1. Consider the following:

1. Higher Sea Surface Temperature
2. Shallower Embayment
3. Presence of Moisture in the air
4. Cyclonic Pulses from the Pacific Ocean

How many of the above explain more cyclones originating in the Bay of Bengal than the Arabian Sea in general?

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

2. Which of the following best describes the primary objective of the recently launched 'Samudra Pradakshina' expedition?

(a) To train Indian Navy cadets in underwater navigation and deep-sea diving.
(b) To map undersea mineral resources in the Indian Ocean.
(c) To conduct a global circumnavigation to showcase Nari Shakti and enhance tri-service cooperation.
(d) To promote India's maritime trade and tourism in Southeast Asia.

3. With reference to magma released during volcano eruption, consider the following statements:

1. The major constituent of magma include Iron oxides and Magnesia.
2. The magma erupting from all regions of the earth is exactly the same in composition because it comes from the interior of the earth.
3. The Hawaii Islands were created as a result of a magma plume.

How many of the statements given above are correct?

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

4. Consider the following statements regarding Long Period Average (LPA):

1. LPA is determined on the basis of the rainfall averaged over a period of less than 10 years.
2. The Indian Metriological Department (IMD) categorizes 'normal' and 'below normal' rainfall using LPA as the benchmark.

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

5. Arrange the following European capital cities in the correct order from North to South:

1. Berlin
2. Rome
3. Oslo
4. Madrid

Select the correct answer using the code given below.

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

6. Which of the following statements best distinguishes the Plate Tectonic Theory from the Continental Drift Theory?

(a) Continental Drift Theory explains both the movement of continents and seafloor spreading, whereas Plate Tectonic Theory explains only the movement of continents.

(b) Plate Tectonic Theory is based on convectional currents in the asthenosphere, while Continental Drift Theory did not provide a convincing mechanism for the movement of continents.

(c) Plate Tectonic Theory was proposed by Alfred Wegener, while Continental Drift Theory was proposed by Harry Hess.

(d) Plate Tectonic Theory assumes the Earth's crust to be rigid and immobile, unlike the Continental Drift Theory.

7. Consider the following statements:

1. Tibetan High
2. Somali Jet
3. Mascarene high

Which of the above have an implication on the Indian Monsoon?

(a) 1, 2 and 3

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1 and 3 only

8. Consider the following statements:

Statement-I: Defence Research and Development Organisation (DRDO) successfully launched the Agni-Prime missile from a rail-based mobile launcher system recently.

Statement-II: The rail-based mobile launcher reduces the missile's range but increases its payload capacity.

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

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

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

(c) Statement-1 is correct, but Statement-II is incorrect

(d) Statement-I is incorrect, but Statement-II is correct

9. Consider the following statements with respect to tides:

1. Spring tides occur when the sun, the moon and the earth are in a straight line.
2. Neap tides occur when the sun and the moon are at right angles position.

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

10. Consider the following pairs:

Cities		Region
1. Nainital	:	Garhwal
2. Rudraprayag	:	Kumaon
3. Nagpur	:	Vidarbha

How many of the pairs given above are correct?

(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) None of the pairs

11. Consider the following Indian States:

1. Tamil Nadu
2. Karnataka
3. Rajasthan
4. Gujarat

Arrange the following states in India in the increasing order of their share in India's total installed wind energy capacity.

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

12. Gig worker economy, sometimes seen in the news, is associated with which of the following activities?

(a) Quinary activities
(b) Tertiary activities
(c) Primary activities
(d) Secondary activities

13. The Logistics Ease Across Different States (LEADS) report is released by:

(a) Ministry of Road Transport and Highways
(b) NITI Aayog
(c) Ministry of Commerce and Industry
(d) Confederation of Indian Industry

14. Consider the following statements:

Statement I: There are many volcanic peaks and mountains such as Mount Vesuvius and Mount Etna in Italy.

Statement II: Italy is located on the Pacific Ring of Fire.

Statement III: African Plate is subducting beneath the Eurasian Plate

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

(a) Both Statement II and Statement III are correct and they explain Statement I
(b) Both Statement I and Statement II are correct and Statement I explains Statement II
(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

15. With reference to the Geological Time Scale, arrange the following time units in descending order of duration:

1. Eon
2. Epoch
3. Period
4. Era

Select the correct answer using the code given below.

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

16. Consider the following statements regarding the Global Innovation Index (GII) :

1. It is released by World Intellectual Property Organization (WIPO).
2. India's ranking in Global Innovation Index (GII) 2025 is in the top 50 performers.

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

17. Varkala cliffs were recently added in the Tentative list of UNESCO's World Heritage Sites from India. They are located in:

(a) Karnataka
(b) Tamil Nadu
(c) Kerala
(d) Andhra Pradesh

18. Consider the following statements:

Statement-I: GST on individual life and health insurance premiums has been made fully exempt.

Statement-II: The GST Council rationalized the number of tax slabs as part of the Next-Generation GST Reforms.

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 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

19. Consider the following:

1. Chromite
2. Aluminium
3. Zinc
4. Nickel

How many of the following are classified as ferrous metallic minerals?

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

20. Consider the following statements regarding the Earth's heat budget:

1. About one-third of incoming solar radiation is reflected back to space.
2. The atmosphere absorbs more solar radiation than the Earth's surface.
3. Solar radiation is absorbed and re-radiated by greenhouse gases, contributing to the greenhouse effect.

How many of the above statements are correct?

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

21. Consider the following statements regarding the Power of Siberia 2 Pipeline (PoS-2):

1. The Power of Siberia 2 Pipeline (PoS-2) is a proposed project to transport natural gas from Russia to China.
2. The proposed pipeline is part of the India-Middle East-Europe Economic Corridor.
3. The pipeline runs entirely through Russia and China and does not pass through any other country.

Which of the statements given above is/are correct?

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

22. Consider the following pairs:

Plateau		Drained by River
1. Malwa	:	Chambal
2. Telangana	:	Penneru
3. Chota Nagpur	:	Son

How many pairs given above are correctly matched?

(a) Only one pair
(b) Only two pairs
(c) All three pairs
(d) None of the pairs

23. How many of the following states of India have reserves of Natural Gas?

1. Nagaland
2. Rajasthan
3. Tamil Nadu
4. Tripura
5. West Bengal

Select the correct answer using the code given below.

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

24. World's largest masonry dam is built across which one of the following rivers?

(a) Krishna
(b) Kaveri
(c) Mahanadi
(d) Bhagirathi

25. Consider the following statements with respect to Continental shelf:

1. Continental shelves are formed due fluctuations of sea level in the past.
2. Continental shelves are well known for mineral deposits.
3. The world's widest continental shelf is located in the Pacific ocean.

Which of the statements given above are correct?

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

26. Which one of the following statements best reflects the issue with Katchatheevu Island, recently in the news?

(a) It is generally believed to be an artificial island constructed by a country around South China Sea.
(b) Restricted access of Indian fishermen to traditional fishing grounds around the island in the Palk Strait.
(c) A permanent Indian military base has been established there to monitor Sri Lanka's naval activities.
(d) Katchatheevu has been declared an international buffer zone by the United Nations due to disputes.

27. Consider the following pairs:

Island		Ocean
1. Aleutian Islands	:	Atlantic Ocean
2. Canary Islands	:	Pacific Ocean
3. Nancowry Islands	:	Indian Ocean
4. Azores Islands	:	Arctic Ocean

How many of the above pairs are correctly matched?

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

28. With reference to the BHARATI initiative, consider the following statements:

1. It is an initiative of the Agricultural and Processed Food Products Export Development Authority (APEDA).
2. The initiative exclusively focuses on promoting the export of fresh fruits and vegetables.

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

29. Consider the following statements regarding the global distribution of rainfall:

1. Rainfall generally decreases from the equator towards the poles.
2. Between 35°–40° N and S, rainfall is heavier on the western coasts of continents.
3. In the latitudes between 45°–65° N and S, the eastern margins of continents receive more rainfall than the west.

Which of the statements given above is/are correct?

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

30. Consider the following countries:

1. France
2. China
3. USA
4. Canada

How many of the above countries have more than one time zone?

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

31. Consider the following statements:

1. The central part of Baghelkhand plateau acts as a water divide between Son and Mahanadi river.
2. Rajmahal Hills constitute the southernmost part of Chota Nagpur plateau.

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

32. Consider the following pairs:

Ocean trenches		**Ocean**
1. Puerto Rico	:	Atlantic
2. Sunda	:	Indian
3. South Sandwich	:	Pacific

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

(a) Only one pair
(b) Only two pairs
(c) All three pairs
(d) None of the pairs

33. Consider the following statements:

Statement I: The vertical pressure gradient force in the atmosphere is much stronger than the horizontal pressure gradient force.

Statement II: Vertical pressure gradient force is counterbalanced by frictional resistance near the earth's surface.

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 is the correct explanation of Statement I.
(b) Both Statement I and Statement II are correct, but Statement II is not the correct explanation of Statement I.
(c) Statement I is correct, but Statement II is incorrect.
(d) Statement I is incorrect, but Statement II is correct.

34. Consider the following pairs:

Ramsar Site		**Location**
1. Gokul Jalashay	:	Bihar
2. Udaipur Jheel	:	Rajasthan
3. Udhwa Lake	:	Jharkhand
4. Khecheopalri Wetland	:	Sikkim

How many pairs given above are correctly matched?

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

35. The world's major fishing grounds are located in the zones where cold and warm ocean currents meet. In this context which among the following fishing grounds are formed due to the confluence of North Atlantic drift warm current and canary cold current?

(a) Dogger Bank
(b) Reed Bank
(c) Pedro Bank
(d) The Grand Bank

36. Recently, which of the following was added as India's 13th site to UNESCO's World Network of Biosphere Reserves?

(a) Cold Desert Biosphere Reserve
(b) Manas Biosphere Reserve
(c) Sundarbans Biosphere Reserve
(d) Panna Biosphere Reserve

37. Consider the following statements:

1. The Western Dedicated Freight Corridor (WDFC) connects Dadri in Uttar Pradesh with Mundra Port in Gujarat.
2. The WDFC covers Haryana, Rajasthan, Gujarat, Maharashtra & Uttar Pradesh.
3. Western Dedicated Freight Corridor is being funded by the World Bank.

How many of the statements given above are correct?

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

38. Consider the following states:

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

Arrange the following states in decreasing order of their share in India's total oil reserve.

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

39. Consider the following countries:

1. Egypt
2. Jordan
3. Lebanon
4. Syria
5. Saudi Arabia
6. Iraq

How many of the above-mentioned countries share a land border with Israel?

(a) Only three
(b) Only four
(c) Only five
(d) All six

40. Consider the following statements regarding Indian climatic conditions:

I: During this season, the northeast trade winds prevail over the country.

II: The weather is normally marked by clear sky, low humidity and feeble, variable winds.

III. There is an inflow of cyclonic disturbances from the west and the northwest.

Which of the following is best described by the statements given above?

(a) Cold Weather Season
(b) Hot Weather Season
(c) Rainy Season
(d) Reatreating monsoon

41. What is the primary reason/s that the North sea records higher salinity despite locating at the high latitudes?

1. North sea has shallow water
2. No river drain into North sea
3. Inflow of highly saline water from the North Atlantic Drift

Select the correct answer using the code given below.

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

42. Consider the following:

1. Russia
2. India
3. China
4. United States

Arrange the following countries according to the increasing amount of coal reserves in the world.

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

43. Consider the following pairs with reference to Thermal Power Station in India:

Thermal Power Plant	***State***
1. Talcher Super TPS:	Assam
2. Sasan Ultra Mega TPS:	Gujarat
3. Vindhyachal TPS:	Madhya Pradesh

How many pairs given above are correctly matched?

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

44. Puducherry is the only Union Territory that is spread across three different states. In this context, arrange the following regions of Puducherry from south to north:

1. Mahe
2. Karaikal
3. Puducherry (Main)
4. Yanam

Select the correct answer using code given below.

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

45. Which of the following groups represents the areas of high rainfall (exceeding 200cm)?

(a) Eastern Tamil Nadu, Telangana, Eastern Ghats
(b) Western Uttar Pradesh, Western Coast, Northern Ganga Plains
(c) Peninsular region, Ladakh, Haryana
(d) Western Coastal area, Hills of Meghalaya, Brahmaputra valley

46. Kashmir valley lies between which among the following mountain ranges of India?

(a) Pir Panjal and Zaskar range
(b) Karakoram and Ladakh range
(c) Ladakh and Zaskar range
(d) Dhauladhar and Pir Panjal range

47. Which one of the following is an erosional feature formed by natural agents such as river, wind, or glacier?

(a) Delta
(b) Loess
(c) Mushroom rock
(d) Morainic ridge

48. A flight takes off from Tokyo (Japan) on Tuesday morning and flies eastward across the International Date Line to Los Angeles (USA). What will be the local day and time on arrival, assuming the flight takes about 10 hours?

(a) Tuesday evening in Los Angeles.
(b) Wednesday morning in Los Angeles.
(c) Monday evening in Los Angeles.
(d) Wednesday night in Los Angeles.

49. Consider the following statements:

1. The pilgrimage site of Rameshwaram is located on Pamban Island.
2. The Adam's bridge (Ram Setu) separates the Gulf of Mannar to the southwest from the Palk Strait to the northeast.
3. The 8 degree channel separates the island of Minicoy from the main archipelago of Lakshadweep.

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

50. Consider the following pairs:

Waterfall		**River**
1. Kunchikal	**:**	Mandakini
2. Chitrakote	**:**	Indravati
3. Shivsamudram	**:**	Krishna

How many of the pairs given above are correctly matched?

(a) Only one pair
(b) Only two pairs
(c) Only three pairs
(d) None of the pairs

51. Consider the following pairs:

National Waterway	***Associated River***	***Major City***
1. National Waterway 1 (NW1)	Ganges	Patna
2. National Waterway 2 (NW2)	West Coast Canal	Kottappuram
3. National Waterway 3 (NW4)	Krishna	Vijaywada

In how many of the above rows is the given information correctly matched?

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

52. Sonapani Glacier lies in which one of the following mountain ranges?

(a) Pir Panjal range
(b) Karakoram range
(c) Shiwalik range
(d) Great Himalaya ranges

53. Consider the following statements:

1. Beyond the Tropics, the Sun is never overhead at any time of the year.
2. If the Earth's axis were perpendicular to its orbit, every place on Earth would have equal day and night throughout the year.
3. During Equinox, neither of the poles is tilted towards the sun.

How many of the above statements are correct?

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

54. Consider the following statements regarding crops area in India:

1. The area under Rabi crops is generally higher than under Kharif crops.
2. The cultivated area under the wheat crop is higher than under the rice crop.

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

55. With reference to the Swachh Vayu Sarvekshan 2025, consider the following statements:

1. It is an initiative of the Ministry of Housing and Urban Affairs (MoHUA).
2. It is a component of the National Clean Air Programme (NCAP).
3. Indore secured the first rank among cities with a population of more than 10 lakh.

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

56. Consider the following statements regarding thunderstorms:

1. They are associated with cumulonimbus clouds and are caused by intense convection of moist air.
2. Hailstorms form when the storm clouds extend to altitudes with sub-zero temperatures.

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

57. Which of the following best defines a 'Blue Moon'?

(a) A phenomenon when the Moon appears blue due to atmospheric dust during a lunar eclipse.
(b) The occurrence of two new moons within the same calendar month.
(c) A full moon that appears closest to the Earth and looks larger and brighter than usual.
(d) The second full moon occurring within the same calendar month.

58. Consider the following statements:

1. The duration of twilight becomes longer as we move from the equator towards the poles.
2. The linear distance of a degree of latitude at the pole is a little longer than that at the equator.
3. The degree of longitude decreases in length as you move from the equator toward the poles.

How many of the above statements are correct?

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

59. Consider the following statements regarding Frontal cyclones:

1. Frontal cyclones form in the temperate latitudes where warm and cold air masses converge.
2. The Mediterranean region receives most of its winter rainfall due to these cyclones.

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

60. According to the Koeppen's Scheme, the Gangetic plains fall under

(a) Monsoon with dry summer (As)
(b) Tropical Savannah (Aw)
(c) Monsoon with dry winter (Cwg)
(d) Cold humid winter with short summer (Dfc)

61. Consider the following statements:

Statement-I: Agartala receives the overhead sunlight during summer solstice.

Statement-II: Cities lying on the Tropic of Cancer get direct sun on summer solstice.

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 is the correct explanation for Statement I.

(b) Both Statement I and Statement II are correct, but 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.

62. Consider the following statements:

Statement I: During a total lunar eclipse, the moon takes on a deep red or orange color.

Statement II: The Moon's path around Earth is tilted compared to Earth's orbit around the Sun.

Statement III: During a total lunar eclipse, the Moon is shining from all the sunrises and sunsets occurring on Earth.

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 and only one of them explain 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.

63. Consider the following statements:

1. Dzukou Valley is located in Arunachal Pradesh.
2. Parvati Valley is located in Uttarakhand.
3. Nubra Valley is located in Himachal Pradesh.

How many of the above statements are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

64. With reference to the Geological Time Scale, Consider the following pairs:

Geological Time Unit		**Major Event**
1. Carboniferous Period	:	Appearance of Reptiles
2. Cretaceous Period	:	Appearance of Marsupials
3. Jurassic Period	:	Appearance of Birds
4. Cambrian Period	:	Appearance of Mammals

How many of the above pairs are correctly matched?

(a) Only one

(b) Only two

(c) Only three

(d) All four

65. With reference to Indian Geography, '2-System Interaction' was recently seen in news is related to:

(a) tectonic plate movements along Himalayan region

(b) Linking the peninsular river system with the Gangetic river system.

(c) confluence of the monsoon trough and an active western disturbance

(d) the water divide along the Vindhyan range

66. With reference to the Richter Scale and Mercalli Scale consider the following statements:

1. While the Richter Scale measures the intensity of an earthquake, the Mercalli Scale measures its magnitude.
2. While Richter Scale is based on instrumental readings, while Mercalli Scale is based on observed effects on people and structures.

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

67. Which of the following winds is known as the "Doctor Wind"?

(a) Mistral
(b) Sirocco
(c) Harmattan
(d) Chinook

68. If the new standard meridian of India is a longitude exactly five degrees west of India's current Standard Meridian and everything else (including sleep patterns of people) remains unchanged, then which of the following statements is/are ***not*** correct?

1. The time-gap between sunrise in New Delhi and Mumbai will widen.
2. A student in Arunachal Pradesh will wake up to see a later time in the clock.

Select the correct answer using the code given below.

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

69. In the context of bottom relief features of the ocean, which among the following occupied the largest area of the sea floor?

(a) Continental shelf
(b) Continental slope
(c) Abyssal Plain
(d) Continental rise

70. Consider the following statements in respect of the 12th World Para Athletics Championships 2025:

1. It was the first time that the World Para Athletics Championship was held in India.
2. The official mascot for the Championship was named 'Viraaj', a young elephant.

Which of the above statements is/are correct?

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

71. Recently, the terms "Zapad" and "Bright Star" were seen in the news. They are:

(a) multilateral military exercises
(b) anti-ballistic missiles
(c) rocket launchers
(d) cryptocurrencies

72. Consider the following pairs:

	Local winds	***Region***
1.	Mango showers	Coastal Karnataka
2.	Blossom showers	Kerala
3.	Aandhi	Central India
4.	Kal Baisakhi	Assam

How many of the pairs given above are correctly matched?

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

73. Consider the following statements:

1. The average temperature near stratopause is higher than the average temperature near tropopause.
2. Stratosphere is the only atmospheric layer where ozone is present.
3. Thermosphere is the layer which lies immediately above stratosphere.

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

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

74. Which of the following is ***not*** correct regarding the El Nino?

(a) El Nino means warmer ocean waters off the coast of Peru around December.
(b) A rise in air pressure in Indian Ocean, Indonesia and Asutralia is the first sign of El Nino.
(c) EI-Nino is used in India for forecasting long range monsoon rainfall.
(d) El Nino year will always see a below normal precipitation in India.

75. Consider the following information:

Festival Name	**State**	**Primary Significance**
1. Pongal	Tamil Nadu	Named after the traditional dish prepared by boiling rice with milk and jaggery.
2. Hornbill Festival	Arunachal Pradesh	Named the hornbill, the large and colourful forest bird
3. Onam	Kerala	Harvest festival and return of King Mahabali

In how many of the above rows is the given information correctly matched?

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

76. Consider the following pairs:

Type of Coast		***Formation***
1. Fjord	:	Drowned glacial valley
2. Ria	:	Raised river valley
3. Dalmatian	:	Deposition by river sediments

Which of the pairs given above are correctly matched?

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

77. Consider the following statements regarding the recently launched National Policy on Geothermal Energy 2025:

1. The Ministry of Earth Sciences is the nodal agency for the implementation of this policy.
2. The policy identifies the Himalayas and the Son-Narmada-Tapi Basin as high-potential geothermal provinces.
3. It allows for 100% Foreign Direct Investment (FDI) in the geothermal sector.

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

78. Consider the following characteristics :

1. The annual and daily range of temperature is very low.
2. Precipitation is mainly in the form of convectional rainfall.
3. Precipitation ranges between 150 cm and 250 cm.

The above characteristics are typically associated with which of the following types of climate?

(a) Monsoon Climate
(b) Equatorial Climate
(c) Mediterranean Climate
(d) Savanna Climate

79. Consider the following trees species of India:

1. Rosewood
2. Sal
3. Red sanders

How many of the above are tropical wet evergreen tree species?

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

80. The Ural Mountains primarily pass through which of the following countries?

1. Russia
2. Ukraine
3. Kazakhstan
4. Mongolia
5. Belarus

Select the correct answer using the code given below.

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

81. Consider the following statements in respect of the Ramon Magsaysay Award:

1. The award is often referred to as the 'Nobel Prize of Asia'.
2. Acharya Vinoba Bhave was the first Indian to receive the Ramon Magsaysay Award.
3. For the first time this year an Indian organisation has received this award.

Which of the statements given above is/are correct?

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

82. Which among the following lakes is located farthest north?

(a) Pangong Tso
(b) Wular lake
(c) Tso Moriri lake
(d) Dal lake

83. Consider the following statements:

Statement I: Solar noon occurs earlier in Kolkata than in Chennai.

Statement II: Kolkata lies at a higher northern latitude than Chennai.

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

84. Consider the following pairs:

City		***River Bank***
1. Vijayawada	:	Godavari
2. Coimbatore	:	Kaveri
3. Rourkela	:	Mahanadi
4. Jabalpur	:	Narmada

How many of the above pairs are correctly matched?

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

85. Consider the following statements with respect to International Date Line (IDL):

1. The IDL roughly follows a 180 degrees longitude north-south line on the Earth.
2. The International Date Line has no legal international status and countries are free to choose the dates that they observe.

Which of the statements give above is/are correct?

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

86. Consider the following statements about the salinity of sea water:

1. Dissolved rocks from the seafloor is the primary source of salts in the sea water.
2. Addition of fresh water from the river greatly influences the surface salinity of the sea water.

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

87. Consider the following cities:

1. Lucknow
2. Raipur
3. Visakhapatnam
4. Bhubaneswar

How many of the above cities are located to the east of the Standard Meridian of India?

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

88. Rihand, North Koel and Gopat are the tributaries of which one of the following rivers?

(a) Son
(b) Narmada
(c) Mahanadi
(d) Tapi

89. Consider the following statements regarding Krishna and Godavari rivers:

1. Both the rivers pass through Maharashtra, Telangana and Andhra Pradesh.
2. Both the rivers have equal river basin area.
3. Kolleru lake is the largest freshwater lake located in the inter-deltaic plain of rivers Krishna and Godavari.

Which of the statements given above is/are correct?

(a) 1, 2 and 3
(b) 1 only
(c) 2 and 3 only
(d) None

90. Which of the following statements is ***not*** correct regarding the Inter Tropical Convergence Zone (ITCZ)?

1. It is a high-pressure zone located at the equator where trade winds converge.
2. Due to the shift of the ITCZ, the trade winds of the southern hemisphere cross the equator between 40° and 60°E longitudes.
3. In winter, the ITCZ moves southward, and so the reversal of winds from northeast to south and southwest takes place.

Select the correct answer using the code given below.

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

91. Consider the following statements:

1. Khardung la lies in Ladakh range which connects Srinagar to Leh.
2. Rohtang pass lies in Pir Panjal range which connects Kullu valley to Lahul-Spiti valley.

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

92. Which of the following fluvial landforms are formed due to alternating beds of hard and soft rock?

(a) Meanders and oxbow lakes
(b) Waterfalls and rapids
(c) Deltas and levees
(d) Floodplains and terraces

93. Consider the following pairs:

	Country	**Reason for being in the news**
1.	Nepal	Gen Z-led protests over a social media ban
2.	Brazil	Former President found guilty of coup plot
3.	Turkey	Rescinded its membership of NATO

How many of the pairs given above are correctly matched?

(a) Only one pair
(b) Only two pairs
(c) All three pairs
(d) None of the pairs

94. Consider the following statements:

Statement I: Temperature inversion commonly occurs in intermontane valleys during winter nights.

Statement II: Cold, dense air settles down in valleys while warm air rises, leading to a reversal of the normal lapse rate.

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 is the correct explanation for Statement-I.
(b) Both Statement-I and Statement-II are correct but 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.

95. With reference to Jet Streams, consider the following statements:

1. Jet streams are fast-flowing air currents found near the tropopause.
2. They generally move from east to west in both hemispheres.

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

96. With reference to the geological history of Earth, which of the followings best describes the term 'Cambrian Explosion'?

(a) The sudden appearance of biological diversity.
(b) An event where large expanses of Earth's oceans were depleted of dissolved oxygen, creating toxic, euxinic waters.
(c) A process where volatile gases were expelled from Earth's interior to the surface.
(d) A mass extinction caused by an asteroid impact.

97. Consider the following statements with regard to the Shanghai Cooperation Organisation (SCO):

1. The 25th Meeting of the Council of Heads of State of the SCO was held in Tianjin, China.
2. Belarus was formally accepted as a full member of the SCO at this Summit.
3. The theme of the 25th SCO Summit was 'Vasudhaiva Kutumbakam'.

Which of the statements given above are **NOT** correct?

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

98. Which of the following are the consequences of the Earth's axial tilt in its orbit around the Sun?

1. Varying lengths of day and night
2. Seasonal changes
3. Changes in the apparent altitude of the midday Sun

Select the correct answer using the code given below.

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

99. Consider the following statements:

Statement-I: Cold ocean current is one of the reasons for the formation of the Gobi desert in China.

Statement-II: The cold ocean currents inhibit the formation of cloud and 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 is the correct explanation for Statement I.
(b) Both Statement I and Statement II are correct, but 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.

100. Consider the following:

Assertion(A): The latitudinal and longitudinal extent of India are roughly about 30 degrees, however, the North-South extent is longer than the East-West extent.

Reason(R): The distance between two longitudes decreases towards the poles whereas the distance between two latitudes remains the same everywhere.

In the context of the above two statements, which one of the following is correct?

(a) Both A and R are true but R is the correct explanation of A.
(b) Both A and R are true but R is not a correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

ANSWERS & EXPLANATIONS
GENERAL STUDIES (P) TEST – 6325 (2026)

Q 1.D

- A thorough look at the history of cyclones shows a high frequency of cyclones in the Bay of Bengal region. That's why India's eastern coastal line is more prone to cyclones and damage caused by them compared to its western coastline.
- There are a lot of factors that make Bay of Bengal more prone to cyclones compared to the Arabian Sea. The factors range from high sea surface temperature, low vertical shear winds, and high moisture in the middle layers of its atmosphere.
- **The Average Sea Surface temperature of Bay of Bengal is higher than that of Arabian Sea making it more prone to cyclone generation.**
- **The Bay of Bengal is relatively shallow than the Arabian sea**. The larger surface area of the Bay of Bengal allows faster heating causing higher evaporation. Faster evaporation forms a high-pressure zone in the area causing instability in the region. All these factors make it suitable for cyclone formation.
- The Bay of Bengal is surrounded by land on three sides, which generates additional moisture and instability. The low-lying coastal regions often get inundated when the storm makes landfall. T**he Bay of Bengal has a much larger area than other water bodies in the region. This makes it easy for a storm to dissipate and West Bengal is one of the most active areas for tropical cyclone formation in the world.**
- **The Arabian Sea gets a lot of dry air from desert countries like Oman and Yemen. So the atmospheric moisture is less. Since moist air is required for a cyclone to form and there's atmospheric moisture in the Bay of Bengal, more cyclones develop there**. **Hence, option (d) is the correct answer.**

Q 2.C

- The **'Samudra Pradakshina' is a historic and first-of-its-kind, all-women circumnavigation sailing expedition undertaken by the Indian Armed Forces.** The official mission objectives highlight a combination of military, social, and diplomatic goals.
- **Key Objectives of 'Samudra Pradakshina'**
  - Showcase Nari Shakti (Women's Power) and Women Empowerment: This is the world's first global circumnavigation by an all-women team drawn from all three services (Army, Navy, and Air Force). The expedition is a powerful symbol of the courage, resilience, and leadership of women in the Indian Armed Forces.
  - Enhance Tri-Service Cooperation (Jointness): The crew comprises officers from the Indian Army, Indian Navy, and Indian Air Force, demonstrating the unity, collective strength, and joint operational synergy of India's military branches.
  - Complete a Global Circumnavigation: The core operational goal is to sail approximately 26,000 nautical miles around the world on the indigenously-built vessel, IASV Triveni, adhering to the stringent World Sailing Speed Record Council (WSSRC) norms (crossing all longitudes and covering over 21,600 nautical miles under sail alone).
- **Hence, option (c) is the correct answer.**

Q 3.A

- Magma is molten or semi-molten rock found beneath the Earth's surface, composed of liquid, dissolved gases, and suspended crystals. This extremely hot, viscous material forms igneous rocks when it cools and solidifies, and is a key component of volcanic eruptions, though it is only called lava once it reaches the surface.

- **Statement 1 is not correct:** Magma is majorly composed of Silica and Aluminium oxides

Major Oxides in Magma	Approx. Percentage Range	Significance
Silica (SiO_2)	45–75%	Determines viscosity and explosiveness
Alumina (Al_2O_3)	10–18%	Forms feldspar minerals
Iron oxides (FeO, Fe_2O_3)	5–12%	Dark color, dense minerals
Magnesia (MgO)	2–10%	Forms olivine, pyroxene
Lime (CaO)	1–10%	Forms plagioclase feldspar
Soda & Potash (Na_2O + K_2O)	2–8%	Influence the type of feldspar
Volatiles (H_2O, CO_2, SO_3, Cl, F)	<5%	Control eruption style and explosivity

- **Statement 2 is not correct:** The composition of magma varies depending on where and how it forms.

Type of Magma	Silica Content	Color	Viscosity	Eruption Style	Example Location
Basaltic (Mafic)	~45–55%	Dark	Low (fluid)	Gentle (non-explosive)	Hawaii, Deccan Traps
Andesitic (Intermediate)	~55–65%	Medium	Moderate	Moderately explosive	Andes Mountains
Rhyolitic (Felsic)	~65–75%	Light	Very high	Very explosive	Yellowstone, Mt. St. Helens

- **Statement 3 is correct**: Hawaii sits in the middle of the Pacific Plate, far away from any plate boundary. Beneath it lies a stationary hotspot — a deep, long-lived magma plume rising from the mantle. As the Pacific Plate moves northwest over this hotspot, magma keeps breaking through, forming a chain of volcanic islands.

Q 4.B

- As per the World Meteorological Organization (WMO) definition, the long-range forecast is defined as the forecast from 30 days up to one season's description of averaged weather parameters. The monthly and seasonal forecast comes under the long-range forecast.
- Long Period Average (LPA) of rainfall is the rainfall recorded over a particular region for a given interval (like month or season) average over a long period like 30 years, 50 years, etc. **Hence statement 1 is not correct.**
- It acts as a benchmark while forecasting the quantitative rainfall for that region for a specific month or season. The IMD predicts a "normal", "below normal", or "above normal" monsoon in relation to a benchmark "long period average" (LPA). **Hence statement 2 is correct.**

Q 5.B

- Hence option (b) is the correct answer.

Q 6.B

- Continental Drift Theory (by Alfred Wegener, 1912) proposed that continents once formed a single landmass (Pangaea) and drifted apart.
- Limitation: No scientific explanation for how continents moved — mechanism missing.
- Plate Tectonic Theory (developed in the 1960s by McKenzie, Parker, and others) explains Earth's lithosphere as divided into plates floating on the semi-molten asthenosphere.
- Movement occurs due to convection currents in the mantle.
- It unifies continental drift and seafloor spreading concepts.
- **Hence option (b) is the correct answer.**

Q 7.A

- **Tibetan High**: Tibetan High is a warm anticyclone (in this wind are changing in a clock-wise direction in the Northern Hemisphere and it will have always outflow of winds) located over Tibetan Plateau in the middle/upper troposphere during monsoon period. It is marked at 300 hPa level with centre 30ºN, 90ºE and extends 70ºE-110ºE.The outflow of winds from Tibetan High as the easterly flow concentrates into jet stream centred near about the latitude of Chennai at 150 hPa in July. The jet stream runs from the east coast of Vietnam to the west coast of Africa. Thus the location of the Easterly Jetstream seems to influence the pattern of monsoon rainfall. Shifting its position east or west causes variation of monsoon activity over India. **The Tibetan 'High' may sometimes shift much to the west of its usual position. In such a situation, the monsoon may extend further westward into Pakistan and in extreme cases into north Iran, though such a westward position of the Tibetan 'High' would be against its having origin in the heating effect of the Tibetan Plateau.**
- **Mascarene High:** Mascarene High is a high-pressure area that is found around the Mascarene Islands (in the south Indian Ocean) during the monsoon period. **This is responsible for crossequatorial flow through South Arabian Sea and it acts as southern hemispheric linkage. The variation in the intensity of High Pressure causes monsoon surges across equatorial flow. These surges are responsible for heavy rains along the west coast.**
- **Somali Jet:** Somali jet is low level (1 to 1.5 km asl) inter-hemispheric cross-equatorial flow of air, attains Jet speed at the west end of the monsoon regime along the east coast of Africa. This Jet originates near

Mauritius and northern part of Madagascar in the southern Hemisphere. This jet reaches Kenya coast (at about 3ºS) covers the plains of Kenya, Ethiopia and to Somali Coast at about 9ºN) During May, it moves further into eastern Africa, then into the Arabian sea and reaches west coast of India in June. **It attains maximum strength in July. Short-period (8-10 days) fluctuations are observed in Low Level.Jet stream. Its strengthening gives rise to a strong monsoon over peninsular India.**

Q 8.C

- The Agni-Prime (Agni-P), which is a new generation advanced variant of the Agni class of missiles, was successfully test-launched by the DRDO from a rail mobile launcher. This was a significant development, demonstrating the missile's capability to be launched from any location across the country. **Hence, statement I is correct.**
- The primary purpose of using a rail-based mobile launcher system is mobility and enhanced survivability, which ensures the missile system is hard to locate and eliminate by an adversary.
- **The use of a rail mobile launcher system does not inherently reduce a missile's range or increase its payload capacity.** The range and payload are determined by the missile's own design, fuel, engine, and guidance systems. Rail and road mobility systems are designed to accommodate the missile without compromising its core performance characteristics. **Hence, statement II is not correct.**

Q 9.C

- **The periodical rise and fall of the sea level, o**nce or twice a day, mainly due to the attraction of the sun and the moon, is called a tide. The strong gravitational pull exerted by the sun and the moon on the earth's surface causes the tides.
- The water of the earth closer to the moon gets pulled under the influence of the moon's gravitational force and causes high tide**. During the full moon and new moon days, the sun, the moon and the earth are in the same line and the tides are highest. These tides are called spring tides. High tides help in navigation.** They raise the water level close to the shores. This helps the ships to arrive at the harbour more easily. The high tides also help in fishing. **Hence, statement 1 is correct.**
- **When the moon and sun's gravitational forces are at right angles to each other,** typically during the first and third quarter moon phases. At this time the forces of the sun and moon tend to counteract one another. The Moon's attraction, though more than twice as strong as the sun's, is diminished by the counteracting force of the sun's gravitational pull. Resulting in low tides. **These tides are called neap tides. Hence, statement 2 is correct.**

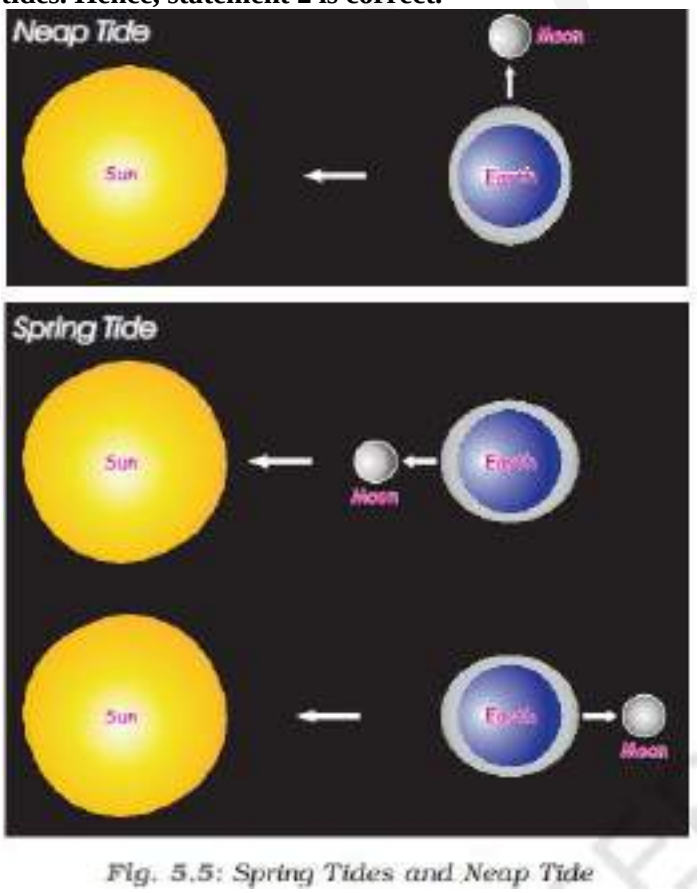


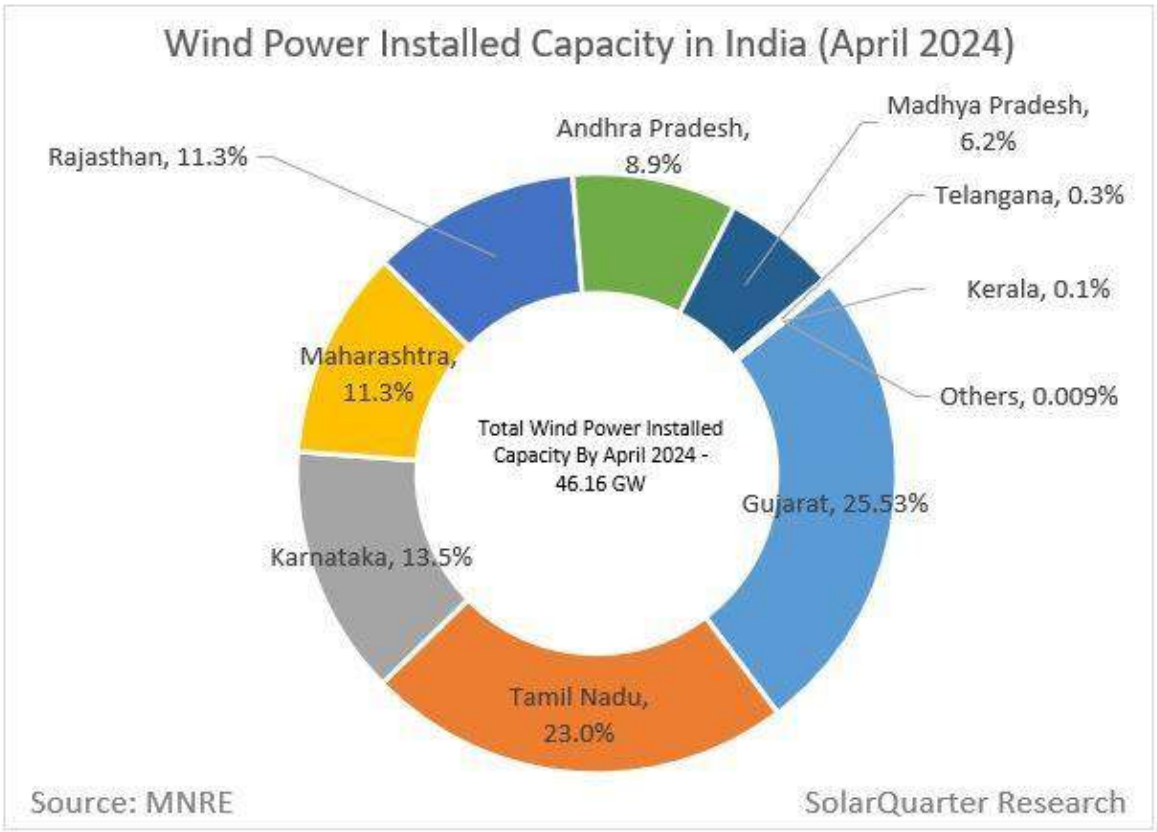
Fig. 5.5: Spring Tides and Neap Tide

Q 10.A

- **Uttarakhand** lies between 28o 44′ & 31o 28′ N Latitude and 77o 35′ & 81o 01′ East longitude. The districts lying in **Garhwal Region** are Uttarkashi, Chamoli, Pauri, **Rudraprayag**, Tehri, Dehradun & Haridwar and the remaining 06 i**n Kumaon Region** are Udham Singh Nagar, **Nainital,** Almora, Pithoragarh, Champawat & Bageshwar. The state varied terrain, major portion of which is mountainous with unique ecological diversity consisting of high alpine areas to the Sub-tropical and Tropical regions. **Hence, pair 1 and 2 are not correctly matched.**
- Total Forest cover area in the state is 3.47 million ha constituting 71% of the State's Geographical area. The forest diversity of the state comprises of Tropical Moist Forest (500-1000m) which is Terai and Bhabar belt of Sub Himalayan Tract, Sub-Tropical Pine Forest (1000-2000m), Himalayan Moist Temperate Forest (2000-3000m), Sub-Alpine Forests (3400-4000m) and Alpine Forests 4000-5000m).
- **Vidarbha** is a major cotton-growing region in central India. On the political map of India, it is located in the **eastern part of the state of Maharashtra. Nagpur city** is the winter capital of the state of Maharashtra, with a population of 46,53,570. **It lies in the Vidarbha region of Maharashtra**. Nagpur is also famous throughout the country as "Orange City" for being a major trade center of oranges that are cultivated in the region. **Hence, pair 3 is correctly matched.**

Q 11.B

- Wind is a site-specific and intermittent resource of energy and the government installed 900 wind monitoring stations across different states through NIWE (National Institute of Wind Energy) and issued wind potential maps at varying heights (50m, 80m, 100m, and 120m), aiding in identifying high-potential zones.
- The Union Minister for New & Renewable Energy and Power has informed that the installed wind energy generation capacity of the country was 53, 123 MW, as on 30th sep 2025. The major wind energy producing States were Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, Kerala, Madhya Pradesh, and Telangana.



- **Hence, option (b) is the correct answer.**

Q 12.B

- Gig work involves performing short-term, project-based jobs, often through online platforms, instead of a traditional long-term employment contract. Gig workers are typically independent contractors who are paid per task or project and have flexibility over their work schedule, but they do not receive traditional

employee benefits like health insurance or paid time off. Examples range from professional services like graphic design and tutoring to on-demand services like ridesharing and food delivery.

- Quinary activities:
  - These are the highest level of decision-making and involve highly specialized jobs like research and policy development. Gig work generally doesn't involve these types of activities.
- Primary activities:
  - Primary activities are related to the extraction of raw materials from the earth like mining or farming. Gig work is typically service-oriented, not involved in the extraction of natural resources.
- Secondary activities:
  - Secondary activities involve manufacturing and production. Gig work is mostly focused on services, not the creation of physical goods.
- **Hence, option (b) is the correct answer.**

Q 13.C

- **The Logistics Ease Across Different States (LEADS) report is released annually by India's Ministry of Commerce & Industry to benchmark logistics performance across States and Union Territories, with LEADS 2025 recently launched by Union Minister Shri Piyush Goyal on September 20, 2025.** The report evaluates performance based on four pillars- Logistics Infrastructure, Logistics Services, Operating and Regulatory Environment, and Sustainable Logistics to encourage competitiveness, attract investments, and foster a globally competitive logistics sector in line with the Make in India vision. **Hence, option (c) is the correct answer.**
- Key Aspects of the LEADS Report:
  - Purpose: To identify opportunities for improvement in the logistics sector and promote inter-state competition to enhance India's overall logistics efficiency.
  - Methodology: The report is an annual assessment that builds upon the World Bank's Logistics Performance Index (LPI).
  - Evaluation Pillars:
    - Performance is measured across four critical areas:
    - Logistics Infrastructure
    - Logistics Services
    - Operating and Regulatory Environment
    - Sustainable Logistics (introduced in LEADS 2024)
- Impact: It provides actionable insights for States and Union Territories to develop strategic action plans for improving logistics, promoting green logistics, and facilitating greater private sector investment.
- Latest Developments (LEADS 2025):
  - Launch: The latest report, LEADS 2025, was launched on September 20, 2025, in New Delhi.
  - Focus: The 2025 launch aims to support India's vision of a globally competitive and future-ready logistics ecosystem.
- Historical Context:
  - Initiation: The LEADS exercise was conceptualized by the Department for Promotion of Industry and Internal Trade (DPIIT) in 2018.
  - Annual Exercise: It is an ongoing initiative to continuously evaluate and improve the logistics sector at the State and UT level.

Q 14.C

- Italy is the only European country with active volcanoes on the mainland and islands. he convergence of three plates — African, Eurasian, and smaller Adriatic microplate — makes it one of the most geologically complex and active regions in the world.
- **Italy Lies on a Convergent Plate Boundary:Italy sits where the African Plate is colliding with the Eurasian Plate**. This collision forces parts of the oceanic crust of the African Plate to sink (or subduct) beneath the Eurasian Plate along the Calabrian and Apennine zones.
- **Italy is not located on the Pacific Ring of Fire**. It lies instead on the Alpine–Himalayan Belt, which is the second most seismically active zone in the world after the Pacific Ring of Fire.
- Italy’s volcanoes are part of a subduction-related volcanic arc system in the Mediterranean. The Tyrrhenian Sea region (west of Italy) is especially active due to back-arc spreading, adding to volcanic activity.

- So, **Italy's volcanoes — Etna, Vesuvius, and Stromboli** — are part of the Alpine–Mediterranean volcanic zone, not the Pacific Ring of Fire. They exist because the African Plate is subducting beneath the Eurasian Plate, creating active volcanic and earthquake zones around the Mediterranean.
- **Hence option (c) is the correct answer.**

Q 15.A

- The **Geological Time Scale (GTS)** is a representation of time based on the rock record of Earth. It is a system of chronological dating that uses chronostratigraphy (the process of relating strata to time) and geochronology (a scientific branch of geology that aims to determine the age of rocks).
- The **Geologic Time Scale** is divided into the following units of time **(descending order of duration)**
  - **Eon:** The largest time unit, represented by an eonothem. There are four eons: Hadean, Archean, Proterozoic, and Phanerozoic.
  - **Era:** The second largest unit, represented by an erathem. There are ten eras, from Eoarchean to Cenozoic. The Hadean has no eras.
  - **Period:** Represented by a system. There are 22 periods, with the current one being the Quaternary.
  - **Epoch:** The second smallest unit, represented by a series. The current epoch is the Holocene.
  - **Age:** The smallest unit, represented by a stage. There are 96 formal ages and five informal ages. The current age is the Meghalayan.
- **Hence, the correct order is 1-4-3-2.**

Q 16.C

- The World Intellectual Property Organization (WIPO)'s Global Innovation Index (GII) 2025 confirms India's upward trajectory in innovation performance. **The country has risen to the 38th rank among 139 economies**, leading both the Central and Southern Asia region and the lower-middle-income group. This progress is often attributed to India's dynamic startup ecosystem, strong performance in Knowledge & Technology Outputs (like ICT services exports), and consistent designation as an Innovation Over-performer. **Hence, statements 1 and 2 are correct.**
- Data from India's Department of Science and Technology (DST) and analyses from the GII report consistently show that the **government sector (central and state governments, public sector enterprises) is the primary source of funding for R&D in India, contributing around 60-65% of the Gross Expenditure on R&D (GERD).** The private sector (Business Enterprise Sector) contribution remains comparatively low (around 35−40%). This is the reverse of the trend seen in most global innovation leaders (e.g., the US, South Korea, China) where the private sector typically accounts for over 70% of R&D funding.

Q 17.C

- After the recent addition of seven natural sites, India's total count on the Tentative List has increased to 69 properties (49 cultural, 17 natural, and 3 mixed heritage properties).
- **The Tentative List is only an inventory of properties that a country intends to nominate for the World Heritage List in the next five to ten years. Inclusion is a mandatory prerequisite for nomination, but it does not guarantee or automatically lead to inscription as a World Heritage Site.** The nomination process is lengthy, requires a full nomination file to be submitted (at least one year after the site is on the Tentative List), and involves independent evaluations by advisory bodies (ICOMOS and IUCN) before the World Heritage Committee makes the final decision.
- The Varkala Cliffs in Kerala were recently added to the UNESCO Tentative List as one of the seven new natural heritage sites. **Hence, option(c) is the correct answer.**
- **Recently added seven sites to the UNESCO Tentative List:**

Sites	Key Features
Natural Heritage of Erra Matti Dibbalu or Red Sand Dunes (Visakhapatnam, Andhra Pradesh)	First documented in 1886 **by British geologist William King** Represent unique **coastal geomorphological and paleo-climatic set up** Declared a **GeoHeritage Monument** by the Geological Survey of India (GSI) in 2016. Composed of sand, silt, and clay with a reddish color from natural oxidation.
Meghalayan Age Caves (Meghalaya)	They are some of the world's longest caves and host impressive stalactites, stalagmites, fossils, and rare cave-dwelling species. **Mawmluh cave is** listed among the **global first 100 geologically important sites** in the world.
Natural Heritage of Tirumala Hills (Tirupati, Andhra Pradesh)	The hills form part of the **Seshachalam Biosphere Reserve** and **Venkateswara National Park**
Natural Heritage of Varkala (Kerala)	Varkala coast is noted for its scenic beauty, unique laterite formations, fossil-bearing rocks, and cultural significance as a pilgrimage destination.
Deccan Traps at Panchgani and Mahabaleshwar	**Location:** Western Ghats of Maharashtra. They form a part of **Koyna Wildlife Sanctuary.**
Geological Heritage of St' Mary's Island Cluster(Karnataka)	The sites are protected by the **coastal regulation zones** of the government of India and have been declared as **National Geological Monument** by GSI.
Naga Hill Ophiolite (Nagaland)	This belt displays a section of oceanic crust and mantle thrust onto land, offering crucial evidence of tectonic plate movement and earth's internal processes.

Q 18.B

- The 56th meeting of the GST Council, chaired by Union Finance Minister Smt. Nirmala Sitharaman has now approved Next-Gen GST reforms, with focus on improving the lives of the common man and ensuring ease of doing business for all, including small traders and businessmen.
- Key Takeaways
  - GST simplified to a two-slab structure (5% & 18%)
  - GST reforms cut taxes on household essentials (soaps, toothpaste, Indian breads) to 5% or Nil boosting affordability
  - Life-saving drugs, medicines reduced from 12% to Nil or 5% making healthcare affordable
  - Two-wheelers, small cars, TVs, ACs, cement cut from 28% to 18% bringing relief to middle-class.
  - Farm machinery, irrigation equipment cut from 12% to 5%, reducing farming costs
  - Tobacco, pan masala, aerated drinks, and luxury goods taxed at 40%.
- **In line with the PM's vision the GST Council has recommended a comprehensive reform package that includes rate rationalization with a simplified two-slab structure (5% and 18%),** sweeping rate reductions across sectors, with focus on common-man, labour-intensive Industries, farmers and agriculture, health, key drivers of the economy. **Hence, statement I is correct.**
- These recommendations are based on consensus among all members of the GST Council to make GST simpler, fairer, and more growthoriented. The revised rates and exemptions comes into effect from 22nd September 2025, ensuring timely relief for the common man, households, farmers, and businesses. Only exception will be specified goods namely, cigarettes, chewing tobacco products like zarda, unmanufactured tobacco and beedi, for which the existing rates of GST and compensation cess will continue to apply and the new rates will be implemented at a later date to be notified, based on discharging of entire loan and interest liabilities account of compensation cess.

- **Hence, statement II is correct.**
- The 56th GST Council meeting rationalized tax slabs to simplify GST structure and ease compliance.
- Exempting GST on individual life and health insurance premiums is a separate reform to make insurance more affordable and does not explain the rationalization of tax slabs. **Hence, Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.**

Q 19.B

- Ferrous metallic minerals are minerals containing iron as a major component, such as iron ore, manganese, chromite, and nickel. They are crucial for the steel and metallurgical industries and are often magnetic. Examples include the iron ores magnetite and hematite, which are vital for modern industrial development.
- Examples
  - Iron ore: The most important industrial ferrous mineral. It is used to produce pig iron, steel, and alloys, and is critical for construction and electrical industries. Manganese: Primarily used to make steel and ferro-manganese alloy, but also has uses in manufacturing, such as in dry-cell batteries, matches, and paints.
  - Chromite: A mineral containing iron and chromium. Hence, point 1 is the correct answer.
  - Nickel: Another example of a ferrous mineral. Hence, point 4 is the correct answer.
- Non-ferrous minerals – do not contain iron (e.g., copper, bauxite, cobalt, aluminium).
- Examples of non-ferrous metallic minerals:
  - Bauxite: The primary ore for aluminum. It is known for being lightweight and is used in aeronautical equipment and packaging. Hence, point 2 is the correct answer.
  - Copper: Used in electrical wiring due to its high electrical conductivity and in alloys like brass and bronze. It is also used to strengthen gold in jewelry.
  - Lead: Used in batteries and as a protective coating.
  - Zinc: Primarily used for galvanizing steel to prevent rust and as a component in brass. Hence, point 3 is the correct answer.
  - Tin: Used in solders and to coat steel cans to prevent corrosion.
  - Gold and Silver: Valued as precious metals for jewelry, coinage, and as a store of wealth.
- **Hence, option (b) is the correct answer.**

Q 20.A

- **Earth's energy (heat) budget:**
  - Earth's energy (heat) budget balances incoming sunlight with outgoing heat. A sizeable slice of sunlight is reflected back to space, the rest is absorbed—mostly by the surface, some by the atmosphere. The surface then emits longwave (infrared) radiation, part of which is absorbed and re-

radiated by greenhouse gases, warming the lower atmosphere and surface (the natural greenhouse effect).

- **How the Sun's energy is partitioned:**
  - Multiple authoritative summaries converge on roughly:
    - ~30% reflected back to space (planetary albedo ≈ 0.29–0.35) — close to "about one-third." **Hence, statement 1 is correct.**
    - ~50% absorbed by the surface (land/ocean).
    - ~20% absorbed by the atmosphere (water vapour, dust, ozone, clouds).
  - These proportions mean the surface absorbs more solar energy than the atmosphere, not the other way round. **Hence, statement 2 is not correct.**
- **Greenhouse effect in the budget:**
  - The surface's longwave emission is partly absorbed by greenhouse gases (H_2O, CO_2, CH_4, etc.), which then re-emit infrared in all directions, including back toward the surface. This is the well-established mechanism that keeps Earth warmer than it would otherwise be.
  - The greenhouse effect works on terrestrial longwave infrared radiation, not solar shortwave radiation. Greenhouse gases (CO_2, CH_4, N_2O, water vapour) are almost transparent to incoming solar radiation, but they absorb and re-radiate longwave radiation emitted by Earth's surface. **Hence, statement 3 is not correct.**

Q 21.A

- The Power of Siberia 2 (PoS-2) pipeline is a proposed project aimed at transporting natural gas from Western Siberian fields through Mongolia to China. **Hence, statement 1 is correct.**
- The Power of Siberia 2 is a Russian-led energy infrastructure project with China and Mongolia. The India-Middle East-Europe Economic Corridor (IMEC) is a multinational connectivity project linking India, the Middle East, and Europe through sea and rail routes. The two projects are entirely separate and unrelated. **Hence, statement 2 is not correct.**
- The proposed route for the Power of Siberia 2 pipeline is planned to pass through Mongolia, making it a trilateral project involving Russia, Mongolia, and China. **Hence, statement 3 is not correct.**

Q 22.C

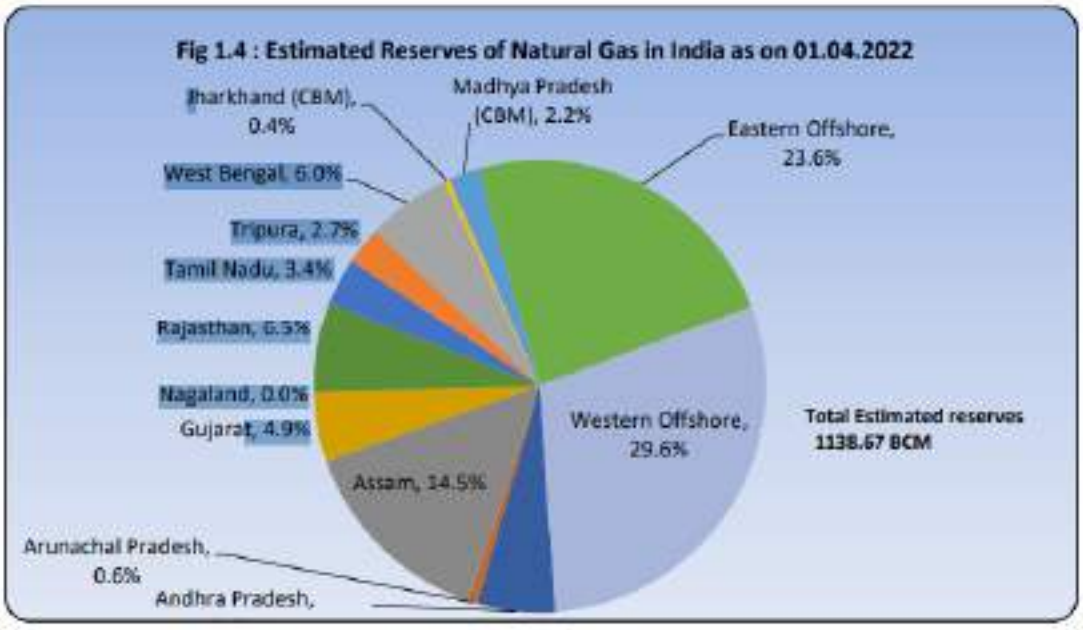
- **The Deccan Plateau:** This is the largest unit of the Peninsular Plateau of India covering an area of about five lakh sq km. This triangular plateau is bounded by the Satpura and the Vindhya in the north-west, the Mahadev and the Maikal in the north, the Western Ghats in the west and the Eastern Ghats in the east. Its general slope is from west to east which is indicated by the flow of its major rivers like the Mahanadi, the Godavari, the Krishna and the Cauvery. **These rivers have further subdivided this plateau into a number of smaller plateaus one of them is Telangana plateau.**
  - **The Telangana plateau** consists of Archaean gneisses at an average elevation of 500-600 m. The southern part is higher than its northern counterpart. **The region is drained by three river systems, the Godavari, the Krishna and the Penneru. Penneru river rises from the Chenna Kesava hills**

of the Nandi ranges of Karnataka and flows for about 597 km before outfalling into Bay of Bengal. Hence, pair 2 is correctly matched

- **The Chotanagpur Plateau:** Chotanagpur plateau represents the north-eastern projection of the Indian Peninsula. It covers an area of over 87 thousand sq km mostly in Jharkhand, northern part of Chhatisgarh and Purulia district of West Bengal. **The Son river flows in the north-west of the plateau and joins the Ganga. The average elevation of the plateau is 700 m above sea level. This plateau is composed mainly of Gondwana. The river Son is an important right bank tributary of the river Ganga. It originates from Amarkantak high lands. Hence, pair 3 is correctly matched.**
- **The Malwa Plateau:** The Malwa Plateau roughly forms a triangle based on the Vindhyan Hills, bounded by the Aravali Range in the west and Bundelkhand in the east. This plateau has two systems of drainage; one towards the Arabian sea (The Narmada, the Tapi and the Mahi), and the other towards the Bay of Bengal (Chambal and Betwa, joining the Yamuna).
  - **In the north it is drained by the Chambal** and many of its right bank tributaries like the Kali, the Sindh and the Parbati. It also includes the upper courses of the Sindh, the Ken and the Betwa. It is composed of extensive lava flow and is covered with black soils. **The Chambal River is part of the Gangetic drainage system. It is the main tributary of the Yamuna River and originates in the Vindhya Ranges. Hence, pair 1 is correctly matched.**

Q 23.D

- The estimated reserves of Natural Gas is at 1138.67 Billion Cubic Meters. India has natural gas reserves in the states of Assam, Andhra Pradesh, Gujarat, Rajasthan, Nagaland and Tripura, as well as offshore locations like the Krishna-Godavari Basin (off the coast of Andhra Pradesh) and the Bombay High field (offshore of Gujarat). Other states with reserves include Arunachal Pradesh and Tamil Nadu, with some reserves also present in regions like the Andaman and Nicobar Islands and parts of Jharkhand and Madhya Pradesh for coal bed methane (CBM).



- **Hence, option (d) is the correct answer.**

Q 24.A

- **The Nagarjuna Sagar Dam** was built between 1955 and 1972. It is **world's largest masonry dam** protected with 26 gates measuring 124.663m in height , Nagarjunasagar Dam located in Nalgonda District is bui**lt across River Krishna.T**he dam has a storage capacity of nearly 11,472 million cubic meters with an irrigation capacity for 9.81 lac acres of land. Other dams on this river are the Srisailam Dam, and the Almatti Dam. **Hence, option (a) is the correct answer.**
- Major dams on the **Kaveri River** include Krishnarajasagara Dam (Karnataka) for irrigation and water storage, Kallanai Dam (Tamil Nadu) for irrigation, and the Mettur Dam (Tamil Nadu).
- The most prominent dam on the **Mahanadi River is the Hirakud Dam** in Odisha, India, which is the world's longest earthen dam.
- **The famous Tehri Dam lies at the confluence of Bhagirathi and Bhilangna River near Tehri Garhwal.** Other operational projects in the basin include Koteshwar, Maneri and Joshiyara. Other than

these, many more have been planned and are being constructed like Kotli Bhel, Loharinag, Bhilanagna dam etc.

Q 25.C

- **Continental shelf** is the seaward extension of land that lies under the sea water. It occupies 7% of the seafloor. **Continental shelves are formed due to either any one or combination of the factors like fluvial deposits, marine erosion, tectonic forces, and the fluctuations in sea level in the past.** In India, continental shelves on the east coast are formed by the deltas of the Ganga, Godavari, Krishna, and Cauvery rivers. On the west coast, the continental shelves were formed by faulting and subsequent submergence. **Hence, statement 1 is correct**.
- The width of the continental shelf varies according to the nature of the rock beneath the crust. If the crust is dynamic then the shelf would be narrow and vice versa**. The widest continental shelf in the world extends 1,210 km (750 miles) off the coast of Siberia, Russia, into the Arctic Ocean. Hence, statement 3 is not correct.**
- The continental shelves are covered with variable thicknesses of sediments brought down by rivers, glaciers, wind, from the land and distributed by waves and currents**. Massive sedimentary deposits received over long time by the continental shelves, become the source of fossil fuels. Continental shelves are well known for oil, natural gas, mineral deposits and coral reefs.** World famous fishing grounds like Grand Bank are situated here. **Hence, statement 2 is correct.**

Q 26.B

- Recently, the President of Sri Lanka visited Katchatheevu Island amid renewed calls by Indian politicians for its return to India.
- Katchatheevu is a small, uninhabited island located in the Palk Strait, between India (specifically Tamil Nadu) and Sri Lanka.
- Historically, the ownership was disputed. In 1974, the Indian government, led by Prime Minister Indira Gandhi, ceded the island to Sri Lanka through the Indo-Sri Lankan Maritime Agreement.
- **Despite the official agreement, the issue remains a major political and humanitarian dispute in India, particularly in Tamil Nadu, because the island and its surrounding waters are traditional fishing grounds for Indian fishermen.**
- The frequent arrest and detention of Indian fishermen by the Sri Lankan Navy for allegedly poaching in Sri Lankan waters keeps the ownership and fishing rights issue constantly in the news. The legality of the 1974 transfer, which was not ratified by the Indian Parliament, is also sub-judice in the Indian Supreme Court.
- The island was ceded to Sri Lanka in 1974 and subsequently, a 1976 agreement barred Indian fishermen from fishing in Sri Lankan waters around the island. This restriction is the direct cause of the frequent arrests and harassment of Tamil Nadu fishermen by the Sri Lankan Navy, which is the primary reason the issue is continuously raised in Indian politics and the news.
- **Hence, option (b) is the correct answer.**

Q 27.A

- **The Aleutian Islands** form part of the Aleutian Arc in the Northern Pacific Ocean and occupy a land area that extends from **the Alaska Peninsula** mainland in the direction of the **Kamchatka Peninsula.** The archipelago acts as a border between the Bering Sea to the north and the Pacific Ocean to the south. **Hence, pair 1 is not correctly matched.**
- **The Canary Islands** are a Spanish archipelago located off the northwest coast of Africa, situated **in the Atlantic Ocean,** known for their volcanic origins, diverse landscapes, and year-round warm climate. **Hence, pair 2 is not correctly matched.**
- **Nancowry** is an island in the central part of the **Nicobar Islands chain**, located in the **northeast Indian Ocean between the Bay of Bengal and the Andaman Sea. Hence, pair 3 is correctly matched.**
- **The Azores** are one of the autonomous regions of Portugal. It is an archipelago composed of nine volcanic islands in the Macaronesia region of the **North Atlantic Ocean. Hence, pair 4 is not correctly matched.**

Q 28.A

- BHARATI (Bharat's Hub for Agritech, Resilience, Advancement, and Incubation for Export Enablement) is a flagship initiative of the Agricultural and Processed Food Products Export Development Authority (APEDA).
- **BHARATI, which stands for Bharat's Hub for Agritech, Resilience, Advancement and Incubation for Export Enablement, has been designed to empower 100 agri-food and agri-tech startups, accelerate their journey, promote innovation and create new export opportunities for young entrepreneurs.** Conceived as APEDA's vision to achieve $50 billion in agri-food exports for its Scheduled Products by 2030, the initiative marks a significant step to strengthen India's agricultural and processed food exports.
- **Starting in September 2025, the inaugural pilot cohort will empower 100 startups, including high-value agri-food producers, technology-driven service providers and innovators.** The BHARATI initiative is structured to complement and enhance industry and government-led incubation programmes in the agriculture, food and food processing sectors. It seeks to drive innovation in high-value categories such as GI-tagged agri-products, organic foods, superfoods, novel processed Indian agri-foods, livestock products and AYUSH products. The initiative also aims to attract startups working on advanced technologies such as AI-based quality control, blockchain-enabled traceability, IoT-enabled cold chains and agri-fintech, while addressing critical areas like innovative packaging, sustainability and sea protocols. BHARATI seeks to resolve export challenges related to product development, value addition, quality assurance, perishability, wastage and logistics. By fostering a collaborative ecosystem, the programme will connect agri-food innovators, tech-driven solution providers and SPS-TBT-focused startups to deliver scalable, cost-effective solutions that enhance India's global competitiveness. **Hence, statement 1 is correct.**
- While fresh fruits and vegetables are included in the scope of APEDA's scheduled products, the BHARATI initiative does not focus exclusively on them. The program focuses on a broad range of high-value agri-food categories and technology-led solutions for export enablement across APEDA's scheduled products.
- Focus Areas include:
  - GI-tagged products
  - Organic foods
  - Superfoods
  - Novel processed Indian agri-foods
  - Livestock products and AYUSH products
  - Startups utilizing advanced technologies like AI, blockchain, and IoT for quality control and logistics.
- **Hence, statement 2 is not correct.**

Q 29.A

- **Global Distribution of Rainfall**
  - Rainfall on the earth's surface is unevenly distributed and follows broad latitudinal and continental patterns. Its variation is influenced by global circulation of winds, ocean currents, distance from the sea, and relief features.

- **Equator to Poles**
  - Rainfall is maximum in the equatorial belt due to strong convectional activity and persistent ascending air. As we move poleward, rainfall steadily decreases because of subsiding air in the subtropical high-pressure zones and reduced evaporation at higher latitudes.
  - **Hence, Statement 1 is correct.**
- **Rainfall in 35°–40° Latitudes**
  - In these subtropical latitudes, the western coasts experience dry summers and wet winters due to the Mediterranean climate, influenced by cold ocean currents. On the other hand, the eastern coasts (humid subtropical climate) receive more rainfall because of warm currents and moist trade winds. Therefore, it is not the western coasts but the eastern coasts that get heavier rainfall in this latitude belt.
  - **Hence, Statement 2 is not correct.**
- **Rainfall in 45°–65° Latitudes**
  - In the mid-latitudes dominated by the westerlies, the western margins of continents are wetter (e.g., western Europe, British Columbia, southern Chile, New Zealand's west coast). Eastern interiors in this belt remain comparatively dry. Thus, the claim that eastern margins get more rainfall is wrong.
  - H**ence, Statement 3 is not correct.**

Q 30.C

- The world is divided into multiple time zones to account for the variation in solar time as you move east or west across the globe. Each time zone represents a region where the local time is the same. Time zones are typically defined based on lines of longitude, with each zone having a standard time offset from Coordinated Universal Time (UTC).
- **List of the countries with more than 1 time zone.**
  France (13)
  Russia (11)
  USA (11)
  Australia (9)
  United Kingdom (9)
  Canada (6)
  Denmark (5)
  New Zealand (5)
  Brazil (4)
  Mexico (4)
  Chile (3)
  Indonesia (3)
  Kiribati (3)
  DR Congo (2)
  Ecuador (2)
  Kazakhstan (2)
  Micronesia (2)
  Mongolia (2)
  Netherlands (2)
  Papua New Guinea (2)
  Portugal (2)
  South Africa (2)
  Spain (2)
  China has only one time zone.
- **Hence option (c) is the correct answer.**

Q 31.A

- **In the east of the Maikal Range is the Baghelkhand plateau** that is made of limestones and sandstones on the west and granite in the east. It covers an area of about 1.4 lakh sq km. It is bounded by the Son river on the north, and to its south occur anticlinal highlands and synclinal valleys of sandstones and limestones.
  - **The central part of the plateau acts as a water divide between the Son drainage system in the north and the Mahanadi river system in the south.** The region has a general elevation of 150 m to 1,200 m and has uneven relief. The main elements of physiography are scarps of the Vindhyan sandstones between the Ganga plain and the Narmada-Son trough. The Bhanrer and Kaimur are

located close to the trough-axis. The general horizontality of the strata shows that this area has not undergone any major disturbance. **Hence, statement 1 is correct.**

- **Rajmahal Hills located in the north eastern edge of the Chotanagpur Plateau that are mostly made of basalt and are covered by lava flows.** They run in north-south direction and rise to average elevation of 400 m (highest mount is 567 m). These hills have been dissected into separate plateaus. **Hence, statement 2 is not correct.**

Q 32.A

- **The long, narrow, steep-sided depressions formed by tectonic forces beneath the abyssal plain are called Ocean trenches.** Ocean trenches are steep depressions in the deepest parts of the ocean where old ocean crust from one tectonic plate is pushed beneath another plate, raising mountains, causing earthquakes, and forming volcanoes on the seafloor and on land.
- Oceanic trenches actually extend 3 to 4 km below the level of the abyssal plain. T**here are 26 oceanic trenches in the world: 22 in the Pacific Ocean, 3 in the Atlantic Ocean and only one in the Indian Ocean.** The deepest trench in the world, the Mariana Trench located near the Mariana Islands.
- The mid-Atlantic ridge divides the Atlantic Ocean into two major basins, i.e., East and West Atlantic basins. Other basins are Spanish basin, north and south Canary basin, Guinea basin, Brazilian basin and Labrador basin. **Puerto Rico Deep (8,380 m) is the deepest of all deeps in the Atlantic Ocean. Other deeps are Romanche Deep and South Sandwich Trench. Hence, option (a) is the correct answer.**

Major Ocean Trenches of the world

S. No	Name of the Trench	Location	Depth (in Metres)
1.	Challenger in Mariana Trench	North Pacific Ocean	10,994
2.	Aldrich or Tonga Trench	South Pacific Ocean	10,882
3.	Kurile Trench	North Pacific Ocean	10,554
4.	Tizar Romanche Trench	South Atlantic Ocean	7,761
5.	Sunda Trench	East of Indian Ocean	7,450

Figure 5.10 Bottom relief of Atlantic Ocean

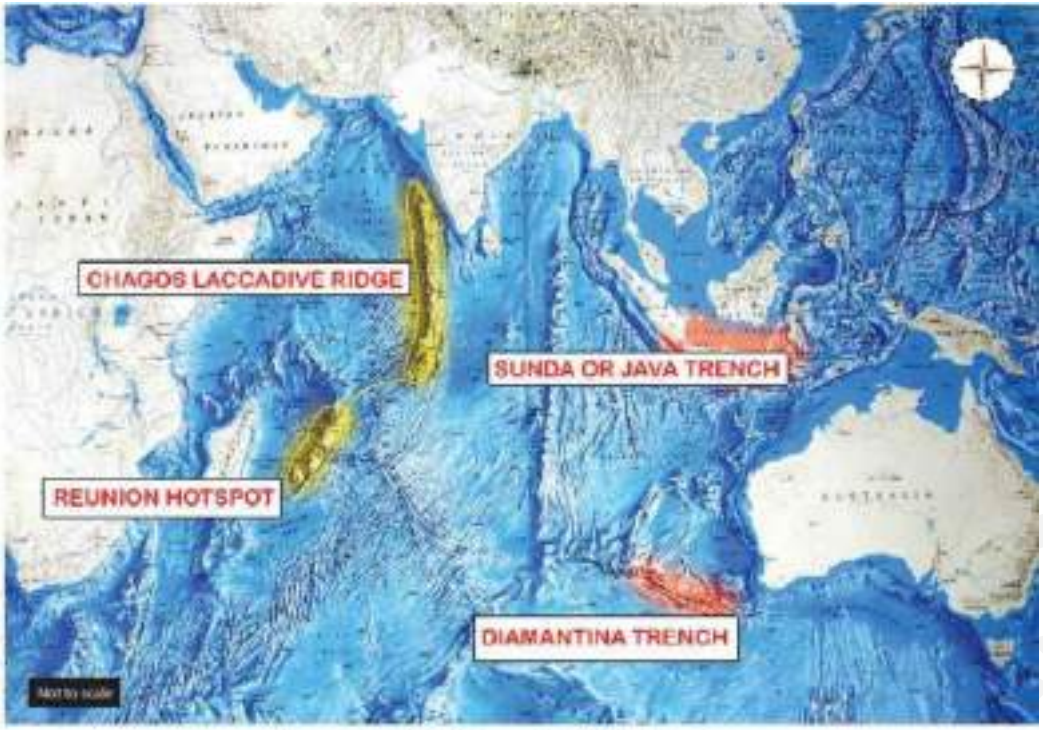


Figure 5.11 Bottom relief of Indian Ocean

Q 33.C

- **Why there is "no violent upward winds"?**
  - Air pressure falls very rapidly with height—from about 1013 hPa at sea level to ~500 hPa by ~5.5 km. That steep drop means the vertical pressure-gradient force (PGF) pushing air upward is thousands of times stronger (per metre) than the typical horizontal PGF that drives winds along the surface. If this vertical PGF acted alone, we'd feel fierce upward winds all the time. We don't—because of a near-perfect balance with gravity called **hydrostatic equilibrium. It is not counterbalanced by frictional force. Hence, statement II is not correct.**
- **The balancing act: hydrostatic equilibrium**
  - In the vertical, two forces almost cancel:
  - Upward: the vertical PGF from high pressure below to lower pressure aloft.
  - Downward: gravity (weight of the air column).
  - This balance keeps the atmosphere layered and broadly stable most of the time, preventing continuous, violent ascent.
- **How large is "vertical" compared to "horizontal"?**
  - A quick feel for magnitudes:
    - Vertical: ~500 hPa change over 5.5 km → ~9 Pa per metre.
    - Horizontal (typical synoptic gradient): ~1 hPa over 100 km → 0.001 Pa per metre.
  - So the vertical PGF per metre can be ~10,000× the horizontal one—yet it's neutralized by gravity, not by other forces. **Hence, statement I is correct.**
- **What about friction and Coriolis?**
  - Friction acts near the surface and mostly on horizontal motion; it slows winds and turns them slightly toward lower pressure, but it doesn't provide a downward force to cancel the vertical PGF.
  - Coriolis (due to Earth's rotation) acts at right angles to the motion and is effectively horizontal; it does not counteract vertical PGF.
- **When the balance is disturbed**
  - Where heating, topographic lifting, fronts, or convection occur, hydrostatic balance is locally perturbed, producing updrafts/downdrafts (e.g., thunderstorms, mountain waves). Even then, typical vertical speeds are much smaller than horizontal wind speeds, and the background atmosphere remains close to hydrostatic.

Q 34.C

- The two newest additions on the list of Ramsar sites are **Gokul Jalashay and Udaipur Jheel**. **Both are located in Bihar and were designated as Ramsar Sites in September 2025. Gokul Jalashay is an oxbow lake situated on the southern edge of the Ganga river in the Buxar District. It plays a vital**

ecological role by acting as a natural flood buffer and providing habitat for over 50 bird species, while also sustaining local livelihoods through fishing and irrigation. The Udaipur Jheel is also a significant oxbow lake in the West Champaran District of Bihar. Hence, pair 1 is correctly matched and pair 2 is not correctly matched.

- The Udhwa Lake Bird Sanctuary is located in the Sahebganj District of Jharkhand. Designated as a Ramsar Site on January 8, 2024, it holds the distinction of being Jharkhand's first such site. The sanctuary itself was established earlier in 1991 and is a complex of two interconnected wetlands: Pataura Lake and Barhel Lake. It is recognized as an Important Bird Area (IBA) due to its role in providing habitat for numerous bird species. **Hence, pair 3 is correctly matched.**
- **Khecheopalri Wetland is located in Sikkim,** within the Gyalshing District. Designated on July 15, 2024, it is a unique glacier-formed high-altitude lake and the first Ramsar Site of Sikkim. Situated at an elevation of 1,700 meters, this site is not only ecologically important but is also revered as a "wish-fulfilling lake," holding deep religious significance for both Buddhists and Hindus in the region. **Hence, pair 4 is correctly matched.**

Q 35.A

- **Ocean currents** are streams of water flowing constantly on the ocean surface in definite directions. The ocean currents may be warm or cold (Fig. 5.6). Generally, the warm ocean currents originate near the equator and move towards the poles. The ocean current influence the temperature conditions of the area. **Warm currents bring about warm temperature over land surface. The areas where the warm and cold currents meet provide the best fishing grounds of the world.**

S. No.	World's Fishing banks	Confluence of ocean currents
1.	The Grand bank (Atlantic Ocean, New foundland)	Gulf Stream and Labrador current
2.	The Agulhas bank (Atlantic Ocean, South west Africa)	Benguela cold current and Agulhas warm current
3.	The Dogger bank (Atlantic Ocean, North east of N.A)	North Atlantic drift and canary cold current
4.	The Reed bank (South China Sea, Pacific Ocean)	Kuroshio Warm current and Oyashio Cold Current
5.	The Pedro bank (India Ocean)	South Equatorial warm current and W. Australian cold current

- **Hence, option (a) is the correct answer.**

Q 36.A

- The most recent addition to the UNESCO World Network of Biosphere Reserves from India is the **Cold Desert Biosphere Reserve.**
  - **Designation Date: The Cold Desert Biosphere Reserve was officially announced as a part of the WNBR in September 2025 during the 5th World Congress of Biosphere Reserves in Hangzhou, China. Hence, option (a) is the correct answer.**
  - Significance: Its inclusion brought the total number of UNESCO-recognized Biosphere Reserves in India to 13.
  - Location and Ecosystem: **The Cold Desert Biosphere Reserve is India's first high-altitude cold desert biosphere reserve. It spans approximately 7,770 sq. km. across the Trans-Himalayan region in the Lahaul-Spiti district of Himachal Pradesh.** It encompasses protected areas like Pin Valley National Park and Kibber Wildlife Sanctuary.
- **Panna Biosphere Reserve: Located in Madhya Pradesh, Panna was the 12th site from India** to be included in the WNBR in October 2020. It is a critical tiger habitat and represents the unique ecosystem of the Vindhyan Hill Ranges.
- **Sundarbans Biosphere Reserve: This reserve, located in West Bengal, was one of India's earliest additions, joining the WNBR in 2001.** It is the largest single block of tidal halophytic mangrove forest in the world and is also a UNESCO World Heritage Site.

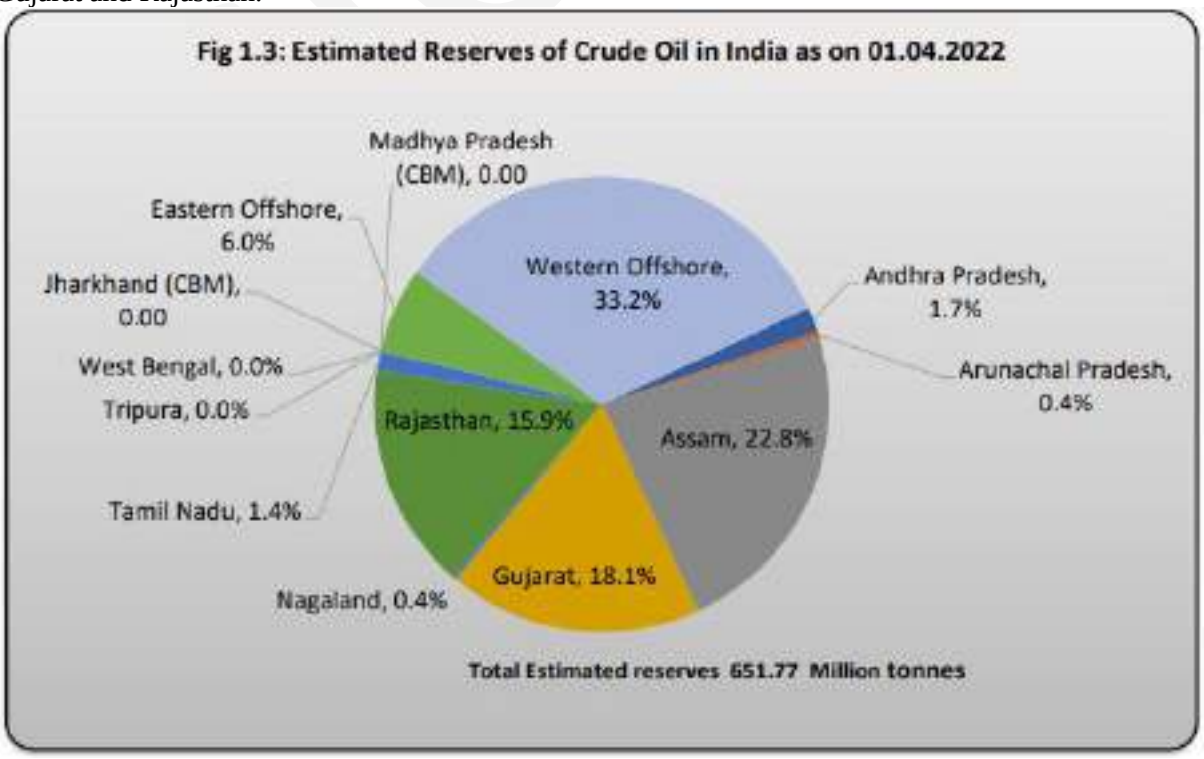
- **Manas Biosphere Reserve: While recognized as one of India's 18 national biosphere reserves, Manas is currently not included in the UNESCO's World Network of Biosphere Reserves.** The WNBR list only includes 13 of the 18 nationally designated sites, and Manas is one of the five that have not yet received international designation under the Man and the Biosphere (MAB) Programme.
- UNESCO's Man and the Biosphere (MAB) Programme
  - The UNESCO World Network of Biosphere Reserves is managed under UNESCO's Man and the Biosphere (MAB) Programme, which was launched in 1971.
  - Purpose: The goal of the MAB programme is to establish a scientific basis for enhancing the relationship between people and their environments.
  - Structure: Biosphere Reserves are sites established to promote solutions reconciling the conservation of biodiversity with its sustainable use. They are typically divided into three zones: a legally protected Core Area, a Buffer Zone used for research and education, and a Transition Area where sustainable human development is promoted.

Q 37.A

- Dedicated Freight Corridor Corporation of India constructed the Western DFC (1506 Route km) and Eastern DFC (1875 route km including Sonnagar-Dankuni PPP Section). The EDFC starting from Sahnewal near Ludhiana (Punjab) will pass through the states of Punjab, Haryana, Uttar Pradesh, Bihar and Jharkhand to terminate at Dankuni in West Bengal. The Western Corridor connecting Dadri in Uttar Pradesh to Jawaharlal Nehru Port (JNPT) in Mumbai will traverse through the states of UP, Haryana, Rajasthan, Gujarat and Maharashtra of WDFC. **Hence, statement 1 is not correct.**
- The Western Dedicated Freight Corridor (WDFC) passes through the states of Haryana, Rajasthan, Gujarat, Maharashtra, and Uttar Pradesh. **Hence, statement 2 is correct.**
- Western Dedicated Freight Corridor (WDFC) are from the Japan International Cooperation Agency (JICA) whereas EDFC is being funded by the World Bank**. Hence, statement 3 is not correct.**

Q 38.B

- India’s petroleum industry is a comprehensive sector encompassing exploration, production, refining, distribution, and marketing of petroleum and its by-products. This includes upstream activities like extraction of crude oil and natural gas, midstream activities such as transportation and storage, and downstream processes including refining and distribution of fuels like petrol, diesel, LPG, and kerosene.
- The estimated reserves of crude oil in India stood at 651.77 million tonnes. Geographical distribution of crude oil indicates that the maximum reserves in India are in the Western Offshore region (about 32-33%) and the second-largest are in the Assam region (about 22-23%). Other states with notable reserves include Gujarat and Rajasthan.



- **Hence, option (b) is the correct answer.**

Q 39.B

- **Israel is located in the Middle East, along the eastern coast of the Mediterranean Sea. It shares land borders with four countries:**
  - Egypt – shares a border in the southwest, along the Sinai Peninsula.
  - Jordan – shares a border to the east of Israel, along the Jordan River and the Dead Sea.
  - Lebanon – shares a northern border with Israel.
  - Syria – shares a small northeastern border near the Golan Heights region.
- **Countries not sharing a border with Israel:**
  - Saudi Arabia – located southeast of Israel but separated by Jordan; no direct land border.
  - Iraq – located farther east; does not share a border with Israel.
  - **Hence, option (b) is the correct answer.**

Q 40.A

- **The Cold Weather Season (Winter) in India:**
  - The cold weather season begins from mid-November in northern India and stays till February. December and January are the coldest months in the northern part of India.
  - The temperature decreases from south to the north. The average temperature of Chennai, on the eastern coast, is between 24°– 25° Celsius, while in the northern plains, it ranges between 10°C and 15° Celsius. Days are warm and nights are cold. Frost is common in the north and the higher slopes of the Himalayas experience snowfall.
  - **During this season, the northeast trade winds prevail over the country.** They blow from land to sea and hence, for most part of the country, it is a dry season. Some amount of rainfall occurs on the Tamil Nadu coast from these winds as, here they blow from sea to land.
  - In the northern part of the country, a feeble high-pressure region develops, with light winds moving outwards from this area. Influenced by the relief, these winds blow through the Ganga valley from the west and the northwest. **The weather is normally marked by clear sky, low temperatures and low humidity and feeble, variable winds.**
  - **A characteristic feature of the cold weather season over the northern plains is the inflow of cyclonic disturbances from the west and the northwest.** These low-pressure systems, originate over the Mediterranean Sea and western Asia and move into India, along with the westerly flow. They cause the much-needed winter rains over the plains and snowfall in the mountains.
  - Although the total amount of winter rainfall locally known as ‘mahawat’ is small, they are of immense importance for the cultivation of ‘rabi’ crops.

- **The peninsular region does not have a well-defined cold season. There is hardly any noticeable seasonal change in temperature pattern during winters due to the moderating influence of the sea. Hence, option (a) is the correct answer.**

Q 41.C

- **Ocean currents are streams of water flowing constantly on the ocean surface in definite directions.** The ocean currents may be warm or cold (Fig. 5.6). Generally, the warm ocean currents originate near the equator and move towards the poles. **Salinity is an important property of sea water. Factors affecting ocean salinity are mentioned below:**
- The salinity of water in the surface layer of oceans depend mainly on evaporation and precipitation. for example, low salinity trend is observed in the Bay of Bengal due to influx of river water. On the contrary, the Arabian Sea shows higher salinity due to high evaporation and low influx of fresh water
- Surface salinity is greatly influenced in coastal regions by the fresh water flow from rivers, and in polar regions by the processes of freezing and thawing of ice. for example, Baltic Sea records low salinity due to influx of river waters in large quantity.
- Wind, also influences salinity of an area by transferring water to other area
- **In the high latitudes areas low salinity is observed because of the lower evaporation rates and the melting of ice which dilutes the water. But North Sea, in spite of its location in higher latitudes, records higher salinity due to more saline water brought by the North Atlantic Drift. Hence, statment 3 is correct.**
  - **Though, the North Sea is a relatively shallow shelf sea on the north-west European continental shelf. The average water depth is 95 metres. But not the reason of salinity of North sea. Many rivers, like the Rhine, Elbe, and Thames, flow into the North Sea. Hence, statment 1 and 2 are not correct.**

Q 42.A

- The world has an estimated 1.16 trillion short tons of coal reserves, with the majority concentrated in the United States, Russia, China, Australia, and India. These top five countries hold about 75% of the world's total proved coal reserves. The total estimated reserves, however, can vary depending on the source and the year the data was collected, but these five nations consistently have the largest proven reserves.
- Country Estimated Reserves
  - United States 273.2 billion tons
  - Russia 178.8 billion tons
  - China 173.1 billion tons
  - Australia 164.8 billion tons
  - India 140.8 billion tons
- Major Reserves:
- The United States has the largest reserves, followed by Russia, China, Australia, and India.
- **Hence, option (a) is the correct answer.**

Q 43.A

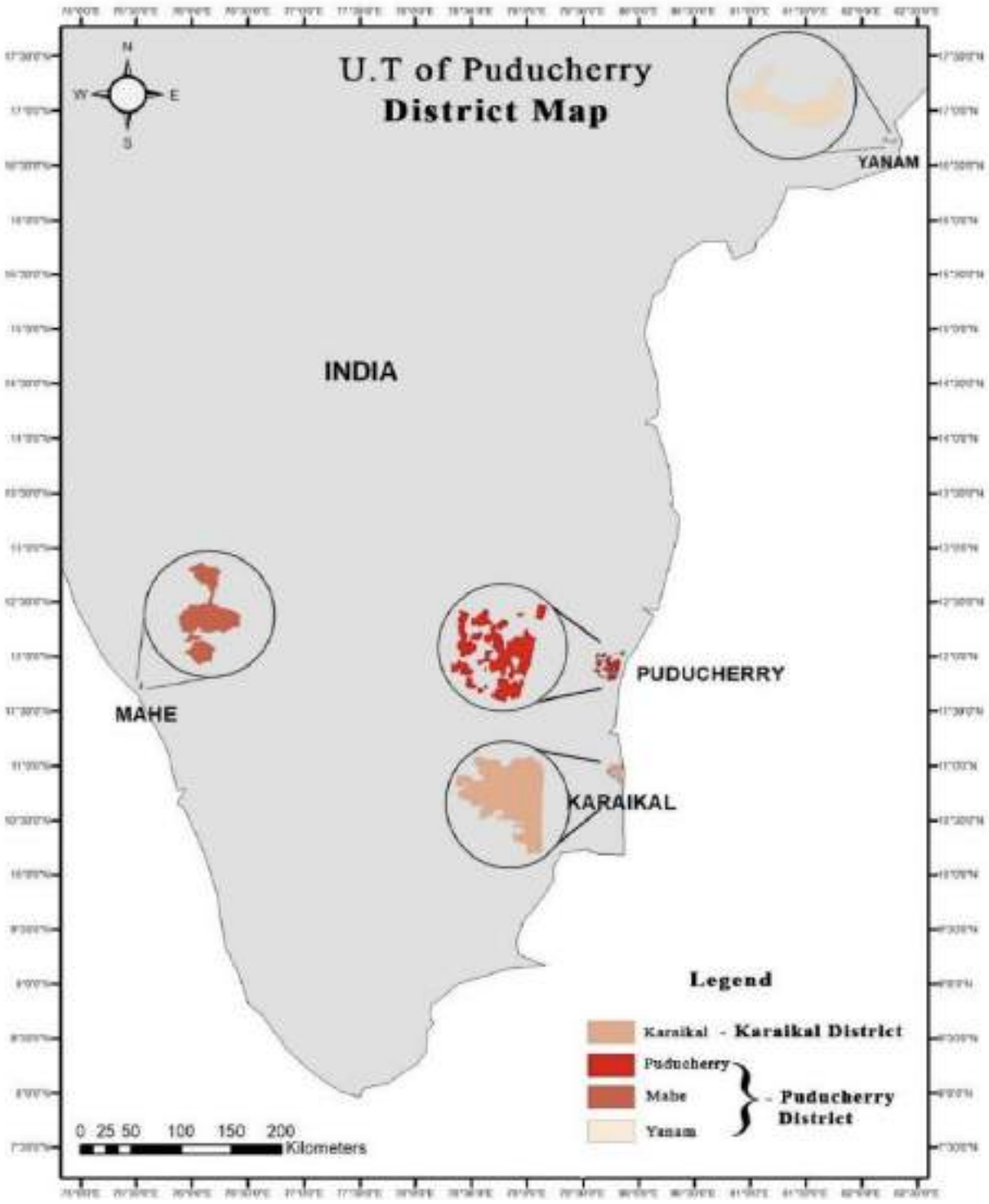
- Talcher Super TPS: Talcher Super Thermal Power Station or NTPC Talcher Kaniha located in Angul district of the Indian state of Odisha is the first mega power plant of India to have an installed generation capacity of 3000MW. It is one of the coal-based power plants of NTPC. **Hence, Pair 1 is not correctly matched.**
- Sasan Ultra Mega TPS: The Sasan Ultra Mega TPS (Thermal Power Station) is a 3,960 MW coal-fired power plant in Sasan, Singrauli district, Madhya Pradesh, India, operated by Reliance Power. It consists of six 660 MW units and is one of the largest integrated power generation and coal mining projects in the world, supplying power to multiple states in India. **Hence, Pair 2 is not correctly matched.**
- Vindhyachal TPS: The Vindhyachal Thermal Power Station is located in Singrauli district in the Indian state of Madhya Pradesh. One of the coal-fired power stations of NTPC, it is the largest power station in India, and the 10th-largest coal-fired power station in the world, with an installed capacity of 4,760 MW. **Hence, Pair 3 is correctly matched.**

Q 44.A

- **Puducherry is the only Union Territory that is spread across three states.** It consists of four regions — Puducherry (Main), Karaikal, Yanam, and Mahe.
  - **Puducherry (Main): Located in Tamil Nadu**

- **Karaikal: Located in Tamil Nadu**
- **Yanam: Located in Andhra Pradesh**
- **Mahe: Located in Kerala**

- All four regions were formerly French exclaves before Independence. They were integrated with the Republic of India de facto on 1 November 1954.
- **The approximate latitudes for the four districts of Puducherry are: Yanam at 16°42′ N - 16°46′ N, Mahe at 11°42′ N - 11°42′ N, Puducherry at 11°42′ N - 12°30′ N , and Karaikal at 10°49′ N - 11°01′ N. Hence the correct order is 2-1-3-4.**



Q 45.D

- The average annual rainfall in India is about 125 cm, but it has great spatial variations.
- **Areas of High Rainfall : The highest rainfall occurs along the west coast, on the Western Ghats, as well as in the sub-Himalayan areas is the northeast and the hills of Meghalaya. Here the rainfall**

exceeds 200 cm. In some parts of Khasi and Jaintia hills, the rainfall exceeds 1,000 cm. In the Brahmaputra valley and the adjoining hills, the rainfall is less then 200 cm.

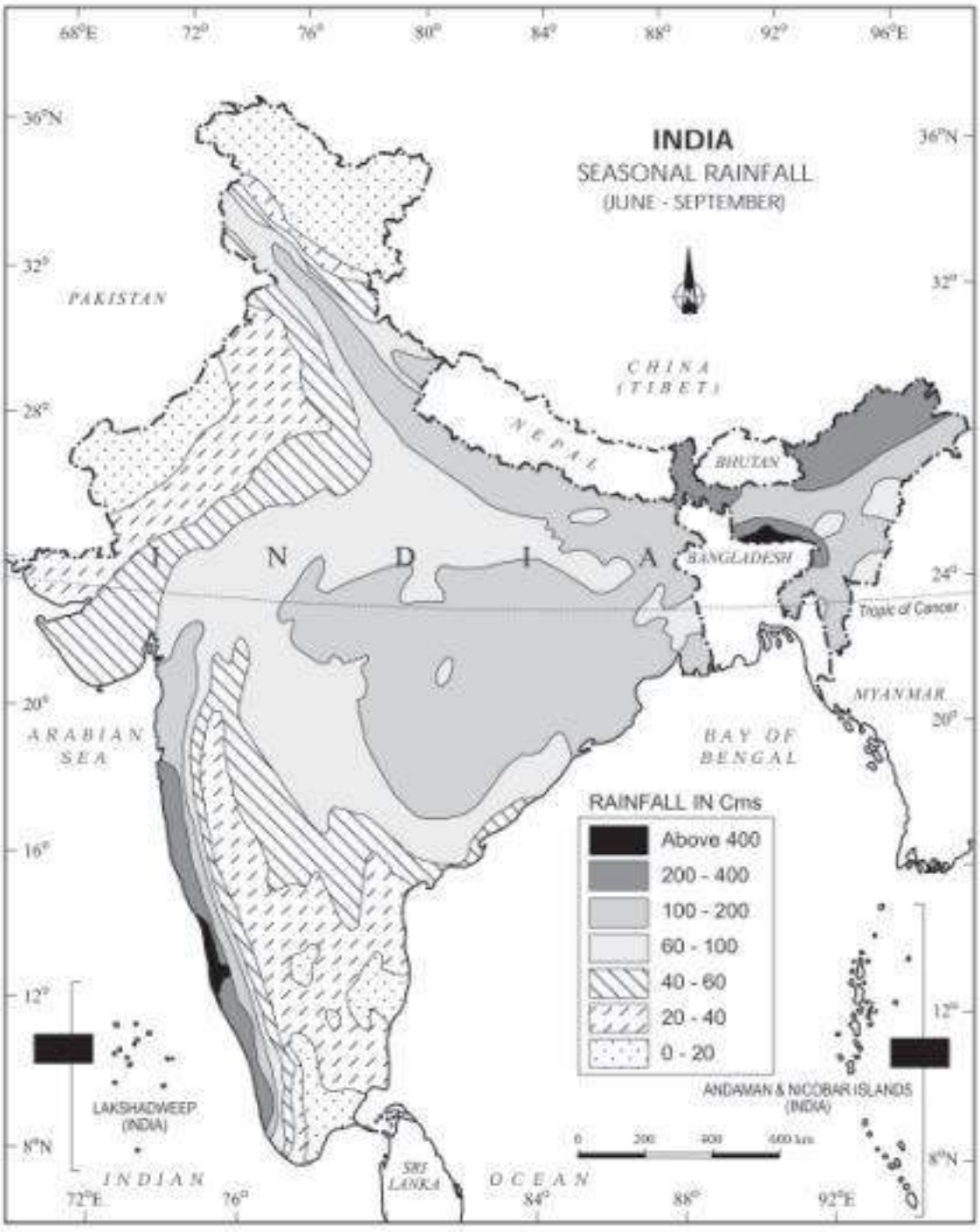


Figure 4.10 : India : Seasonal Rainfall (June-September)

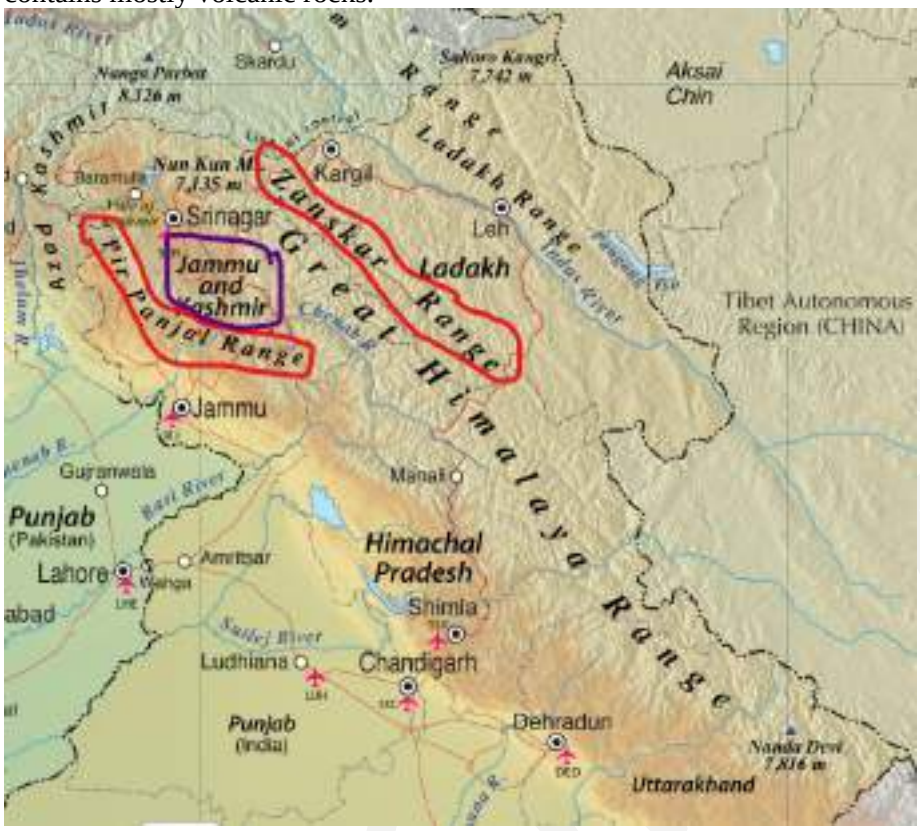
- Areas of Medium Rainfall : Rainfall between 100-200 cm is received in the southern parts of Gujarat, **east Tamil Nadu**, northeastern Peninsula covering Odisha, Jharkhand, Bihar, eastern Madhya Pradesh, **northern Ganga plain along the sub-Himalayas and the Cachar Valley and Manipur.**
- Areas of Low Rainfall : Western Uttar Pradesh, Delhi, Haryana, Punjab, Jammu and Kashmir, eastern Rajasthan, Gujarat and Deccan Plateau receive rainfall between 50-100 cm.
- Areas of Inadequate Rainfall: Parts of the Peninsula, especially in Andhra Pradesh, Karnataka and Maharashtra, **Ladakh** and most of western Rajasthan receive rainfall below 50 cm. **Hence, option (d) is the correct answer.**

Q 46.A

- **The Middle or the Lesser Himalaya:** In between the Shiwaliks in the south and the Great Himalayas in the north is the Middle Himalaya running almost parallel to both the ranges. It is also called the Himachal or Lower Himalaya. It has an intricate system of ranges which are 60-80 km wide having elevations

varying from 3,500 to 4,500 m above sea level. Locally linear longitudinal ranges have also developed, with steep, bare southern slopes and more gentle, forest covered northern slopes.

- **The important ranges included are the Pir Panjal, the Dhaola Dhar, the Mussoorie Range, the Nag Tiba and the Mahabharat Lekh**. **The Pir Panjal range** in Kashmir is the longest and the most important range. It extends from the Jhelum river to the upper Beas river for 300-400 km and is **separated from the Zaskar Range by the valley of Kashmir.** It rises to 5,000 metres and more in elevation and contains mostly volcanic rocks.



- **The Valley of Kashmir, situated between the Pir Panjal and Zaskar ranges, extends approximately 135 km from southeast to northwest, with a width of about 40 km in its central part.**
- The Kishanganga, the Jhelum and the Chenab cut through this range. South-east of the Ravi, the Pir Panjal continues as Dhaola Dhar range, passing through Dalhousie, Dharmshala, and Shimla. **Hence, option (a) is the correct answer.**

Q 47.C

- **Mushroom rock:** A mushroom rock, also called a rock pedestal, is a naturally occurring rock formation shaped like a mushroom, formed primarily by wind erosion in desert environments. The wind carries sand particles that abrade and erode the softer rock layer of the base more quickly than the harder rock layer at the top, resulting in the distinctive mushroom shape. **Hence option (c) is the correct answer.**
- Delta: "Delta" can refer to a landform where a river deposits sediment and creates a fertile, often triangular wetland at its mouth, or it can be the fourth letter of the Greek alphabet (Δ), used in mathematics and science to denote change or difference.
- Loess is terrestrial sediment composed largely of windblown silt particles made of quartz. Loess requires three things:
  - A source of silt
  - Wind to transport the silt
  - A suitable site for deposition and accumulation
- Morainic ridge: Depositional landform formed by glaciers leaving behind debris (moraine).

Q 48.C

- The International Date Line (IDL) roughly follows the 180° meridian. When a traveler crosses it eastward (from Asia to America), they go back one calendar day.
- When crossing westward (from America to Asia), they gain one day. Therefore, the flight leaves Tokyo on Tuesday morning. It travels eastward, crossing the IDL and goes back one day.
- Therefore, it arrives in Los Angeles on Monday evening, even though it's been flying for 10 hours.

Q 49.A

- **Adam's Bridge, also known as Rama Setu,** is a chain of **natural limestone shoals** between Pamban Island, off the southeastern coast of Tamil Nadu, India, and Mannar Island, off the northwestern coast of Sri Lanka. Geological evidence suggests that the bridge was formerly a land connection between India and Sri Lanka. The feature is 48 km long and **separates the Gulf of Mannar (southwest) from the Palk Strait (northeast). Hence, statement 2 is correct.**
- **Pamban Island** is an island located between peninsular India and Sri Lanka. It forms part of the Rameswaram taluk in the Ramanathapuram district of Tamil Nadu. It is the largest island in Tamil Nadu by area and the principal town in the island is **the pilgrimage centre of Rameswaram. Hence, statement 1 is correct.**
- **The 9 Degree Channel** is a major shipping lane in the Indian Ocean. It separates the island of Minicoy from the main archipelago of Lakshadweep. It is so named because it lies at approximately 9 degrees north latitude. The 8 Degree Channel is a body of water in the Indian Ocean that serves as the maritime boundary between India and the Maldives. **It separates the island of Minicoy (the southernmost island of India's Lakshadweep) from the northernmost islands of the Maldives. Hence, statement 3 is not correct.**

Q 50.A

- **Chitrakote waterfalls** is popularly known as Niagra Falls of India. Chitrakot Waterfall is situated on the river Indravati in Bastar district of Chhattisgarh state of India. The height of this waterfall is 90 feet. **Hence, pair 2 is correctly matched.**
- **Shivanasamudra is a popular waterfall on river Kaveri, located in Chamarajanara district, bordering Mandya district. The two waterfalls Barachukki at a height of 69 mts and Gaganachukki at a height of 90 mts are also called Shivanasamudra.** The Shivanasamudra is an island dividing **the River Cauvery i**nto two namely Barachukki and Gaganachukki. **Hence, pair 3 is not correctly matched.**
- **Kunchikal Falls measures approximately 455 metres (1,493 feet) in height. It is formed by the Varahi River.** Unlike single-drop waterfalls, Kunchikal is a multi-tiered cascade that stretches across rocky terrain. **Hence, pair 1 is not correctly matched.**
- Ethipothala Falls (on a tributary of the Krishna) in Andhra Pradesh and Gokak Falls on the Ghataprabha River, a tributary of the Krishna, in Karnataka

Q 51.A

- **National Waterways**
  - **National Waterways 1 or NW1**
    - It starts from Allahabad (Prayagraj) to Haldia with a distance of 1620 km.
    - The NW 1 run through the Ganges, Bhagirathi, and Hooghly river system with having fixed terminals at Haldia, Farrakka, and Patna and floating terminals at most of the riverside cities like Kolkata, Bhagalpur, Varanasi, and Allahabad. **Hence, Pair 1 is correctly matched.**
    - It is be the longest National Waterways in India.
  - National Waterways 2
    - It is a stretch on the Brahmaputra river from Sadiya to Dhubri in Assam state.
    - The NW 2 is one of the major freight transportation waterways of northeast India and the third-longest Waterways with and a total length of 891 km. **Hence, Pair 2 is not correctly matched.**
  - National waterways 3 or the West Coast Canal
    - It is located in Kerala state and runs from Kollam to Kottapuram.
    - The 205 km long West Coast Canal is India’s first waterway with all-time navigation facility.
    - The NW3 is consists of the West Coast Canal, Champakara Canal, and Udyogmandal Canal and runs through Kottappuram, Cherthala, Thrikkunnapuzha Kollam, and Alappuzha. **Hence, Pair 3 is not correctly matched.**
  - National Waterway 4
    - It is connected from Kakinada to Pondicherry through Canals, Tank, and River Godavari along with Krishna river.
    - The NW 4 the second-longest waterway of India with a total length of 1095 km in Andhra Pradesh and Tamil Nadu.

Q 52.A

- **The glaciers of the Pir Panjal Range:**
  - The glaciers of the Pir Panjal Range are less numerous and smaller in size as compared to those of the Karakoram Range. **Sonapani glacier located in Chandra Valley of Lahul and Spiti region, Himachal. It is only 15 km long.**
  - The Bara Shigri Glacier also occupies the Chandra Valley.
  - The largest glacier in the Nun Kun massif is the Gangri Glacier which is 13 km long. The glaciers of the Nanga Parbat massif are small in size and are moving fast due to steep slope. The Chungphar Rakhiot, Buzhi and Tashan are other important glaciers. **Hence, option (a) is the correct answer.**

Q 53.C

- When the earth revolves round the sun, it spins on an elliptical orbit at a speed of 18.5 miles per second. The axis of the earth is inclined to the plane of the ecliptic (the plane in which the earth orbits round the sun) at an angle of 66%°, giving rise to different seasons and varying lengths of day and night. **If the axis were perpendicular to this plane, all parts of the globe would have equal days and nights at all times of the year. Hence statement 2 is correct.**
- **On 21st June,** the Northern Hemisphere is tilted towards the sun. **The rays of the sun fall directly on the Tropic of Cancer.** Since a large portion of the Northern Hemisphere is getting light from the sun, it is summer in the regions north of the equator. The longest day and the shortest night at these places occur on 21st June.
- At this time in the Southern Hemisphere all these conditions are reversed. It is winter season there and the nights are longer than the days. This position of the earth is called the Summer Solstice. On 22nd December, the Tropic of Capricorn receives direct rays of the sun as the South Pole tilts towards it. As the sun's rays fall vertically at the Tropic of Capricorn (23½° S), a larger portion of the Southern Hemisphere gets light. Therefore, it is summer in the Southern Hemisphere with longer days and shorter nights. The reverse happens in the Northern Hemisphere. This position of the earth is called the Winter Solstice. **The Tropics thus mark the limits of the overhead sun, for beyond these, the sun is never overhead at any time of the year. Hence statement 1 is correct.**
- **On 21st March and September 23rd,** direct rays of the sun fall on the equator. At this position, **neither of the poles is tilted towards the sun**; so, the whole earth experiences equal days and equal nights. This is called an **equinox**. **Hence statement 3 is correct.**

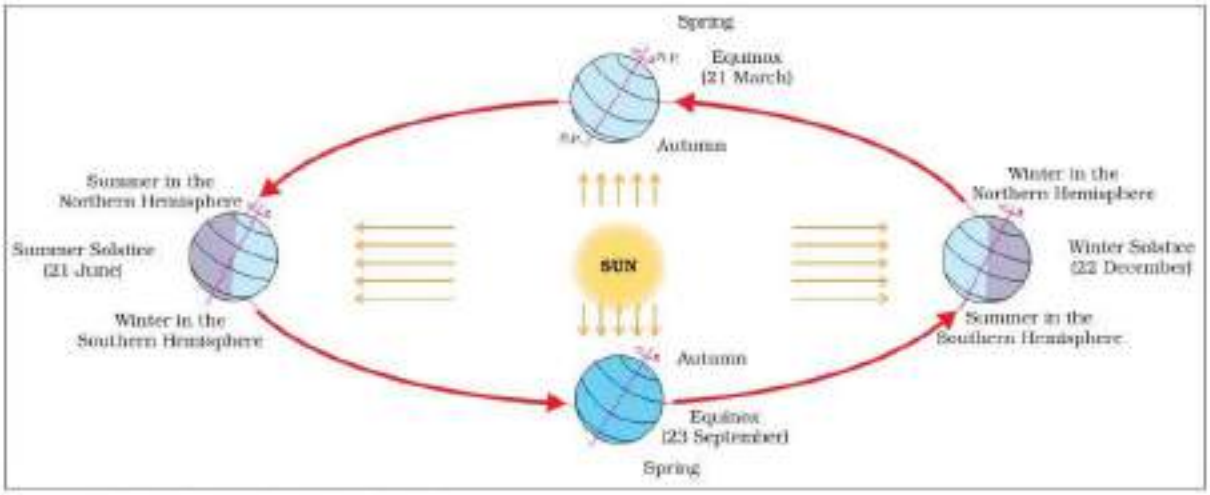


Figure 3.3 : Revolution of the Earth and Seasons

Q 54.D

- India has a gross cropped area of approximately 219.16 million hectares and a net sown area of 132.1 million hectares as of 2023-24. The total area under Kharif crops is generally higher than the area under Rabi crops due to the extensive cultivation of rice. **Hence, statement 1 is not correct.**
- Based on the Economic Survey 2024-25, the cultivated area under rice is significantly higher than that under wheat. Rice has a Cultivated area of 47.8 million hectares, whereas wheat has a Cultivated area of 31.8 million hectares. **Hence, statement 2 is not correct.**

Q 55.B

- While air quality is an urban issue, and the Ministry of Housing and Urban Affairs (MoHUA) is involved in programs like the Smart Cities Mission and Swachh Bharat Mission, the National Clean Air Programme (NCAP), of which the Sarvekshan is a component, was launched and is driven by the **Union Ministry of Environment, Forest and Climate Change (MoEF&CC). Hence, statement 1 is not correct and statement 2 is correct.**
- The award recognizes best-performing cities under Swachh Vayu Sarvekshan 2025, conducted across 130 cities under the National Clean Air Programme (NCAP).
- Swachh Vayu Sarveshan Award 2025
- Population based Categories: Category 1 (Population >10 lakh),Category 2 (Population 3–10 lakh) and Category 3 (Population <3 lakh)
- Total Awards: 11 best-performing cities were awarded out of 130 NCAP cities
  - **Category 1 (Population >10 lakh): Indore (1st Rank)>Jabalpur (2nd Rank)>3rd: Agra & Surat. Hence, statement 3 is correct.**
  - Category 2 (Population 3–10 lakh): Amravati (1st Rank) >Jhansi & Moradabad (2nd Rank)> Alwar (3rd Rank).
  - Category 3 (Population <3 lakh): Dewas (1st Rank)> Parwanoo (2nd Rank)>Angul (3rd Rank).
- Ranking criteria: Biomass & Municipal Solid Waste Burning, Road dust, Dust from Construction & Demolition Waste, Vehicular Emissions, Emissions from Industries, IEC activities, Improvement in PM10 concentrations, etc.
- **About NCAP**
  - Genesis: Launched by Union Ministry of Environment, Forest and Climate Change in 2019.
  - Objective: To improve air quality in 131 cities (non-attainment cities and Million Plus Cities) in 24 States/UTs by engaging all stakeholders.
  - Target: To achieve reduction in PM10 level up to 40% or achievement of national ambient air quality standards (60 µg/m3) by 2025-26 from the levels of 2019-20.
  - Implementing Body: Central Pollution Control Board (CPCB) at the national level.
  - PRANA (Portal for Regulation of Air-pollution in Non-Attainment cities): Launched to monitor the implementation of NCAP.

Q 56.C

- **Thunderstorm:**
  - A thunderstorm is a short-lived, local, but vigorous convective storm built around a cumulonimbus (Cb) cloud. It needs three basics: heat, moisture, and instability. Strong surface heating on moist days makes air parcels buoyant; they rise, cool, and condense to form towering clouds.
- **Why cumulonimbus + convection are central:**
  - As moist, warm air rises rapidly (updrafts), the cloud grows vertically into a cumulonimbus (Cb) cloud with a characteristic anvil top. This is the classic thunderstorm engine: intense convection in moist, unstable air. Lightning and thunder are electrical discharges within or from this rapidly growing Cb.
  - **Hence, statement 1 is correct.**
- **How hail forms in mature thunderstorms:**
  - If the cumulonimbus extends into sub-zero layers aloft, supercooled droplets freeze on ice nuclei. Strong updrafts cycle developing hailstones up and down through the freezing zone, adding concentric layers of ice. When the stone becomes too heavy for the updraft, it falls as hail.
  - **Hence statement 2 is also correct.**
- **Life cycle in brief:**
  - Developing stage: Dominant updrafts build the cumulonimbus (Cb) cloud.
  - Mature stage: Deep cloud, heavy rain/hail, lightning, and the onset of downdrafts.
  - Dissipating stage: Downdrafts cut off the warm inflow and the storm collapses.
  - (With low moisture, gusty outflows can raise dust—dust storms—instead of heavy rain.)

Q 57.D

- **What Is a Blue Moon?**
  - The night sky holds many fascinating phenomena, and one that often captures public attention is the "Blue Moon." Despite its name, a Blue Moon has little to do with the moon's color. Instead, it refers to an extra full moon that appears due to the unique alignment of the lunar calendar with our Gregorian calendar.

- **Types of Blue Moon**
  - There are two main definitions of a Blue Moon, both of which are tied to the lunar cycle — the Moon's phases take approximately 29.5 days to complete.
    - > **Monthly Blue Moon (More Common)**
      - ✓ **This occurs when two full moons appear within the same calendar month.** Since most months are longer than the lunar cycle, it is possible for two full moons to occur in one month — the second one is called the Blue Moon. **Hence, option (d) is the correct answer.**
    - > **Seasonal Blue Moon (Traditional Definition)**
      - ✓ In an astronomical season (the time between a solstice and an equinox, typically three months), there are usually three full moons. When a fourth full moon appears, the third in the sequence is traditionally called a Blue Moon. This definition is used more in astronomical contexts.

Q 58.C

- **The brief period between sunrise and full daylight is called dawn, and that between sunset and complfite darkness is termed twilight.** This is caused by the fact that during the periods of dawn and twilight the Earth receives diffused or refracted light from the sun whilst it is still below the horizon. Since the sun rises and sets in a vertical path at the **equator the period during which refracted light is received is short.** But in temperate latitudes, the sun rises and sets in an oblique path and the period of refracted light is longer. **It is much longer still at the poles.** so that the winter darkness is really only twilight most of the time. **Hence, statement 1 is correct.**
- **Latitude is the angular distance of a point on the Earth's surface.** measured in degrees from the centre of the Earth. The equator represents 0° and the North and South Poles are 90°N. and 90°S. Between these points lines of latitude are drawn at intervals of 1°. For precise location on a map, each degree is subdivided into 60 minutes and each minute into 60 seconds. **As the Earth is slightly flattened at the poles, the linear distance of a degree of latitude at the pole is a little longer than that at the equator.** For example at the equator (0°) it is 68.704 miles, at 45° it is 69.054 miles and at the poles it is 69.407 miles. The average is taken as 69 miles.**Hence statement 2 is correct.**
- **Longitude is an angular distance, measured in degrees along the equator east or west of the Prime (or First) Meridian.** As the parallels. of latitude become shorter polewards, so the meridians 01' longitude, which converge at the poles, enclose a narrower space. **The degree of longitude therefore decreases in length.** It is longest at the Equator where it measures 69.172 miles. At 25° it is 62.73 miles, at 45° it is 49 miles, and at the poles 0 miles. **Hence, statement 3 is correct.**

Q 59.C

- Frontal Cyclones and Mediterranean Rainfall
  - Frontal cyclones, also called temperate cyclones or extratropical cyclones, are low-pressure systems that develop in mid-latitudes (30°–60° N and S). They form due to the convergence of warm tropical air masses and cold polar air masses along the polar front. These cyclones are the chief cause of precipitation in temperate regions, especially during winters. **Hence statement 1 is correct.**
- Frontal Cyclones: Key Mechanism
  - In temperate latitudes, contrasting air masses (warm westerlies and cold polar easterlies) meet, giving rise to fronts.
  - Along these fronts, cyclonic activity develops due to instability and rotation of the earth (Coriolis force).
  - The uplift of warm moist air and condensation leads to prolonged rainfall over large areas.
  - These cyclones typically move from west to east.
- Mediterranean Rainfall
  - The Mediterranean region (around 30°–45° latitudes) experiences hot, dry summers due to the dominance of subtropical high pressure.
  - During winter, the westerlies shift equatorward, bringing temperate cyclones.
  - As a result, the Mediterranean climate is marked by winter rainfall caused by frontal cyclones. **Hence statement 2 is correct.**
  - Other regions also experience frontal cyclone rainfall, e.g., NW Europe, eastern USA, southern Chile.
  - However, the Mediterranean climate is the classic example of winter rainfall due to temperate cyclones.

Q 60.C

Table 4.1 : Climatic Regions of India According to Koeppen's Scheme

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

- **According to the table given above, option (c) is the correct answer.**

Q 61.D

- **The Tropic of Cancer (23° 30'N) divides the India into almost two equal parts**. The Tropic of Cancer passes through the middle of the country from the Rann of Kuchchh in the west to Mizoram in the east. Almost half of the country, lying south of the Tropic of Cancer, belongs to the tropical area. All the remaining area, north of the Tropic, lies in the sub-tropics. **On 21st June, the sun rays directly fall on the Tropic of Cancer and the Northern Hemisphere is tilted towards the sun. Hence, cities lying on the Tropic of Cancer receive direct (90°) sunlight from the Sun at noon on the Summer Solstice**. **Hence, statement II is correct.**
- In India, the Tropic of Cancer passes through eight Indian states- **Gujarat (West), Rajasthan (North), Madhya Pradesh (Central), Chhattisgarh (Central), Jharkhand (East), West Bengal (East), Tripura (North East), and Mizoram (North East).**
- **The Tropic of Cancer passes through Tripura, but it passes through city of Udaipur**, however **Agartala is located on the north of Tropic of Cancer, hence, sun rays do not directly fall on the Agartala**. **Hence, statement I is not correct.**

Figure 1.5 : India and Adjacent Countries

Q 62.B

- During a lunar eclipse, Earth gets in the way of the Sun's light hitting the Moon. That means that during the night, a full moon fades away as Earth's shadow covers it up. **The Moon can also look reddish** because Earth's atmosphere absorbs the other colors while it bends some sunlight toward the Moon. Sunlight bending through the atmosphere and absorbing other colors is also why sunsets are orange and red.
- **During a total lunar eclipse, the Moon is shining from all the sunrises and sunsets occurring on Earth.** The moon takes on a deep red or orange color, sometimes called a "Blood Moon," because sunlight filtering through Earth's atmosphere is scattered, with blue light blocked and red light reaching the moon's surface. **Hence, Statement III is correct and is the correct explanation of Statement I.**
- **We do not have a lunar eclipse every month,** even though the Moon orbits Earth once every month. This is **because the Moon's orbital path is tilted about 5° relative to Earth's orbit around the Sun.** Due to this tilt, the Moon usually passes above or below Earth's shadow. As a result, even when the Moon is behind Earth, it often still receives sunlight and remains visible. A lunar eclipse occurs only when the Sun, Earth, and Moon align closely enough for the Moon to enter Earth's shadow. **Hence, Statement II is correct but it is not the correct explanation of Statement I.**

Q 63.D

- **The Dzukou Valley is located near the Manipur-Nagaland interstate border** in Northeast India and sprawls over an area of roughly 20,000 acres. While a part of the valley lies within Nagaland's Kohima district, the rest of it is situated in the Senapati district of Manipur. Located just beyond Nagaland's Japfu

peak, Dzukou Valley boasts of towering hills, cascading streams, and a spectacular range of flora and fauna. **Hence, statement 1 is not correct.**

- **Nubra Valley is in the north of Leh town.** Diskit, Hunder, and Sumur are the main settlements of the Nubra Valley. Shyok and Nubra are the main rivers of the valley. **Khardungla pass is a gateway to Nubra valley and Siachen Glacier. Hence, statement 3 is not correct.**
- **Parvati Valley is a scenic Himalayan region in Himachal Pradesh**, known for its lush greenery, towering mountains, the majestic Parvati River, and trekking trails like Kheerganga. **Hence, statement 2 is not correct.**
- **Silent Valley National Park is situated in the Nilgiri Hills of the Western Ghats,** and covers an area of approximately 90 sq km. It is one of the last remaining tracts of tropical evergreen forest in India, and is an important conservation area for many endangered species.

Q 64.C

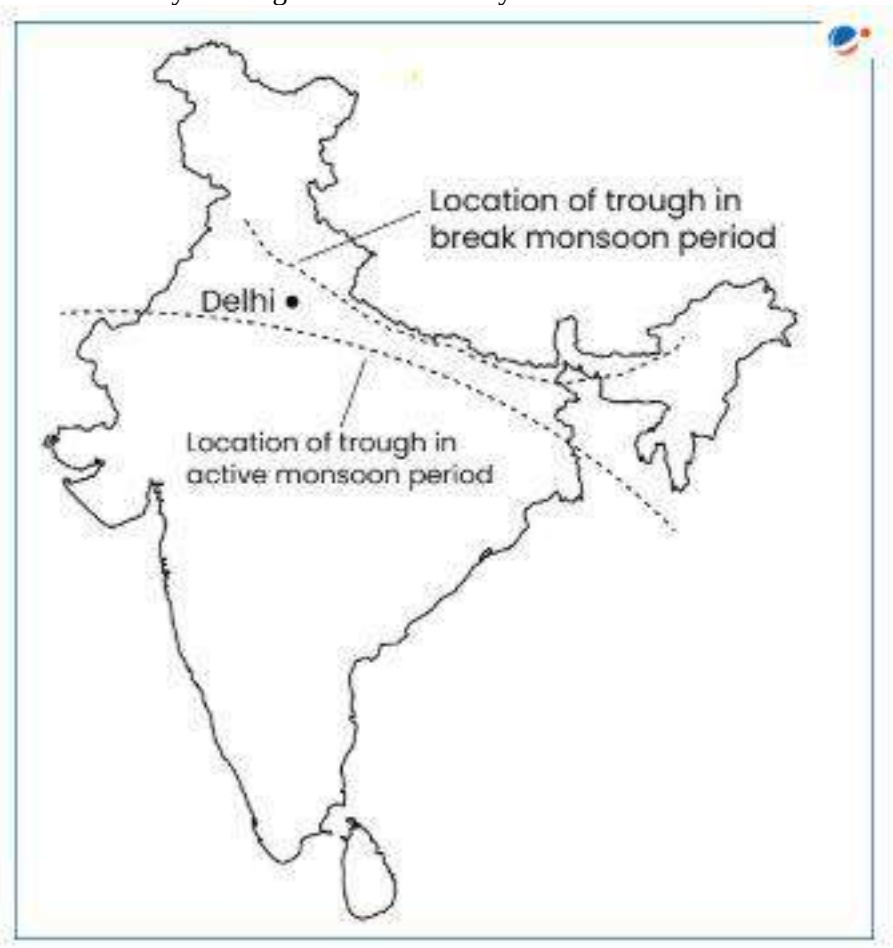
- The geological time scale is a record of Earth's history based on the organisms that lived at different times.
- **Paleozoic Era**
  - **Cambrian:** The Cambrian Explosion marked the sudden appearance of all major animal phyla, with marine invertebrates dominating the seas. **Mammals did not exist during this period. Hence, pair 4 is not correctly matched.**
  - **Ordovician:** Fish diversified, trilobites, brachiopods, and corals remained dominant, and plants and fungi began colonizing land.
  - **Silurian:** The first vascular plants evolved, early land plants lacked roots and leaves, and jawed fishes appeared.
  - **Devonian:** Leafy plants like ferns, clubmosses, and horsetails appeared, atmospheric carbon dioxide dropped, and lobe-finned fish began transitioning into amphibians, while jawed fishes ruled the seas.
  - **Carboniferous:** Seed plants emerged, the **first reptiles like Hylonomus appeared**, and atmospheric oxygen reached very high levels. **Hence, pair 1 is correctly matched.**
  - **Permian:** The supercontinent Pangaea formed, the amniotic egg evolved, synapsid reptiles became abundant, and gymnosperms replaced coal-age flora.
- **Mesozoic Era**
  - **Triassic:** Dinosaurs dominated land, pterosaurs dominated the air, ichthyosaurs dominated the seas, first mammals appeared, and modern corals, teleost fish, and insect groups evolved.
  - **Jurassic:** Gymnosperms and ferns were common, **the first birds appeared**, large dinosaurs such as sauropods and carnosaurs thrived, and mammals remained small. **Hence, pair 3 is correctly matched.**
  - **Cretaceous:** Flowering plants (angiosperms) evolved, dinosaurs and modern sharks appeared, toothed and toothless birds coexisted with pterosaurs, and monotremes, **marsupials**, and placental mammals emerged. **Hence, pair 2 is correctly matched.**

Geological Time Scale

Eons	Era	Period	Epoch	Age/ Years Before Present	Life/ Major Events
		Quaternary	Holocene Pleistocene	0 - 10,000 10,000 - 2 million	Modern Man Homo Sapiens
	Cenozoic (From 65 million years to the present Time)	Tertiary	Pliocene Miocene Oligocene Eocene Paleocene	2 - 5 million 5 - 24 million 24 - 37 Ma 37 - 56 Million 57 - 65 Million	Early Human Ancestor Ape; Flowering Plants and Trees Anthropoid Ape Rabbits and Hare Small Mammals ; Rats - Mice
	Mesozoic 65 - 245 Million Mammals	Cretaceous Jurassic Triassic		65 - 144 Million 144 - 208 Million 208 - 245 Million	Extinction of Dinosaurs Age of Dinosaurs Frogs and turtles
	Paleozoic 245 - 570 Million	Permian Carboniferous Devonian Silurian Ordovician Cambrian		245 - 286 Million 286 - 360 Million 360 - 408 Million 408 - 438 Million 438 - 505 Million 505 - 570 Million	Reptile dominate replace amphibians First Reptiles Vertebrates, Coal beds Amphibians First trace of life on land: Plants First Fish No terrestrial Life ; Marine invertebrate
Proterozoic Archean Hadean	Pre-Cambrian 570 Million - 4,800 Million			570 - 2,500 Million 2,800 - 3,800 Million 3,800 - 4,800 Million	Soft-bodied arthropods Blue green Algae Unicellular bacteria Oceans and Continents form - Ocean and Atmosphere are rich in Carbon dioxide
Origin of Stars Supernova Big Bang	5,000 - 13,700 Million			5,000 Million 12,000 Million 13,700 Million	Origin of the sun Origin of the universe

Q 65.C

- **The catastrophic rainfall in north India, especially in the Himalayan states and Punjab, for the past couple of weeks has occurred because of a concoction of weather systems over the region.**
- **These include the western disturbances originating over north Pakistan and north Afghanistan, the low pressure areas and associated cyclonic circulations from the Bay of Bengal and moisture-laden winds from the Arabian Sea that pushed the low pressure areas northwards.**
- **The IMD identified the cause as a confluence of the monsoon trough and an active western disturbance. This is called the "2-System Interaction". Hence, option (c) is the correct answer.**
- This interaction is further intensified by additional circulations drawing moisture from both the Arabian Sea and the Bay of Bengal into the Himalayan foothills.

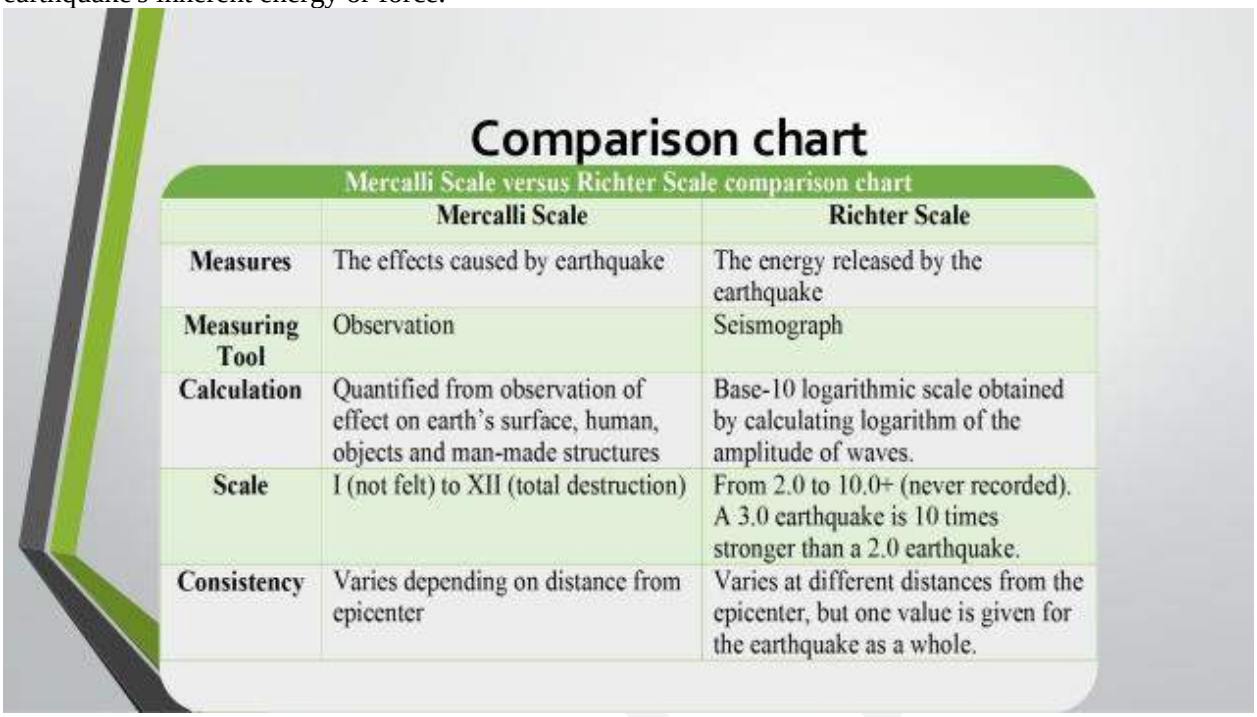


- The increase in frequency of western disturbances during the monsoon period and the moisture influx from the Arabian Sea are relatively new occurrences and need further scientific exploration. Western disturbances are extra tropical storms in the middle to upper layers of the troposphere (the lowest layer of the atmosphere) that usually originate around the Mediterranean region and travel towards India via Iran, Afghanistan and Pakistan.
- Over Pakistan and India, they induce cyclonic circulations, a swirling of winds in the middle layers of the troposphere that in turn induce convective storms closer to the surface, causing rainfall. Western disturbances are most common between December and March when four to six of them affect India and cause most of the winter and spring rainfall and snowfall.
- The rainfall excesses in the north Indian states, along with multiple extreme rainfall-induced flash floods, landslides and riverine floods as reported in the news, give clear evidence of both the volume and intensity of rainfall.

Q 66.B

- The Richter scale measures the magnitude of an earthquake, which is a quantitative measure of the energy released during an earthquake. It determines this by measuring the maximum amplitude of seismic waves recorded by a seismograph at a specific distance from the earthquake. Each whole number increase on the Richter scale signifies a tenfold increase in the wave's amplitude and approximately 32 times more energy released.

- The Mercalli scale measures an earthquake's intensity at a specific location based on observed effects like shaking, felt by people, and damage to buildings and the landscape, using Roman numerals from I (not felt) to XII (total destruction). It differs from magnitude scales like the Richter scale, which measures the earthquake's inherent energy or force.



Comparison chart

Mercalli Scale versus Richter Scale comparison chart

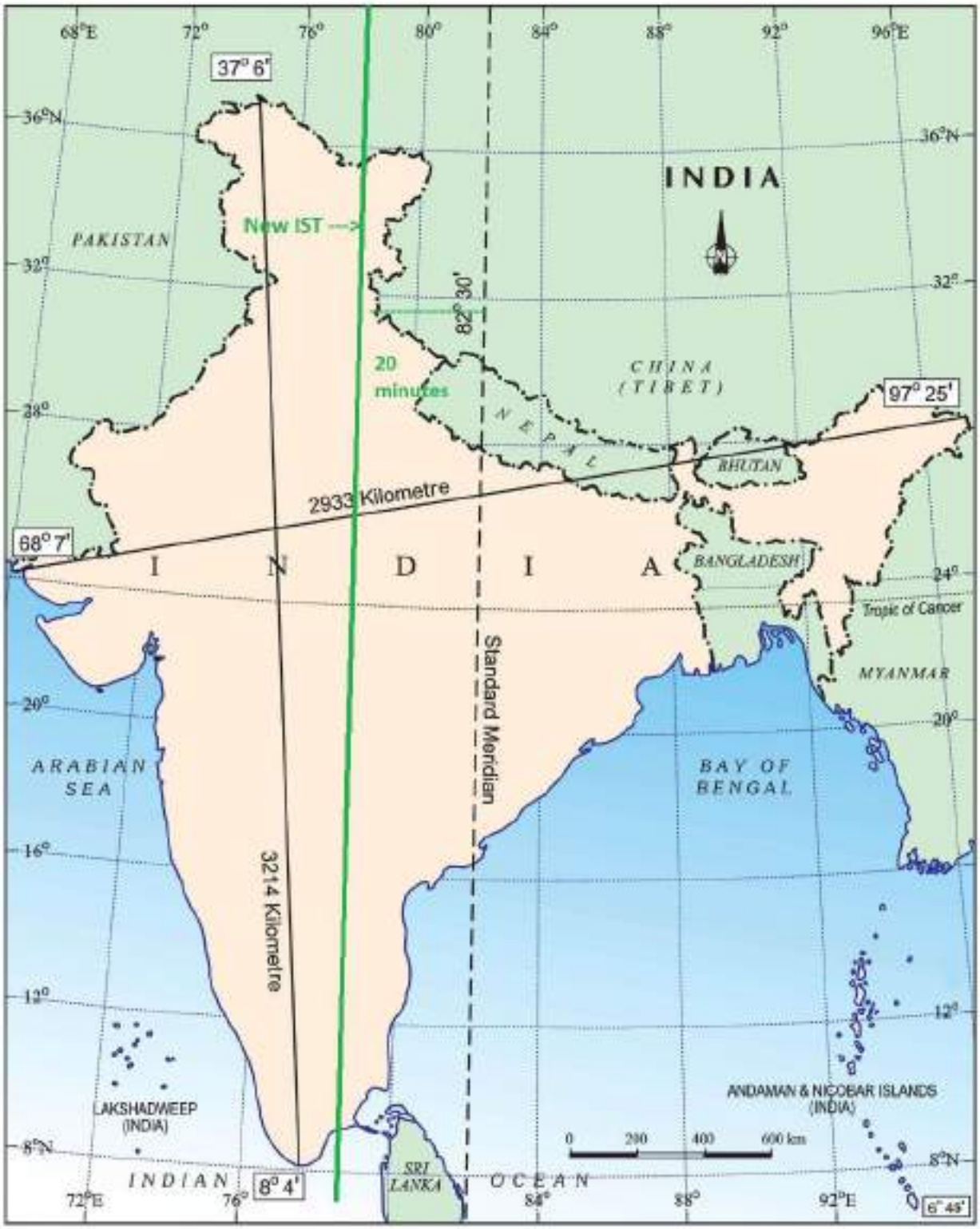
	Mercalli Scale	Richter Scale
Measures	The effects caused by earthquake	The energy released by the earthquake
Measuring Tool	Observation	Seismograph
Calculation	Quantified from observation of effect on earth's surface, human, objects and man-made structures	Base-10 logarithmic scale obtained by calculating logarithm of the amplitude of waves.
Scale	I (not felt) to XII (total destruction)	From 2.0 to 10.0+ (never recorded). A 3.0 earthquake is 10 times stronger than a 2.0 earthquake.
Consistency	Varies depending on distance from epicenter	Varies at different distances from the epicenter, but one value is given for the earthquake as a whole.

Q 67.C

- In West Africa, the North- East Trades blow offshore from the Sahara Desert and reach the Guinea coast as a dry, dust -laden wind, called locally the Harmattan meaning The doctor'. It is thus called the 'Doctor Wind'. H**ence option (c) is the correct answer.**
- It is so dry that its relative humidity seldom exceeds 30 per cent. The doctor' provides a welcome relief from the damp air of the Guinea lands by increasing the rate of evaporation with resultant cooling effects, but it is such a dry dusty wind that , besides ruining the crops, it also stirs up a thick dusty haze and impedes inland river navigation.

Q 68.C

- As per the question, India's new Standard Meridian is five degrees west of India's current Standard Meridian (82°30'E). Thus, India's new Standard Meridian would be (82°30'-5°0') = 77°30'E.
- As fifteen degrees of longitude is equal to one hour, or one degree of longitude is equal to one hour/fifteen degrees = 4 minutes, 5° (five degrees of longitude) would be equal to 5X4 = 20 minutes.
- As the current IST (Indian Standard Time) is 5 hours 30 minutes ahead of the Greenwich Mean Time (GMT), as per the new Standard Meridian, the new IST would be GST + 5 hours 30 minutes - 20 minutes = 5 hours 10 minutes.



- Since it is given in the question that the only change is the acceptance of a new standard meridian, and everything else remains the same,
- **Statement 1 is not correct**: The change will not affect the difference in the times of sunrise in two different places. **For example, if the time of sunrise is in New Delhi on a particular day in the month of April is 6 AM (as per the current IST) and that in Mumbai is 7 AM (as per the current IST)**, then the difference that was 7-6 = **1 hour will remain the same** (explained as follows). The new sunrise time on the same day in April as per the **new IST**,
  - In New Delhi - 6 AM (minus 20 minutes) = 5:40 AM
  - In Mumbai - 7 AM (minus 20 minutes) = 6:40 AM
  - Difference 6:40 - 5:40 = **1 hour**
- **Statement 2 is not correct**: If a student in Arunachal Pradesh used to wake up at 5:30 AM (as per the current IST), he will wake up at 5:30 - 20 minutes (as per the new IST) i.e. at 5:10 AM. **Thus he would wake up to see an earlier time and not a later time.**

Q 69.C

- **The ocean floors can be divided into four major divisions:** (i) the Continental Shelf; (ii the Continental Slope; (iii) the Deep Sea Plain; (iv) the Oceanic Deeps. Besides, these divisions there are also major and minor relief features in the ocean floors like ridges, hills, sea mounts, guyots, trenches, canyons, etc.

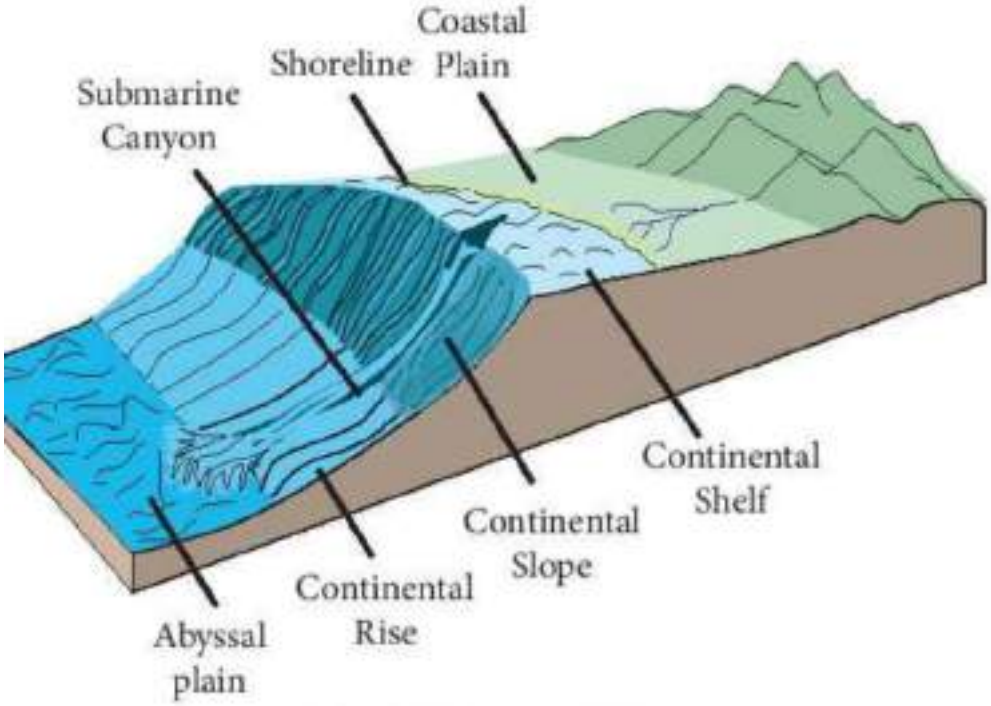


Figure 5.8 Ocean relief

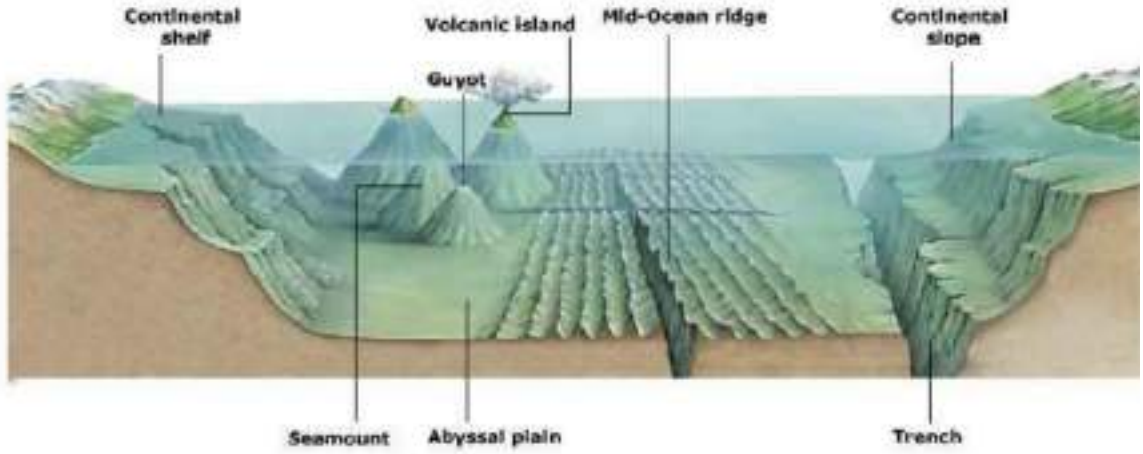


Figure 5.7 Major relief features of Ocean Floor

- **Continental Shelf:** The continental shelf is the extended margin of each continent occupied by relatively shallow seas and gulfs. It is the shallowest part of the ocean showing an average gradient of 1° or even less. The shelf typically ends at a very steep slope, called the shelf break. I**t occupies 7% of sea floor.Continental Slope:** The zone of steep slope extending from the continental shelf to the deep sea plain or abyssal plain is called continental slope. The slope angle varies from 5° to 60°. **It occupies 9% of sea floor.** This is the region in oceans where canyons and trenches are being observed.
- **Continental rise:** The area between the continental slope and the sea floor is known as the continental rise. This part is noted for the accumulation of sediments similar to the alluvial fans near the foot hills in the land. It represents the boundary between continents and abyssal plain. **It constitutes about 5% of the oceanic area.**
- **Abyssal plain:** The Abyssal plain is the vast area of flat terrain in the bottom of the oceans. **It is the largest part of ocean relief covering more than 50% of the total area.** There is an accumulation of very fine sediments on the floor. The sediments are combinations of fine particles of clay and microorganisms. **Hence, option (c) is the correct answer.**

Q 70.C

- The 2025 World Para Athletics Championships (12th edition) were held in New Delhi from 27 September to 5 October 2025, the first time this championship was hosted by India. **Hence, statement 1 is correct.**
- **By successfully hosting the event at the Jawaharlal Nehru Stadium in New Delhi, India joined an exclusive group of host nations and signaled its rising commitment to developing para-sports, accessibility, and inclusivity on a global stage. The country is the fourth Asian nation to host the championships, following Qatar (Doha 2015), UAE (Dubai 2019), and Japan (Kobe 2024).**
- The official mascot was indeed named 'Viraaj'. It was a spirited young elephant with a blade prosthesis, created to symbolize the strength, optimism, and resilience of the para-athletes and promote the core values of the Championships. The mascot's name, 'Viraaj,' is derived from the Sanskrit word for 'resplendent,' 'sovereign,' or 'shining'. **Hence, statement 2 is correct.**

Q 71.A

- **Zapad (meaning 'West') is a major multilateral military exercise hosted by Russia (often involving countries from the Collective Security Treaty Organization).** An Indian Armed Forces contingent, including personnel from the Army, Air Force, and Navy, departed in September 2025 to participate in this exercise in Russia.
- **Bright Star is a major multilateral, tri-service military exercise hosted by Egypt (along with the USA and other multinational forces).** India participated in the 2025 edition, which took place around the end of August and the beginning of September 2025.
- **Hence option (a) is the correct answer.**

Q 72.D

- **Local winds, region and their socio-economic influence:**

Name	Description	Influence
Loo	They are **hot, dry winds** blowing throughout the daytime in **north and western India** during the month of **May and June**. They are developed due to formation of the **Monsoon Low Pressure Trough** in northern India.	• **Negative influence:** These winds cause loss of life due to **dehydration**. • **Positive influence:** It facilitates the process of **separating the chaff from the grain.** There is also **decline** in number **of insect-borne disease** like malaria due to decrease in mosquito population.
Aandhi	Also known as "**Kali Aandhi**", they are strong **dust storms** observed over **north-western and Central India before monsoon**.	They can cause **destruction** of life and property as well as add to the **pollution** of cities like **Delhi**.
Mango showers	They are **pre-monsoon local rain-carrying winds** which cause early showers along coastal **Karnataka and Kerala**.	They aid in **early ripening of Mangoes**, thus locally called Mango showers.
Blossom showers	They are **pre-monsoon showers** in late-summer in **Kerala** and adjacent areas.	They aid in **blossoming of coffee flowers**, having high commercial importance for the state.
Elephanta	They are strong **southerly and south westerly winds** blowing along the **Malabar coast** of India **post-monsoon** in the months of **September and October**.	They mark the **end of southwest monsoon**.

- **Norwesterns are local winds that affect the east and northeast regions of India every summer. They cause thunderstorms in the region. In Bengal, it is locally known as "Kalbaishaki" meaning, calamity in the month of Baisakh (the first month in the Bengal calendar). Whereas, in Assam, they are known as "Bardoli Chheerha".**
- **Hence, option (d) is the correct answer.**

Q 73.B

- The troposphere is the lowermost layer of the atmosphere. Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator. The thickness of the troposphere is greatest at the equator because heat is transported to great heights by strong convectional currents.

- The zone separating the troposphere from the stratosphere is known as the tropopause. The temperature here is nearly constant, and hence, it is called tropopause. The tropopause is the boundary between the troposphere and the stratosphere, where temperatures are cold and decrease with altitude.
- The stratopause is the boundary between the stratosphere and the mesosphere, where temperatures are warmer and increase with altitude. The tropopause is typically around -55 degree Celsius and the stratopause around -15 Degree Celsius on average. **Hence statement 1 is correct.**
- The mesosphere lies above the stratosphere, which extends up to a height of 80 km. The upper limit of mesosphere is known as the mesopause. The ionosphere is located between 80 and 400 km above the mesopause. It contains electrically charged particles known as ions, and hence, it is known as ionosphere. **Hence statement 3 is not correct.**
- **Both troposphere and stratopshere have ozone. Tropospheric ozone (ground-level ozone) is a secondary air pollutant formed by reactions of sunlight with NO_x and VOCs. It irritates eyes, damages lungs and crops. Stratospheric ozone, by contrast, is beneficial, as it shields Earth from harmful UV radiation. Hence statement 2 is not correct.**

Q 74.D

- **The term "El Niño," meaning "The Little Boy" in Spanish, was coined by Peruvian fishermen who observed the warmer ocean waters during the month of December.** Under normal conditions, trade winds blow from east to west along the equator, pushing warm surface waters toward Asia and allowing cooler water to rise near the South American coast. The El Niño effect is typically occurs every two to seven years and lasting several months, El Niño arises when trade winds weaken or reverse, causing warm water to build up in the central and eastern Pacific. This disruption affects typical oceanic and atmospheric circulation result severe changes in weather patterns.
- First Signs of El Nino:
  - **Rise in air pressure in the Indian ocean, Indonesia, and Australia.**
  - A fall in air pressure over Tahiti and the rest of central and eastern Pacific ocean.
  - The trade winds in the south pacific weekend or headed east with Warm air rises in Peru.
  - Warm water spreads from the west pacific and the Indian ocean to the East pacific . It takes the rain with it, causing rainfall in normally dry areas and drought in normally wet areas
- During an El Niño year, the usual flow of moist winds towards India is disrupted. This change reduces the amount of rainfall India receives between June and September. In the past, strong El Niño events have led to serious drops in rainfall, late arrival of the monsoon, and dry spells in key agricultural states. To reduce the risks, Indian weather agencies monitor ocean temperatures and pressure changes closely. The India Meteorological Department uses these signals to forecast long-term monsoon patterns and issue early warnings.
- **Since 1950, there have been 16 El Niño years, out of which 7 years had impacted Indian monsoon rainfall when rainfall was below normal. Some of the e El Nino years have the normal rainfall, for example 1994 year showed enhanced rainfall, possibly due to the simultaneous occurrence of the Indian Ocean Dipole (IOD). Hence, option (d) is the correct answer.**
- Positive IOD events are associated with decreased rainfall in eastern Indian Ocean regions, such as Indonesia and Australia, and increased rainfall in the western Indian Ocean, including the eastern coast of Africa and the Arabian Peninsula. Negative IOD events can result in increased rainfall and flooding in eastern Indian Ocean areas and decreased rainfall in the western Indian Ocean regions.

Q 75.B

- **Pongal is a multi-day Hindu harvest festival celebrated by Tamils. The festival is celebrated over three or four days, which are named Bhogi, Thai Pongal, Mattu Pongal and Kaanum Pongal, beginning on the last day of the Tamil calendar month of Margazhi, and observed on consecutive days. Thai Pongal is observed on the first day of the Tamil calendar month of Thai and usually falls on 14 or 15 January in the Gregorian calendar.**
  - It is dedicated to the solar deity Surya and corresponds to Makar Sankranti, the Hindu observance celebrated under various regional names across the Indian subcontinent.
  - **The festival is named after the ceremonial "Pongal", which means "boiling over" or "overflow" in Tamil language and refers to the traditional dish prepared by boiling rice with milk and jaggery. Hence, pair 1 is correctly matched.**
  - The festival is traditionally an occasion for decorating with rice-powder based kolam artworks, offering prayers at home, visiting temples, getting together with family and friends, and exchanging gifts to renew social bonds of solidarity.

- Pongal is also referred to as Tamizhar thirunal ("the festival of Tamil people")
- It is observed by the Tamil diaspora in the Indian state of Tamil Nadu, parts of South India, Sri Lanka and other parts of the world with significant Tamil population.

- **Hornbill Festival is an annual festival celebrated from 1 to 10 of December in the Northeastern Indian state of Nagaland.** The festival represents all ethnic groups of Nagaland for which it is **also called the Festival of Festivals. Hence, pair 2 is not correctly matched.**
  - **The festival is named after the hornbill, the large and colourful forest bird** which is displayed in the folklore of most of the state's ethnic groups.
  - The Hornbill Festival provides a colourful mixture of dances, performances, crafts, parades, games, sports, food fairs and religious ceremonies.
- **Onam is the official state festival of Kerala. It is celebrated as a harvest festival and is intrinsically linked to the legendary homecoming of the mythical righteous king, Mahabali.** The associated rituals, such as the elaborate Onasadhya (feast) and Pookalam (flower carpets), confirm its primary significance. **Hence, pair 3 is correctly matched.**

Q 76.A

- Fjord: Formed when glacial valleys are submerged by sea water — steep-sided and deep (e.g., Norway). A fjord coast features long, deep, and narrow inlets of seawater, formed when glacial valleys, carved by ice-age glaciers, were flooded by the rising sea level. These characteristic features include steep, high-walled cliffs and U-shaped valleys, with fjords primarily found in higher-latitude, temperate regions like Norway, Chile, New Zealand, Canada, Greenland, and Alaska
- Ria: Formed when river valleys are submerged, not raised. A ria is a coastal inlet formed by the partial submergence of an unglaciated river valley. It is a drowned river valley that remains open to the sea. A Dalmatian-type coastline features long, narrow islands and valleys (or inlets) that run parallel to the mainland due to the submergence of anti-parallel karst ridges. This type of coastline is named after the Dalmatia region of Croatia, where the Adriatic Sea has flooded anticlines (upward folds) and synclines (downward folds) of limestone, creating a concordant landform of parallel islands and channels separated by narrow waterways.
- Dalmatian Coast: Formed by submergence of folded coastal mountains, not coral growth.
- **Hence option (a) is the correct answer.**

Q 77.B

- **National Policy on Geothermal Energy 2025 clearly specifies that the Ministry of New and Renewable Energy (MNRE) serves as the nodal Ministry for the implementation of Geothermal Energy-based projects. Hence, statement 1 is not correct.** The Ministry of Earth Sciences (MoES) is, however, recognized as a crucial partner in the policy's implementation, particularly for inter-agency collaboration concerning data repositories and resource assessment.
- The policy identifies ten geothermal provinces in India. The 10 geothermal provinces in India identified by GSI are: (i) Himalayan Geothermal Province; (ii) Naga-Lusai; (iii) Andaman Nicobar Islands; (iv) Son-Narmada Tapi (SONATA); (v) West Coast; (vi) Cambay Graben; (vii) Aravalli; (viii) Mahanadi; (ix) Godavari; (x) South Indian Cratonic. **Hence, statement 2 is correct.**
- India's National Policy on Geothermal Energy facilitates Foreign Direct Investment (FDI) by allowing 100% FDI under the automatic route for geothermal projects, supported by financial incentives, a streamlined regulatory framework with single-window clearances, and exploration permits. This policy, notified in September 2025, aims to attract investment, develop local expertise, promote cost-effective technologies, and explore both large-scale power generation and decentralized applications of geothermal energy across 10 identified provinces. **Hence, statement 3 is correct.**

Q 78.B

- **The Equatorial climate:**
  - The Equatorial climate (also called Tropical Rainforest Climate) is found in regions close to the equator, between 5°N and 5°S latitudes. It is characterized by uniformly high temperatures and heavy rainfall throughout the year, primarily due to the vertical position of the sun and strong convection currents. This type of climate supports dense evergreen rainforests such as the Amazon (South America), Congo Basin (Africa), and parts of Southeast Asia.
- **Key Features of Equatorial Climate**
  - Temperature
    - > Annual average temperature: around 27°C.
    - > Annual and diurnal (daily) range is extremely low, because the sun is almost overhead throughout the year.

- Rainfall
  - > Receives rainfall throughout the year, with no marked dry season.
  - > Rainfall occurs mainly due to convectional showers in the afternoon, caused by intense heating.
- Amount of Precipitation
  - > Average annual rainfall is well above 200 cm, often ranging from 150 cm to 250 cm in most regions.

- **Hence, option (b) is the correct answer.**

Q 79.A

- **Tropical Evergreen Forests:** These forests are found in the western slope of the Western Ghats, hills of the northeastern region and the Andaman and Nicobar Islands. They are found in warm and humid areas with an annual precipitation of over 200 cm and mean annual temperature above 22oC. Tropical evergreen forests are well stratified, with layers closer to the ground and are covered with shrubs and creepers, with short structured trees followed by tall variety of trees. There is no definite time for trees to shed their leaves, flowering and fruition. As such these forests appear green all the year round. **Species found in these forests include rosewood, mahogony, aini, ebony, etc**
- **Moist deciduous forests:** The Moist deciduous forests are more pronounced in the regions which record rainfall between 100-200 cm. These forests are found in the northeastern states along the foothills of Himalayas, eastern slopes of the Western Ghats and Odisha. **Teak, sal, shisham, hurra, mahua, amla, semul, kusum, and sandalwood etc. are the main species of these forests.**
- **Red sander is** one of the most valuable plant species found in Southern parts of India.Owing to the reddish colour of the heartwood of this plant, it is popularly known as 'Red sandalwood'. It is otherwise known as 'Red Sanders' in trade. **Naturally, this plant species is occurring in the tropical dry deciduous forest.** However, considering its usefulness and demand in the market, it is described under a separate forest sub-type- 'The Red sanders forest'. This plant is referred to as 'the pride of Eastern Ghats'. **Since the plant species is resistant to drought, it is considered as an excellent species for planting in hot and dry areas of South India. Hence, option (a) is the correct answer.**

Q 80.C

- Ural Mountains — The Boundary Between Europe and Asia
- The Ural Mountains primarily pass through two countries:
  - Russia – Main country: The vast majority of the Ural range lies in Russia. They extend from the Arctic Ocean (north) to the Ural River and northwestern Kazakhstan (south). They form a natural boundary between European Russia and Asian Russia.
  - Kazakhstan – Southern end: The southernmost tip of the Urals extends into northwestern Kazakhstan, near the Ural River. This area marks the transition zone between the two continents.

Q 81.D

- **The Ramon Magsaysay Award, established in 1957, is often called "Asia's Nobel Prize" for its recognition of individuals and organizations in Asia who demonstrate integrity, courageous service, and impactful leadership in areas like community leadership, journalism, and public service.** Named after Philippine President Ramon Magsaysay, the annual award grants a certificate, medallion, and cash prize for selfless public service and is announced on Magsaysay's birthday, August 31st, with a formal ceremony in Manila. The award seeks to honor transformative leadership and a spirit of greatness, regardless of background, through the work of a diverse board of trustees. **Hence, statement 1 is correct.**
- Acharya Vinoba Bhave was the first Indian to be conferred the Ramon Magsaysay Award. He received the award in 1958 for Community Leadership. **Hence, statement 2 is correct.**
- **Educate Girls NGO won the Ramon Magsaysay Award in 2025**, becoming the first Indian organization to receive this prestigious honor, which is often called the "Nobel Prize of Asia" for its recognition of transformative leadership and greatness of spirit. The award celebrates the NGO's work in breaking cultural barriers and gender stereotypes to educate girls, particularly in rural and disadvantaged areas of India. **Hence, statement 3 is correct.**

Q 82.B

- **Pangong Tso lake,** an endorheic lake spanning **eastern Ladakh and West Tibet,** is situated at a height of 14,270ft above sea level and is said to be one of the highest brackish water lakes in the world. The lake is almost 5km wide and 134km long, with one-third of it lying in India and the other two-thirds in China. Its coordinates are approximately 33.8°N latitude and 78.5°E longitude.
- **Tso Moriri** is a pristine high-altitude lake and a **Ramsar Wetland Site in the remote Changthang Plateau** in Leh district of the union territory of Ladakh in India. Its coordinate are approximately 32.9°N latitude and 78.3°E longitude
- **Wular Lake** is one of the largest freshwater lakes in the Indian subcontinent. It is located in the Bandipora district of **Jammu and Kashmir.** The lake basin was formed as a result of tectonic activity and is fed by the Jhelum River and the streams Madhumati and Arin. Its coordinates are approximately 34.2°N latitude and 74.5°E longitude.
- **Dal is a freshwater lake in Srinagar.** The lake is located within a catchment area covering 316 square kilometres in the Zabarwan mountain valley, in the foothills of the Shankaracharya Hill, which surrounds it on three sides. It coordinates are approximately 34.1°N latitude and 74.9°E longitude.

- **Hence, option (b) is the correct answer.**

Q 83.B

- **Solar noon** is the moment when the Sun is at its highest point in the sky, right over your local meridian. Interestingly, it usually doesn't happen exactly at 12 PM.
- This happens because the Earth is tilted on its axis and follows a slightly oval-shaped orbit around the Sun. These two factors mean that the Sun's peak in the sky - its "solar noon" - rarely lines up perfectly with the time on our clocks.

- Solar noon occurs when your location's meridian faces the Sun. At that moment, after rising steadily all morning, the Sun reaches the top of its daily journey across the sky. Depending on where you are, it may appear directly south, north, or even right overhead.
- Because the **Earth rotates eastward, solar noon comes a little earlier for places to the east and a little later for places to the west.**
- **Solar noon happens earlier in Kolkata than in Chennai because Kolkata lies east of Chennai. Hence, option (b) is the correct answer.**

Q 84.A

- **Vijayawada** is the second largest city and a major commercial hub in Andhra Pradesh. It is situated on the **banks of the Krishna River**, flanked by the Eastern Ghats and the scenic Indrakeeladri Hills. **Hence, pair 1 is not correctly matched.**
- **Coimbatore** is the second largest city of Tamil Nadu. It is one of the most industrialized cities in Tamil Nadu, known as the textile capital of South India or the Manchester of the South. The city is situated on the **banks of the river Noyyal. Hence, pair 2 is not correctly matched.**
- **Rourkela** is located in the Sundargarh district of Odisha, India. It is the third-largest City in Odisha after Bhubaneswar and Cuttack. It is surrounded by a range of hills and **encircled by the rivers Koel, Sankha, and Brahmani. Hence, pair 3 is not correctly matched.**
- **Jabalpur** is a city situated on the **banks of the Narmada River** in the state of Madhya Pradesh. The city is famous for its scenic attractions along the river, such as the Marble Rocks at Bhedaghat and the powerful Dhuandhar Falls. **Hence, pair 4 is correctly matched.**

Q 85.C

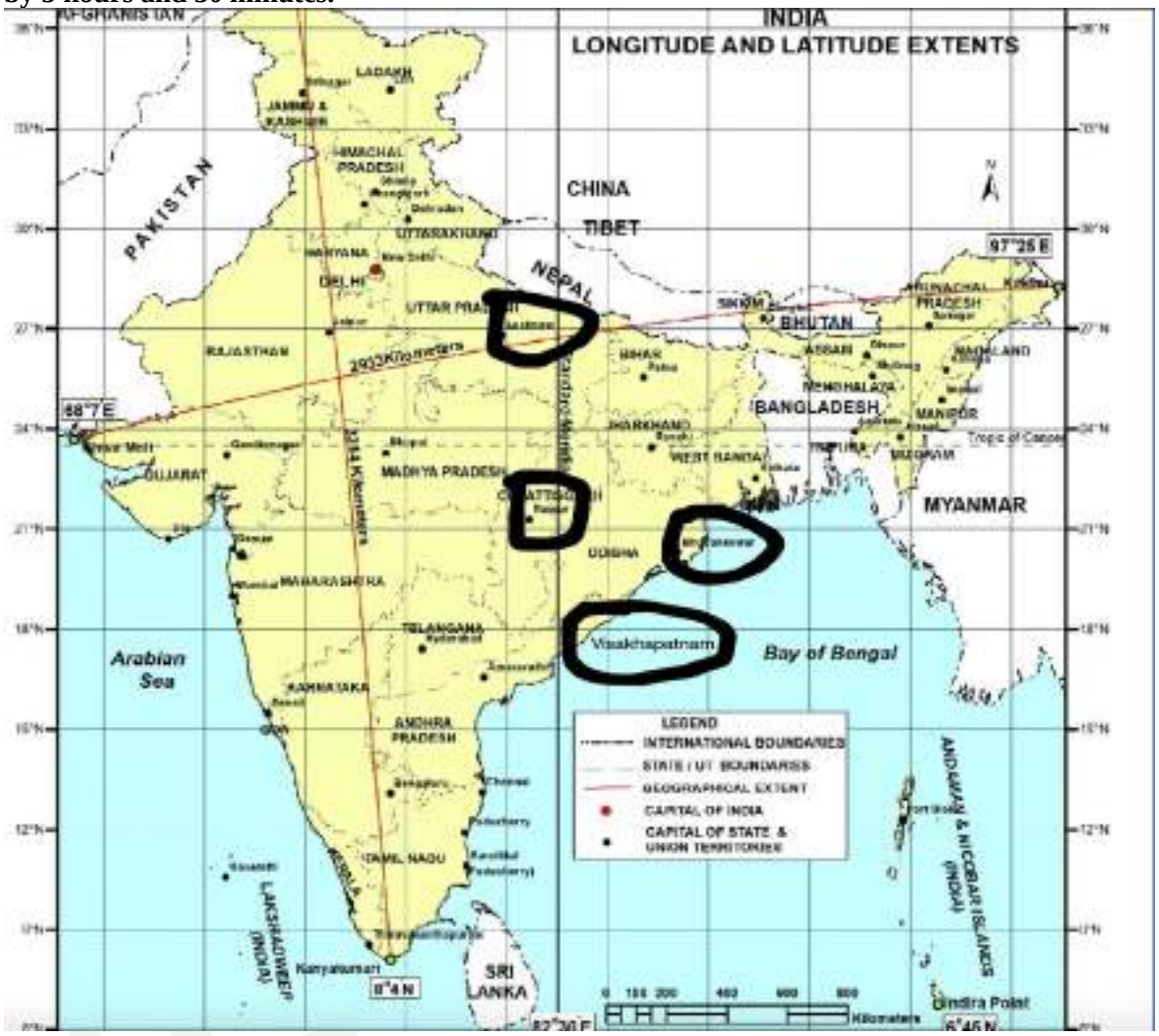
- **The International Date Line (IDL)** is the line extending between the South and North Poles that is the boundary between one calendar day and the next. It passes through the Pacific Ocean, **roughly following the 180.0° line of longitude** and deviating to pass around some territories and island groups. **Hence, statement 1 is correct.**
- A traveller going eastwards gains time from Greenwich until he reaches the meridian 180°E. When he is 12 hours ahead of G.M.T. similarly in going westwards, he loses 12 hours when he reaches 180°W. There is thus a total difference of 24 hours or a whole day between the two sides of the 180° meridian. This is the International Date Line, where the date changes by exactly one day when it is crossed.
- **A traveller crossing the date line from east to west loses a day** (because of the loss in time he has made) and while c**rossing the dateline from west to east he gain a day** (because of the gain in time he encountered). Thus, when it is midnight, **Friday on the Asiatic side, by crossing the line eastwards, he gains a day it will be midnight Thursday on the American side**, i.e., he experiences the same calendar date twice.
- Despite its name, **the international date line has no legal international status** and countries are free to choose the dates that they observe. While the date line generally runs north to south from pole to pole, it zigzags around political borders such as eastern Russia and Alaska's Aleutian Islands. **Hence, statement 2 is correct.**

Q 86.B

- **Salinity is the term used to define the total content of dissolved salts in sea water.** It is calculated as the amount of salt (in gm) dissolved in 1,000 gm (1 kg) of seawater. It is usually expressed as parts per thousand or ppt.
- **Sources of salt in the ocean:** Sea water is a weak but complex solution made up of many things including mineral salts and decayed biological marine organisms. **Most of the ocean salts are derived from weathering and erosion of the earth's crust by the rivers. Some of the ocean salts have been dissolved from rocks and sediments below the sea floor,** while others have escaped from the earth's crust through volcanic vents as solid and gaseous materials. **Hence, statement 1 is not correct.**
- **Factors affecting ocean salinity are mentioned below:**
  - Evaporation of water vapor from the ocean to the atmosphere leaves behind the salt, resulting in higher salinity.
  - Fresh rain water falling into the ocean decreases the salinity of the surface water in that region
  - **Surface salinity is greatly influenced in coastal regions by the fresh water flow from rivers**. Toward the poles, fresh water from melting ice decreases the surface salinity once again. **Hence, statement 2 is correct.**
  - Wind, also influences salinity of an area by transferring water to other areas.

Q 87.B

- The earth's longitudinal expanse of 360° is thus covered in 24 hours at the pace of 15° per hour. As the longitudinal extent of India is nearly 29°, the real-time difference in India between its eastern and western extremities is roughly two hours. While at the eastern extremity of India, the day may have just broken out, the extremity of the west would take nearly another two full hours to do so.
- To iron out this big chunk of the time difference, India, like all other countries of the world, follows the local time of its relatively central meridian as the standard time for the whole country. Each country chooses its standard meridian in a multiple of 7°30' for convenience. Accordingly, the **standard meridian of India has been selected to be 82°30' E. Indian Standard Time is ahead of Greenwich Mean Time by 5 hours and 30 minutes.**



- **Hence, option (b) is the correct answer.**

Q 88.A

- **The Son river springs from the Amarkantak Plateau, not far from the origin of the Narmada, at an elevation of about 600 m.** After flowing for some distance to the north, it meets the Kaimur Range which turns its course to the north-east. It passes over the cascades in the hill reaches and further beyond through the Palamau district of Jharkhand.
  - It joins the Ganga about 16 km upstream of Danapur in Patna district of Bihar after flowing for a distance of 784 km from its source. It has a total catchment area of 71,259 sq km in which there are wide fluctuations of water flow changing with the change of season. **The important tributaries of the Son are the Johilla, the Gopat, the Rihand, the Kanhar and the North Koel.** Almost all the tributaries join it on its right bank. **Hence, option (a) is the correct.**
- **The Tapi, also called the Tapti, is a major west-flowing river in Peninsular India.** The Tapi originates from a sacred tank in Multai on the Satpura Plateau in Madhya Pradesh, at an elevation of 730 meters. **The important tributaries of this river apart from the Purna River, are the Betul, Patki, Ganjal, Dathranj, Bokad, Bokar Suki, More, Kanki, Guli, Aner, Arunavati, Gomai and Valer on right bank and Ambhora, Khursi, Khandu, Kapra, Sipra, Garja, Khokri, Utaoli, Mona, Vaghur, Girna, Bori, Panjhara, Buray and Amravati on the left bank.**

- **The Mahanadi (literally meaning big river) is an important river of the Peninsular India.** It has its source in the northern foothills of Dandakaranya near Sihawa in Raipur District of Chhattisgarh at an elevation of 442 m. The **main tributaries are the Ib (251 km), the Mand (241 km), the Hasdo (333 km) and the Sheonath (383 km) on the left bank and the Ong (204 km), the Jonk (196 km), and the Tel (295 km) on the right bank.**
- **The Narmada River is the largest west-flowing river in Peninsular India.** It originates in the Amarkantak plateau in Madhya Pradesh at an elevation of 1,057 meters and flows westward through a rift valley between the Vindhya and Satpura ranges. Its **right bank tributaries are the Orsang, the Barna and the Kolar. The important tributaries joining the Narmada on its left bank are the Burhner (177 km), the Banjar (184 km), the Shar (129 km), the Shakkar (161 km) the Tawa (172 km) and the Kundi (169 km).**

Q 89.B

- **The Krishna river rises in the Western Ghats,** at an elevation of about 1337 m just north of Mahabaleshwar, about 64 km from the Arabian Sea. It flows for about 1400 km and outfalls into the Bay of Bengal. The principal tributaries joining Krishna are the Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra and the Musi**. The Krishna River flows through the Indian states of Maharashtra, Karnataka, Telangana, and Andhra Pradesh.**
- **The Godavari River rises from Trimbakeshwar** in the Nashik district of Maharashtra about 80 km from the Arabian Sea at an elevation of 1,067 m. **The Godavari River flows through Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, and Odisha. Hence, statement 1 is correct.**

TABLE 4.4. Surface Flow in Major River Basins of India

Sl. No.	River basins	Basin area*		Annual water yield		Rate of flow	Storage capacity
		(km²)	%	(million m³)	%	(m³/km²)	(million m³)
	Major rivers						
1.	Ganga	861,404	26.2	468,700	25.2	442,170	33,467
2.	Indus	321,284	9.8	79,500	4.3	247,441	14,419
3.	Godavari	312,812	9.5	118,000	6.4	377,223	14,859
4.	Krishna	258,948	7.9	62,800	3.4	243,403	29,860
5.	Brahmaputra	258,008	7.8	627,000	33.8	1,081,034	142
6.	Mahanadi	141,589	4.3	66,640	3.6	470,658	7,926
7.	Narmada	98,795	3.0	54,600	2.9	970,658	2,550
8.	Kaveri	87,900	2.7	20,950	1.1	237,770	5,428
9.	Tapi	65,145	2.0	17,982	0.9	267,770	8,140
10.	Penneru	55,213	1.7	3,238	0.2	58,646	1,978
11.	Brahmani	39,033	1.2	18,310	1.0	202,701	3,953
12.	Mahi	34,481	1.0	11,800	0.6	388,681	4,140
13.	Subarnarekha	19,296	0.6	7,940	0.4	411,484	283
14.	Sabarmati	21,895	0.7	3,800	0.2	173,556	1,017
	Medium & minor rivers	711,833	21.6	296,840	16.0	417,008	18,452
	Total (India)	3,287,782	100.0	1,858,100	100.0	565,153	146,826

- Godavari basin is significantly larger than the Krishna basin, with the Godavari having the largest basin in India's southern peninsula and the Krishna basin being the second largest in that region. **Hence, statement 2 is not correct.**
- **Kolleru Lake is one of the largest freshwater lakes in India located in the state of Andhra Pradesh.** It spans into two districts - Krishna and West Godavari. **Kolleru Lake is located in the inter-deltaic plain of rivers Krishna and Godavari.** The lake is fed directly by water from several seasonal rivers/streams and several inflowing drains and channels of irrigation systems of river Krishna and Godavari. **Hence, statement 3 is not correct.**

Q 90.A

- **The Inter Tropical 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°N-25°N latitudes (over the Gangetic plain), sometimes called the monsoon trough. Hence, statement 1 is not correct.

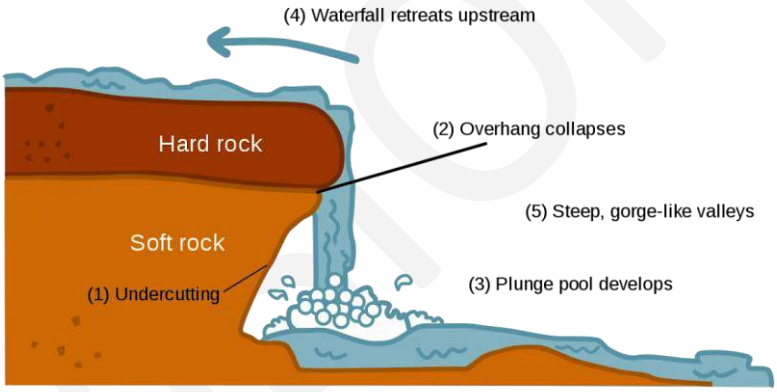
- This monsoon trough encourages the development of thermal low over north and northwest India. **Due to the shift of ITCZ, the trade winds of the southern hemisphere cross the equator between 40° and 60°E longitudes** and start blowing from southwest to northeast due to the Coriolis force. Hence, statement 2 is correct.
- **It becomes 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. Hence, statement 3 is correct.**

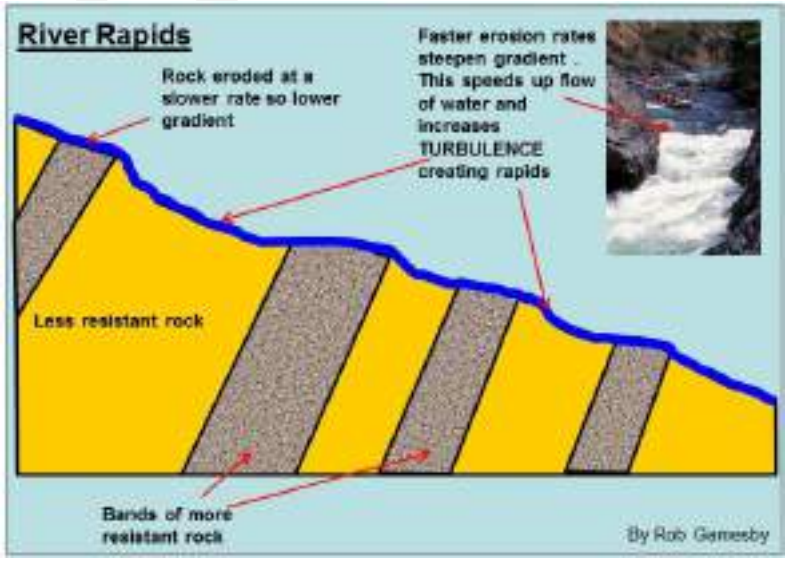
Q 91.B

- The Western Himalayas are dotted with a number of passes which offer passages through them. States of Jammu and Kashmir, Himachal Pradesh and Uttarakhand are included in this part of the Himalayas.
  - **Khardung la: Khardung la pass is** the second highest motor-able pass in the world after Umling la(pass). Umling-la is the highest motor-able road in the world. **Khardung la is the gateway to Shyok and Nubra valleys thus connects the city of Leh to the Nubra Valley and the Shyok river valley. Positioned on the Ladakh range, Khardung la is 40km(s) from Leh at an altitude of 18,379ft (5602m). Hence, statement 1 is not correct.**
  - **Rohtang Pass: perched on the eastern Pir Panjal range of the Himalayas,** is a breathtaking high mountain pass located about 51 km from Manali in Himachal Pradesh. At an elevation of 3,978 meters, **it forms a crucial link between the Kullu Valley and the desolate landscapes of Lahaul and Spiti.** The source of River Beas is also located at the Rohtang pass known as Beas Kund. **Hence, statement 2 is correct.**

Q 92.B

- When a river flows over layers of hard and soft rock, the soft rock erodes faster, creating sudden changes in gradient.
- This leads to the formation of waterfalls (where there's a vertical drop) and rapids (where the slope is uneven but not vertical).
- Over time, headward erosion may cause waterfalls to retreat, forming gorges.
- The other landforms (meanders, deltas, floodplains) result from lateral erosion or deposition, not from rock alternation.





Q 93.B

- Nepal has been in the news recently regarding youth-led protests. Specifically, the government's decision in late 2023 to ban TikTok. A social media platform highly popular with the younger demographic, often referred to as Gen Z, sparked significant debate and opposition. This issue remains a relevant topic regarding digital rights and youth activism in the country. **Hence, pair 1 is correctly matched.**
- Brazil's former president Jair Bolsonaro has been sentenced to more than 27 years in prison for plotting a military coup and seeking to destroy the country's democracy. Brazil's Supreme Court ruled that Bolsonaro, a former paratrooper who was elected president in 2018, is guilty of seeking to forcibly cling to power after losing the 2022 election. Bolsonaro's crimes, as per the sentence, include coup d'état and violently attempting to abolish Brazil's democracy. **Hence, pair 2 is correctly matched.**
- Turkey (officially Türkiye) is a long-standing and strategically vital member of the North Atlantic Treaty Organization (NATO). Despite having complex political relationships with several NATO allies and sometimes delaying the accession of new members, Turkey has not rescinded, withdrawn, or been expelled from its NATO membership. **Hence, pair 3 is not correctly matched.**

Q 94.A

- **Temperature Inversion in Valleys**
  - **Normal Condition of Temperature**
    - Under normal atmospheric conditions, the lapse rate applies—meaning temperature decreases with altitude. Warm air lies near the surface and progressively cooler air is found higher up in the atmosphere. This maintains vertical mixing of air.
  - **What Happens During Inversion?**
    - Sometimes this natural order is reversed. Temperature inversion occurs when the lower layers of the atmosphere become cooler than the layers above them. Instead of warmer air near the ground, cold, dense air settles below, while warmer air rests above, preventing vertical mixing. This is especially common during long, clear winter nights.
    - **Katabatic winds are cold, dense winds that flow downhill from higher elevations into lower-lying areas, driven by gravity.** They form when air at higher altitudes cools, becomes denser than the surrounding air, and then sinks down slopes, similar to how a dense liquid flows downhill.
  - **Why Valleys Are Prone**
    - In intermontane valleys, inversion is more pronounced. At night, the slopes cool rapidly by terrestrial radiation. The cold, heavy air descends into the valley bottom due to gravity, displacing warmer air upwards. As a result, the normal lapse rate is inverted. This is why valleys often experience fog, frost, and poor air quality during winters. **Hence, both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.**

Q 95.A

- Jet streams are fast-moving narrow bands of strong winds found in the upper troposphere, **just below the tropopause. Hence, statement 1 is correct.**
- These winds move from west to east due to the Coriolis effect. Polar Jet Streams (PJS) are located between polar and temperate air masses and generally occur at 6 - 9 km altitude. **Hence, statement 2 is not correct.**
- Subtropical Jet Streams (SJS) are found between tropical and temperate air masses at a higher altitude of 10 - 16 km. This variation occurs because the troposphere is thicker near the equator (~17-18 km) and thinner near the poles (~8-9 km).
- Since jet streams form in the upper troposphere, their altitude varies according to tropospheric thickness. A greater temperature difference between air masses does increase the speed of the jet stream because jet streams exist due to temperature gradients (higher contrast leads to stronger winds). However, it does NOT raise the altitude of the jet stream. The altitude is determined by the location within the troposphere rather than the temperature contrast. For example, polar jet streams remain at a lower altitude even though they have a high temperature gradient, while subtropical jet streams are higher due to the natural thickness of the troposphere at lower latitudes.

Q 96.A

- The **beginning of the Paleozoic Era** is marked by the first appearance of hard body parts like shells, spikes, teeth, and scales, and the appearance in the rock record of most animal phyla known today. That is, most basic animal body plans appeared in the rock record during the Cambrian Period. This sudden

appearance of biological diversity is called the **Cambrian Explosion. It lasted for about 13 to 25 million years and resulted in the divergence of most modern metazoan phyla. Hence, option (a) is the correct answer.**

- **The Great Oxygenation Event (GOE), or oxygen catastrophe,** was a period approximately 2.4 to 2.1 billion years ago **when oxygen levels in Earth's atmosphere and oceans significantly increased,** caused by the evolution of oxygenic photosynthesis in ancient cyanobacteria. This event dramatically changed Earth's environment and chemistry, leading to the mass extinction of many anaerobic organisms but ultimately paving the way for the evolution of more complex aerobic life and the formation of an ozone layer.
- In geology, **degassing is the natural process by which gases trapped within the Earth's interior are released to the surface and atmosphere,** often through volcanic eruptions or tectonic activity. This release of volatiles from molten rock (magma) is crucial for forming a planet's atmosphere and influencing geological processes like volcanic eruptions.

Q 97.B

- **The most recent assembly of the SCO's top decision-making body, the Council of Heads of State (HSC), was the 25th Meeting, which took place in late August/early September 2025 in Tianjin, China**. As the host nation, China held the rotating chairmanship for this specific summit. **Hence, statement 1 is correct.**
- **While Belarus did recently become the 10th full member of the SCO, this was done at the 24th SCO Summit held in Astana, Kazakhstan, in July 2024**. By the time the 25th Summit in Tianjin took place, Belarus had already completed the accession process and was participating as a full member, not being formally accepted at that specific meeting. **Hence, statement 2 is not correct.**
- **The theme for the 25th SCO Summit held in Tianjin, China, was "Upholding the Shanghai Spirit: SCO on the Move."** The phrase "Vasudhaiva Kutumbakam," which translates to "The World is One Family," was the core theme adopted by India for its presidency of the G20 Summit in 2023. **Hence, statement 3 is not correct.**

Q 98.D

- When the Earth revolves around the sun, it spins on an elliptical orbit at a speed of 18.5 miles per second. **The axis of the Earth is inclined to the plane of the ecliptic** (the plane in which the Earth orbits round the sun) at an angle of 66%° giving rise to following:
- **Varying Lengths of Day and Night**
  - The Earth’s axis is tilted, so days and nights are not always equal. In the Northern Hemisphere winter, days become shorter as we go north, and at the Arctic Circle on 22 December the sun does not rise at all. At the North Pole there is darkness for six months. In summer the opposite occurs: days grow longer, and at the Arctic Circle on 21 June the sun never sets, creating the “Land of the Midnight Sun.” At the North Pole there are six months of daylight. In the Southern Hemisphere, the same pattern happens but in reverse.
- **The Altitude of the Midday Sun**
  - The tilt of the Earth’s axis makes the height of the midday sun change during the year. On 21 March and 23 September, called the equinoxes, the sun is overhead at the equator and all places have equal day and night. On 21 June, at the summer solstice, the sun is overhead at the Tropic of Cancer and the Northern Hemisphere has its longest day. On 22 December, at the winter solstice, the sun is overhead at the Tropic of Capricorn and the Southern Hemisphere has its longest day. Between the Tropics the sun can be overhead, but outside them it never is. Near the poles, days and nights last for months, while in the Tropics they are almost equal all year.
- **Seasonal Changes and Their Effects on Temperature**
  - In summer the sun is higher in the sky, its rays fall more directly, and the heat is concentrated, so temperatures rise. Longer days mean more heating, and shorter nights mean less cooling, making summers warmer. In winter the sun is lower, its rays are slanting and spread out, and much heat is lost in the atmosphere, so temperatures remain low. Shorter days and longer nights add to the cooling, making winters colder.

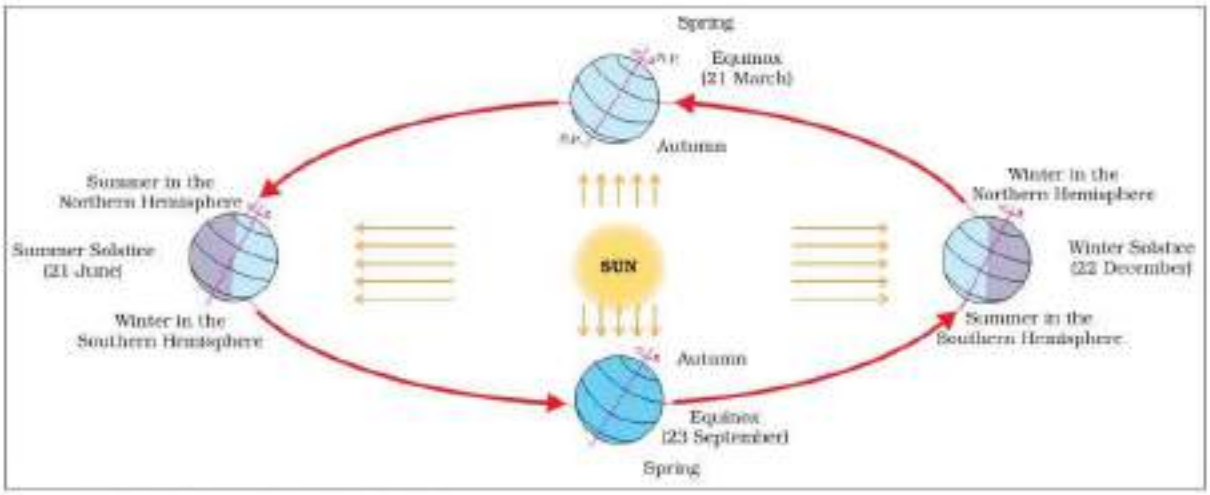


Figure 3.3 : Revolution of the Earth and Seasons

- **Hence, option (d) is the correct answer.**

Q 99.D

- **Ocean currents are streams of water flowing constantly** on the ocean surface in definite directions. The ocean currents may be warm or cold. Generally, the warm ocean currents originate near the equator and move towards the poles.
- **The warm ocean current brings heavy rainfall when the wind blows over it becomes warm while the cold ocean current brings drought when the wind blows over it becomes cold and dry.** This creates a stable layer of cool air, **inhibit cloud formation and rainfall.** For example, the wind blowing over the Peru Current is cold and dry causing the formation of the Atacama Desert located on the west coast of Peru.
- **Interior deserts,** which are found in the heart of continents, exist because no moisture-laden winds reach them. By the time air masses from coastal areas reach the interior, they have lost all their moisture. Interior deserts are sometimes called inland deserts. **For exam[ple, the Gobi Desert, in China and Mongolia, lies hundreds of kilometers from the ocean. Winds that reach the Gobi have long since lost their moisture.** The Gobi is also in the rain shadow of the Himalaya mountains to the south. **Hence, statement I not correct and statement II are correct.**

Q 100.A

- The **latitudinal and longitudinal extent** of India, are roughly about **30 degrees**, whereas the actual distance measured from **north to south** extremity is **3,214 km**, and that from **east to west** is only **2,933 km**.
- This difference is based on the fact that the **distance between two longitudes decreases towards the poles whereas the distance between two latitudes remains the same everywhere**.
- This is because of the nature of the latitudes and the longitudes. The distance between two is fixed between any two points and does not vary according to the area or shape. On the other hand, the longitudes are not parallel lines and the distance between the lines varies from the equator to the poles. The distance is minimum at the poles and maximum near the equator.
- **Hence, both A and R are true, and R is the correct explanation for A.**