONAL INFORMATION:

NATIONAL WATERWAYS	
About	To promote Inland Water Transport (IWT) in the country, 111 waterways (including 5 existing and 106 new) have been declared as National Waterways (NWs) under the National Waterways Act, 2016 which came into effect from 12th April, 2016. These waterways are used for freight and passenger movement, with recent government initiatives focusing on infrastructure development and private investment to boost their economic potential.
Key inland Waterways of India	➤ NW-1: Ganga-Bhagirathi-Hooghly River System (Haldia - Allahabad) ➤ NW-2: Brahmaputra River (Dhubri - Sadiya) ➤ NW-3: West Coast Canal (Kottapuram - Kollam), Champakara and Udyogmandal Canals ➤ NW-4: Phase-1 development of the stretch Muktiyala to Vijayawada of river Krishna ➤ NW-10 (Amba River)

- NW-83 (Rajpuri Creek)
- NW-85 (Revadanda Creek - Kundalika River System)
- NW-91 (Shastri river-Jaigad creek system)
- NW-68 – Mandovi – Usgaon Bridge to Arabian Sea (41 km)
- NW-111 – Zuari– Sanvordem Bridge to Marmugao Port (50 km).
- NW-73- Narmada river-
- NW-100- Tapi river
- Sunderbans Waterways (NW-97): Namkhana to AtharaBankiKhal in West Bengal.

THE 13 NATIONAL WATERWAYS NOW IN OPERATION



98. Consider the following statements:

Statement-I:

Mizoram is known as the Molassis Basin.

Statement II:

Mizoram is made up of hard consolidated deposits.

Which of the following is correct in respect of the above statements?

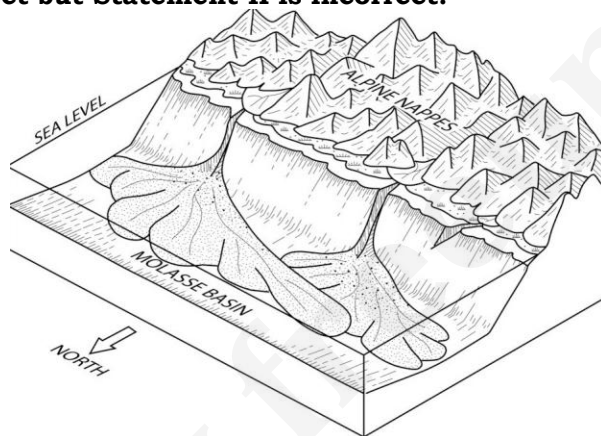
- (a) Both Statement-I and Statement-II are correct, and Statement-II is the correct Explanation for Statement-I.
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct Explanation for Statement-I
- (c) **Statement-I is correct but Statement-II is incorrect**
- (d) Statement-I is incorrect but Statement-II is correct

EXPLANATION:

Mizoram ("Land of the Mizos") was known as the Lushai Hills District of Assam before it was renamed the Mizo Hills District in 1954.

- Geologically, the Mizo Hills form a part of the Rakhine (Arakan) Mountains, a series of compact parallel ridges with a north-south axis formed of sandstone, limestone, and shales—all Cenozoic rocks between 2.6 and 65 million years old.
- The ridges, separated by narrow river valleys, rise to about 7,000 feet (2,100 metres).
- In the south, the Kaladan River and its tributaries flow southward into Myanmar, while the Dhaleswari (Tlawng) and Sonai (Tuirail) rivers flow north into Assam.
- Mizoram is also known as the Molassis basin, which is made up of soft unconsolidated deposits.

So, Statement-I is correct but Statement-II is incorrect.



99. The term "Bugyals" denotes:

- (a) A dry temperate forest ecosystem of the lower Himalayas
- (b) A tropical grassland found in the rain shadow region
- (c) **A high-altitude alpine meadow of the Himalayas**
- (d) A shrub-dominated landscape of the trans-Himalayan region

EXPLANATION:

Meadows or Bugyals, as it is referred to in the local dialect, are alpine pasture lands found in the Himalayan region of Uttarakhand and Himachal Pradesh.

- During the spring season, the sloped and flat meadows are covered with green grass or seasonal alpine flora. It is the favourite grazing ground for the cattle of tribal herdsman.
- These Bugyal meadows start appearing at the height of 3000 meters above sea level, where the treeline ends; they continue till about 4500 meters, where the snowline begins, and vegetation becomes scarce. Therefore, Bugyals are high-altitude Alpine meadows in the Himalayas. **So, Option (c) is correct.**
- There are three types of Alpine meadows in the Himalayan mountains:

- The dry alpine meadows in cold deserts like Ladakh are widespread but contain only sparse vegetation.
- The second type of alpine meadows is situated in the western Greater Himalayas –in the states of Uttarakhand (called Bugyals), Himachal Pradesh and Jammu and Kashmir. Such alpine meadows receive enough rain and snowfall. They are full of lush and diverse vegetation.
- The third kind of alpine meadows is found in the eastern Himalayan region, like in Sikkim and Arunachal Pradesh, where mostly shrubs dominate.
- Himalayan alpine meadows harbour several endemic species of plants and animals.
 - Herbs like Indian aconite or Atis (*Aconitum heterophyllum*), spikenard muskroot or Jatamansi (*Nardostachys jatamansi*), Salampanja or Hathazari (*Dactylorhiza hatagirea*), Kutki (*Picrorhiza kurrooa*), smooth angelica or Chippi (*Angelica glauca*), and the caterpillar fungus cordyceps or Yartsa Gunbu (*Ophiocordyceps sinensis*) are found in these alpine meadows.
 - Besides plant varieties, some rare animal species are also found in these alpine meadows. Among them are the majestic snow leopards, bharals (Himalayan blue sheep), Himalayan marmots and kiangs (wild ass).
- Alpine meadows also make up the upper catchment for high-altitude rivers and water streams and thus play an important role in the Himalayan hydrological system.



100. Match List I with List II and select the correct answer using the code given below the lists:

	List I (Mineral belts in India)		List II (Minerals)
(A)	North-Eastern Plateau Region	1.	Iron ore and mica
(B)	South-Western Plateau Region	2.	Monazite and thorium
(C)	North-Western Region	3.	Dolomite and limestone

How many of the above pairs is/are correctly matched?

- (a) Only one
- (b) Only two
- (c) All three**
- (d) None

EXPLANATION:

The North eastern plateaus covers chhotanagpur plateau, orissa plateau and eastern Andhra plateau. This belt contains rich deposits of a variety of minerals, speacially used for metallurgical industries. Prominent minerals that are large and widely distributed are iron ore, manganese, mica, bauxite, limestone, dolomite etc. This region has also rich deposits coal, along the river valleys of Damodar, Mahanadi, Son etc. This region has also substantial amount deposit of copper, uranium, thorium, phosphate etc. **So, Pair 1 is correct.**

South-western plateaus region extends over Karnataka plateau and adjoining Tamil Nadu plateau and is rich in metallic minerals particularly in iron ore, manganese and bauxite and in some non-metallic minerals. All the three gold mines of India are found in this region. However, coal is not found in this plateau region.

This belt does not have as diversified mineral deposits as the north-eastern belt. Kerala has deposits of monazite and thorium, bauxite clay. Goa has iron ore deposits. **So, Pair 2 is correct.**

North-western region belt extends from gulf of Khambhat in Gujarat to the Aravalli range in Rajasthan. Petroleum and natural gas are principal resources of this belt. Deposits of other minerals are small and scattered. However, it is known for reserves and production of several non-ferrous metals particularly copper, silver, lead, and Zinc.

Rajasthan is rich in building stones i.e. sandstone, granite, marble. Gypsum and Fuller's earth deposits are also extensive. Dolomite and limestone provide raw materials for cement industry. **So, Pair 3 is correct.**
