Class XI Session 2025-26
Subject - Geography
Sample Question Paper - 6

Time Allowed: 3 hours **Maximum Marks: 70**

General Instructions:

Read the following instructions carefully and follow them:

1. This question paper contains 30 questions. All questions are compulsory.
2. Question paper is divided into five sections A, B, C, D and E.
3. Section A Questions no. 1 to 17 are Multiple Choice type questions. Each question carries 1 mark.
4. Section B Questions no. 18 and 19 are Source-based questions. Each question carries 3 marks.
5. Section C Questions no. 20 to 23 are Short Answer type questions. Each question carries 3 marks. Answer to these questions shall be written in 80 to 100 words.
6. Section D Questions no. 24 to 28 are Long Answer type questions. Each question carries 5 marks. Answer to these questions shall be written in 120 to 150 words.
7. Section E Questions no. 29 and 30 are Map-based questions. Each question carries 5 marks.
8. There is no overall choice given in the question paper. However, an internal choice has been provided in a few questions in all sections other than Section A.

Section A

1. How human beings have come to terms with nature? **[1]**

   a) through modification
   b) Both through adaptation and modification
   c) through adaptation
   d) Only through adaptation

2. Which one of the following proportion of area of the country was targeted to be under forest in Forest Policy of India? **[1]**

   a) 22
   b) 44
   c) 55
   d) 33

3. The natural satellite of the earth is **[1]**

   a) Earth
   b) Venus
   c) Mercury
   d) Moon

4. Consider the following statements and choose the correct option from the given options **[1]**

   I. Gathering information and monitoring the possibilities of landslide is not only difficult but also immensely cost-intensive.
   II. Unlike other disasters that are sudden, unpredictable and are largely controlled by macro or regional factors, landslides are largely controlled by highly localised factors.

a) Both the statements I and II are incorrect
b) Only statement I is correct
c) Both the statements are true and statement II correctly present the reason for statement I
d) Only Statement II is correct

5. Which one is the branch of geography based on a systematic approach? **[1]**

a) All of these
b) Climatology
c) Hydrology
d) Geomorphology

6. What do we say to the number of water vapors present in the atmosphere? **[1]**

a) Dew
b) Humidity
c) Dew Points
d) Saturation

7. The major river of Dakshin is **[1]**

a) Narmada
b) Godavari
c) Jhelum
d) Ganga

8. In which region maximum insolation is received? **[1]**

a) Arctic
b) Temperate
c) Sub tropical
d) Tropical

9. **Assertion (A):** India has a land frontier of about 15,200 km. **[1]**
Reason (R): A total of 9 countries share borders with India. Out of these, 7 countries share land borders while 2 countries share sea borders with India.

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

10. Which one of the following commercial tree with a highly valued endemic species grows mainly in the western part of the Himalayan range? **[1]**

a) oak
b) chestnut
c) Chir pine
d) Deodar

11. Arrange the following in correct sequence: **[1]**

i. It withdraws from Rajasthan, Gujarat, Western Ganga plain and the Central Highlands by the end of the month.
ii. The monsoon retreats from the western Rajasthan by the first week of September.
iii. By the beginning of October, the low pressure covers northern parts of the Bay of Bengal and by early November, it moves over Karnataka and Tamil Nadu.
iv. By the end of September, the southwest monsoon becomes weak as the low-pressure trough of the Ganga plain starts moving southward in response to the southward march of the sun.

a) (ii) - (i) - (iv) - (iii)
b) (i) - (iv) - (iii) - (ii)
c) (iii) - (ii) - (iv) - (i)
d) (iv) - (ii) - (i) - (iii)

12. In which one of the following states is the Nandadevi Biosphere reserve situated? **[1]**

a) Bihar
b) Uttarakhand

c) Uttar Pradesh
d) Odisha

13. Which one of the following countries is larger in area than India? **[1]**

a) Iran
b) France
c) China
d) Egypt

14. Which of the following pairs is matched correctly? **[1]**

River	**Tributary**
(a) Godavari	(i) Jhelum
(b) Krishna	(ii) Penganga
(c) Narmada	(iii) Luni
(d) Kaveri	(iv) Amravati

a) (a) - (i)
b) (d) - (iv)
c) (b) - (ii)
d) (c) - (iii)

15. Which one of the following earthquake waves is more destructive? **[1]**

a) Surface waves
b) S-waves
c) P-waves
d) T-waves

16. Match column I with column II and select the correct answer using the codes given below. **[1]**

Column I	**Column II**
(a) Cocos Plate	(i) Between South America and Pacific plate
(b) Nazca plate	(ii) North-East of Australia
(c) Caroline plate	(iii) Between Central America and Pacific plate
(d) Fuji plate	(iv) Between Philippines and Indian plate

a) (a) - (iii), (b) - (i), (c) - (ii), (d), (iv)
b) (a) - (i), (b) - (ii), (c) - (iv), (d), (iii)
c) (a) - (iii), (b) - (i), (c) - (iv), (d), (ii)
d) (a) - (i), (b) - (iii), (c) - (ii, (d), (iv)

17. **Assertion (A):** In humid Sub-tropical climatic regions, rainfall occurs throughout the year. **[1]**
Reason (R): In this region, the air masses are generally stable.

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

Section B

18. **Read the following text carefully and answer the questions that follow:** **[3]**

Analysis of properties of matter indirectly provides information about the interior. We know through the mining activity that temperature and pressure increase with the increasing distance from the surface towards the interior in deeper depths. Moreover, it is also known that the density of the material also increases with depth. It is possible to find the rate of change of these characteristics. Knowing the total thickness of the earth, scientists have estimated the values of temperature, pressure and the density of materials at different depths. The details of

these characteristics with reference to each layer of the interior are discussed later in this chapter. Another source of information are the meteors that at times reach the earth. However, it may be noted that the material that becomes available for analysis from meteors, is not from the interior of the earth. The material and the structure observed in the meteors are similar to that of the earth. They are solid bodies developed out of materials same as, or similar to, our planet. Hence, this becomes yet another source of information about the interior of the earth. The other indirect sources include gravitation, magnetic field, and seismic activity. The gravitation force (g) is not the same at different latitudes on the surface. It is greater near the poles and less at the equator. This is because of the distance from the centre at the equator being greater than that at the poles. The gravity values also differ according to the mass of material. The uneven distribution of mass of material within the earth influences this value. The reading of the gravity at different places is influenced by many other factors. These readings differ from the expected values. Such a difference is called gravity anomaly. Gravity anomalies give us information about the distribution of mass of the material in the crust of the earth. Magnetic surveys also provide information about the distribution of magnetic materials in the crustal portion, and thus, provide information about the distribution of materials in this part. Seismic activity is one of the most important sources of information about the interior of the earth. Hence, we shall discuss it in some detail.

i. Other than seismic activity, list the indirect sources of information about the earth's interior. (1)

ii. Examine the relationship between temperature & distance and pressure. (1)

iii. Why the gravitational force is stronger close to the poles and weaker at the equator? (1)

19. Observe the given map: **[3]**

i. Which Island groups are located in the Arabian Sea? (1)

ii. Give the name of the waterbody marked with **X** in map that separates the Andaman Islands in the north from the Nicobar Islands in the south? (1)

iii. How many islands or islets make up the island groups situated in the Bay of Bengal? (1)

20. Explain the implications of longitudinal extent of India? **[3]**

OR

What is a sub-continent? Explain this with reference to countries lying south of the Himalayan Mountain System in South Central Asia.

21. What do you understand by social forestry? **[3]**

22. Mention the factors which results in mass movement. **[3]**

OR

How does biological weathering take place?

23. Which two climatic variables are used by Koeppen for classification of the climate? **[3]**

Section C

24. Explain about different types of drought. **[5]**

25. The ocean floor may be segmented into how many divisions based on the depth as well as the forms of relief? **[5]**

OR

What are the evidences in support of the continental drift theory?

26. Explain about vertical distribution of salinity. **[5]**

OR

Explain the landforms made by erosion caused by groundwater.

27. Why does tropical cyclone originate over the seas? In which part of the tropical cyclone do torrential rains and high velocity winds blow and why? **[5]**

OR

How do you distinguish between the process of soil formation and soil-forming factors? What is the role of climate and biological activity as two important control factors in the formation of soils?

28. What are Monsoons? How are these caused? Describe the winter and summer monsoons. **[5]**

OR

The two Peninsular rivers display interesting differences in their regimes compared to the Himalayan rivers. Explain.

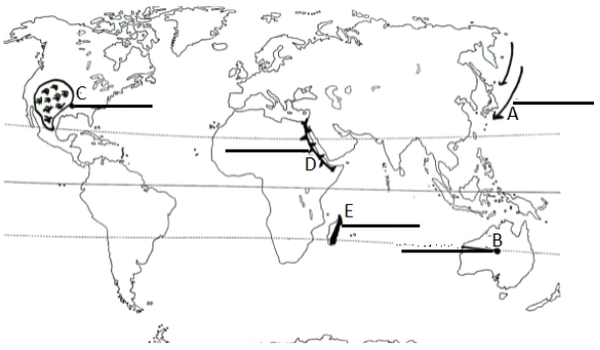
Section D

29. On the outline map of India, locate and label the following: **[5]**

i. First biosphere of India
ii. Mahanadi
iii. Malwa Plateau
iv. Shiwalik Range
v. Strait which separates India and Srilanka

30. With the help of the following key, identify the areas marked as A, B, C, D, and E on the given outline map of the World. Write the correct name of the place in the blank space given on the map. **[5]**

A. This is a cold current colliding with warm Kuroshio Current along the eastern coast of Japan.
B. This is the smallest continent that lies entirely in the Southern Hemisphere.
C. These grassland regions experience hot summers and cold winter and rainfall up to 500 - 900 mm.
D. This minor tectonic plate is mostly in the Saudi Arabian landmass.
E. This ecological hotspot has about 85 percent of the plants and animals are found nowhere else in the world.



Solution

Section A

1.

(b) Both through adaptation and modification

Explanation:

'Human' is an integral part of 'nature' and 'nature' has the imprints of 'human'. 'Nature' has influenced different aspects of human life. Its imprints can be noticed on food, clothing, shelter, and occupation. Human beings have come to terms with nature **through adaptation and modification**.

2.

(d) 33

Explanation:

The Government of India adopted a **forest policy in 1952**, which was further modified in 1988. According to the new forest policy, the Government will emphasise sustainable forest management in order to conserve and expand forest reserve on the one hand, and to meet the needs of local people on the other. It aimed at bringing **33 per cent** of the geographical areas under forest cover.

3.

(d) Moon

Explanation:

The moon is the only natural satellite of the earth and the fifth largest moon in the solar system.

4.

(c) Both the statements are true and statement II correctly present the reason for statement I

Explanation:

Both the statements are true and statement II correctly present the reason for statement I

5. **(a)** All of these

Explanation:

Physical geographers study Earth's seasons, climate, atmosphere, soil, streams, landforms, and oceans. It is one of the branches of geography based on the systematic approach.

6.

(b) Humidity

Explanation:

Humidity

7.

(b) Godavari

Explanation:

River Godavari is the largest Peninsular river system. It is also called the Dakshin Ganga. It rises in the Nasik district of Maharashtra and discharges its water into the Bay of Bengal.

8.

(c) Sub tropical

Explanation:

Sub tropical

9. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
The long international boundary of India is shared in the East by Bangladesh (4,096 km), on the north by China (3,917 km), Afghanistan (80 km), and on the north-west by Pakistan (3,310 km). It also has borders with Nepal (1,752 km), Myanmar (1,458 km), and Bhutan (587 km).

10. **(d)** Deodar
Explanation:
Deodar

11. **(d)** (iv) - (ii) - (i) - (iii)
Explanation:
(iv) - (ii) - (i) - (iii)

12. **(b)** Uttarakhand
Explanation:
The **Nanda Devi Biosphere Reserve** situated in **Uttarakhand** includes parts of Chamoli, Almora, Pithoragarh and Bageshwar districts. The major forest types of the reserve are temperate. The biosphere reserve has a rich fauna, for example, the snow leopard, black bear, brown bear, musk deer, snowcock, golden eagle and black eagle.

13. **(c)** China
Explanation:
China

14. **(b)** (d) - (iv)
Explanation:
Kaveri - Amravati

15. **(a)** Surface waves
Explanation:
Surface waves

16. **(c)** (a) - (iii), (b) - (i), (c) - (iv), (d), (ii)
Explanation:
    - Cocos plate: Between Central America and Pacific plate
    - Nazca plate: Between South America and Pacific plate
    - Caroline plate: Between the Philippine and Indian plate (North of New Guinea)
    - Fuji plate: North-east of Australia

17. **(c)** A is true but R is false.
Explanation:
Humid subtropical climate lies on the eastern parts of the continent in subtropical latitudes. In this region the air masses are generally **unstable** and cause rainfall throughout the year.

Section B

18. i. Temperature, pressure, and density of materials at different depths are the some of the indirect sources of information of the interior of the earth. Analysis of properties of matter indirectly provides information about the interior of the earth. The other indirect sources include gravitation, and magnetic field study, etc.
    ii. Temperature and pressure increase with the increasing distance from the surface towards the interior in deeper depths.
    iii. The gravitational force is stronger close to the poles and weaker at the equator because of the distance from the centre at the equator being greater than that at the poles.

19. i. Lakshadweep
    ii. Ten-degree channel
    iii. The Bay of Bengal Island groups consist of about 572 islands/islets.

20. The longitudinal extent of India is 68°7 E and 97° 25 E. These longitudinal extent has the following implications-
    1) The longitudinal extent affects the local time for different states in our country.
    2)Since 30° meridian pass from east to west and earth takes two hours to cover them so there is the time lag of two hours as we move from east to west.

    OR

    Sub-continent: A sub-continent is a vast independent geographical unit. This landmass is distinctly separated from the main continent. The vastness in size produces diversity in economic, social and cultural conditions. India is a vast country. It is often described as the 'Indian subcontinent.
    Countries: The Himalayan mountain system acts as a physical barrier separating the Indian subcontinent from the mainland of Asia. India, Pakistan, Bangladesh, Nepal and Bhutan, Maldives, Sri Lanka combine together to form a sub-continent. The great mountain wall isolates these countries from Asia. These are also called 'SAARC' countries.

21. Social forestry means the management and protection of forests and afforestation on barren lands with the purpose of helping in the environmental, social and rural development. The National Commission on Agriculture (1976) has classified social forestry into three categories. These are:
    i. Urban forestry pertains to the raising and management of trees on public and privately owned lands in and around urban centres such as green belts, parks, roadside avenues, etc.
    ii. Rural forestry lays emphasis on the promotion of agroforestry and community forestry.
    iii. Farm forestry is a term applied to the process under which farmers grow trees for commercial and non-commercial purposes on their lands.

22. (i) removal of support from below to materials above through natural or artificial means;
    (ii) increase in gradient and height of slopes;
    (iii) overloading through addition of materials naturally or by artificial filling;
    (iv) overloading due to heavy rainfall,
    saturation and lubrication of slope materials;
    (v) removal of material or load from over the original slope surfaces;
    (vi) occurrence of earthquakes, explosions or machinery;
    (vii) excessive natural seepage;
    (viii) heavy drawdown of water from lakes, reservoirs and rivers leading to slow outflow of water from under the slopes or river banks;
    (ix) indiscriminate removal of natural vegetation.

    OR

    Biological weathering takes place by:
    1) Trees and other plants - The roots of trees, grasses and other plants can grow into small spaces and gaps in rock. When these roots grow, they exert pressure on the rock around them, causing the gaps to widen or even crack. Plant roots can also weather rock through chemical processes. When dead roots decompose, they release carbon dioxide; this is sometimes converted into carbonic acid, which chemically breaks down rock into soil.
    2) Microorganisms and lichens-Many microorganisms in the soil and on the surface of rock can contribute. Some bacteria derive nutrition by taking a combination of nitrogen from the air and minerals -- such as silica, phosphorous and calcium -- from rock. By removing these minerals, the rock is weakened and is further subject to other weathering forces such as wind and water. Lichens, symbiotic colonies of fungi and microscopic algae that grow on rock, also contribute to weathering. The fungi in a lichen produce chemicals that break down the minerals in the rock. The algae, like the bacteria, use these minerals for nutrition.
    3) Animals activity - Animals can also contribute to weathering. Animals can walk on rock or disturb it, causing landslides that scrape or smooth rock surfaces. Burrowing animals such as badgers and moles can break up rock underground or bring it to the

surface, where it is exposed to other weathering forces. Some animals directly burrow into the rock. The piddock shell is a mollusk, closely related to the clam, that uses its shell to cut a hole in rock, where it lives.

4) Human activity - humans also contribute to biological weathering. Construction, mining and quarrying break up and disturb large sections of rock. Foot traffic over rock causes friction that breaks off tiny particles. Over a long period, foot traffic can cause significant wear and tear on rock surfaces

23. Köppen climate classification is one of the most widely used climate classification systems. It is an empirical classification based on the variables mean annual and mean monthly temperature and precipitation data. He introduced the use of capital and small letters to designate climatic groups and types. Although developed in 1918 and modified over a period of time, Koeppen's scheme is still popular and in use. Koeppen recognised five major climatic groups, four of them are based on temperature and one on precipitation. Koeppen identified a close relationship between the distribution of vegetation and climate. He selected certain values of temperature and precipitation and related them to the distribution of vegetation and used these values for classifying the climates. Over the recent years, there has also been an increasing interest in using the classification to identify changes in climate and potential changes in vegetation over time. These successful applications point to the potential of using the Köppen classification as a diagnostic tool to monitor changes in the climatic condition over various time scales.

Section C

24. Different types of droughts are as follows:
    i. **Meteorological Drought:** It is a situation when there is a prolonged period of inadequate rainfall marked with mal-distribution of the same over time and space.
    ii. **Agricultural Drought:** It is also known as soil moisture drought, characterised by low soil moisture that is necessary to support the crops, thereby resulting in crop failures. Moreover, if an area has more than 30 percent of its gross cropped area under irrigation, the area is excluded from the drought-prone category.
    iii. **Hydrological Drought:** It results when the availability of water in different storages and reservoirs like aquifers, lakes, reservoirs, etc. falls below what the precipitation can replenish.
    iv. **Ecological Drought:** When the productivity of a natural ecosystem fails due to a shortage of water and as a consequence of ecological distress, damages are induced in the ecosystem. Various parts of India experience these droughts recurrently which result in some serious socio-economic and ecological problems.
25. The ocean floor may be segmented into three major divisions based on the depth as well as the forms of relief. These divisions are: (i) Continental margins, (ii) Abyssal plains and (iii) Mid-oceanic ridges.
    i. Continental margins: The continental margin is one of the three major zones of the ocean floor, the other two being deep-ocean basins and mid-ocean ridges. The continental margin is the shallow water area found in proximity to continent. The continental margin consists of three different features: the continental rise , the continental slope, and the continental shelf. Continental margins constitute about 28% of the oceanic area.There are two types of continental margins: active and passive margins. Active margins are typically associated with lithospheric plate boundaries whereas Passive margins are often located in the interior of lithospheric plates, away from the plate boundaries, and lack major tectonic activity.
    ii. Abyssal plains: An abyssal plain is an underwater plain on the deep ocean floor, usually found at depths between 3,000 metres (9,800 ft) and 6,000 metres (20,000 ft). Lying generally between the foot of a continental rise and a mid-ocean ridge, abyssal plains cover more than 50% of the Earth's surface. They are among the flattest, smoothest and least explored regions on Earth. Abyssal plains are key geologic elements of oceanic basins . The creation of the abyssal plain is the result of the spreading of the seafloor (plate tectonics) and the melting of the lower oceanic crust.
    iii. Mid-oceanic ridges: Mid oceanic ridge is an underwater mountain range, formed by plate tectonics. This uplifting of the ocean floor occurs when convection currents rise in the mantle beneath the oceanic crust and create magma where two tectonic plates meet at a divergent boundary. The mid-ocean ridges of the world are connected and form a single global mid-oceanic ridge system that is part of every ocean, making the mid-oceanic ridge system the longest mountain range in the world, with a total length of about 60,000 km. There are two processes, ridge-push and slab-pull, thought to be responsible for the spreading seen at mid-ocean ridges, and there is some uncertainty as to which is dominant.

OR

A variety of evidence was offered in support of the continental drift. Some of these are given below:

    i. **The Matching of Continents (Jig- Saw-Fit):** The shorelines of Africa and South America facing each other have a remarkable and unmistakable match.
    ii. **Rocks of Same Age Across the Ocean:** The belt of ancient rocks of 2,000 million years from Brazil coast matches with those from western Africa. The earliest marine deposits along the coastline of South America and Africa are of the Jurassic age. This suggests that the ocean did not exist prior to that time.

iii. **Tillite:** It is sedimentary rock formed out of deposits of glaciers. The Gondwana system of sediments from India is known to have its counterparts in six different landmasses of the Southern Hemisphere. At the base, the system has thick tillite indicating extensive and prolonged glaciation. Counterparts of this succession are found in Africa, Falkland Island, Madagascar, Antarctica and Australia besides India. The overall resemblance of the Gondwana type sediments clearly demonstrates that these landmasses had remarkably similar histories.

iv. **Placer Deposits:** The occurrence of rich placer deposits of gold in the Ghana coast and the absolute absence of source rock in the region is an amazing fact. The gold-bearing veins are in Brazil and it is obvious that the gold deposits of Ghana are derived from the Brazil plateau when the two continents lay side by side.

v. **Distribution of Fossils:** The observations that Lemurs occur in India, Madagascar and Africa led some to consider a contiguous landmass "Lemuria" linking these three landmasses. Mesosaurus was a small reptile adapted to shallow brackish water. The skeletons of these are found only in two localities: the Southern Cape province of South Africa and Iraver formations of Brazil. The two localities presently are 4,800 km apart with an ocean in between them.

26. Vertical distribution of salinity are as follows :

(i) With depth salinity changes, but the way it changes depends upon the location of the sea.
By the loss of water to ice or evaporation,salinity at the surface increases and by the input of fresh waters from the rivers salinity decreases.
(ii) Salinity is very much fixed at the depth, because there is no way that water is 'lost', or the salt is 'added.'
(iii) Between the surface zones and the deep zones of the oceans there is a marked difference in the salinity.The lower salinity water rests above the higher salinity dense water.
(iv) Generally salinity increases with depth and there is a distinct zone called the halocline, where salinity increases sharply.
(v) Other factors being constant, increasing salinity of seawater causes its density to increase. Generally high salinity seawater sinks below the lower salinity water. This leads to stratification by salinity.

OR

Important landforms made by erosion are as follows:
(i) Pools: Pools are most easily seen in a meandering stream where the outer edge of each meander loop is deep and undercut; riffles form in the shallow water of the short, straight, wide reaches between adjacent loops. The pools form sequences spaced at a repeating distance of about five to seven widths of the channel and often appear in stream development long before the stream produces visible meanders. These patterns are thought to be associated with a form of wave phenomenon and may be initiated by a single gravel patch in a channel; the first channel deviation requires an overcompensation of counter-deviation and sets off a chain reaction type of development.
(ii) Swallow holes: A swallow hole is a place where the ground literally swallows up a stream. Swallow holes (which some people call potholes) are on the top surface of rocks that allow water to pass through. Mostly commonly these are limestones. The water dissolves the limestone, making the hole bigger. Most swallow holes are the entrances to cave systems. The place where the water comes out again is a spring (and geographers call a resurgence). That will be at, or close to, the bottom of the rock.
(iii) Sinkholes: A sinkhole is an opening more or less circular at the top and funnel -shaped towards the bottom with sizes varying in area from a few square metre to a hectare and with depth from a less than half a metre to thirty metres or more.
(iv) Uvalas: When sinkholes and do lines join together because of slumping of materials along their margins or due to roof collapse of caves, long, narrow to wide trenches called uvalas are formed.It is a morphological form frequently found in the “Outer Dinarides” anywhere between Slovenia and Greece. But large closed karst depressions are found on all continents in different landscapes.
(v) Collapse sinks: If the bottom of the sinkholes forms the roof of a void or cave underground it might collapse leaving a large hole opening into a cave or a collapse sinks.
(vi) Lapies: Gradually, most of the surface of the limestone is eaten away by these pits and trenches, leaving it extremely irregular with a maze of points, grooves and ridges or lapies. Especially, these ridges or lapies form due to differential solution activity along parallel to sub¬parallel joints. The lapie field may eventually turn into somewhat smooth limestone pavements.
(vii) Caves: In areas where there are alternating beds of rocks (shales, sandstones, quartzites) with limestones or dolomites in between or in areas where limestones are dense, massive and occurring as thick beds, cave formation is prominent. Water percolates down either through the materials or through cracks andjoints and moves horizontally along bedding planes. It is along these bedding planes that the limestone dissolves and long and narrow to wide gaps called caves result. There can be a maze of caves at different elevations depending upon the limestone beds and intervening rocks. Caves normally have an opening through which cave streams are discharged. Caves having openings at both the ends are called tunnels.

27. Tropical Cyclones are low pressure systems that form over warm tropical waters. Tropical cyclones derive their energy from the warm tropical oceans and do not form unless the sea-surface temperature is above 26.5°C, although once formed, they can persist

over lower sea-surface temperatures. Tropical cyclones can persist for many days and may follow quite erratic paths. They usually dissipate over land or colder oceans. At the equator, the Coriolis force is zero and the wind blows perpendicular to the isobars. The low pressure gets filled instead of getting intensified. That is the reason why tropical cyclones are not formed near the equator. Intensive Rainfall occurs to the left of the Cyclone. Maximum rainfall occurs close to the centre of the storm. Secondary maximum of rainfall occurs 2º away from Primary maximum to the right of the storm centre. Slow moving/big size cyclones give more rainfall, whereas, fast

moving/small size ones give less rainfall. More than 90% of rainfall is limited within 200 Km radius of the storm. Torrential rain occurs in the eye of the cyclone. The strong spirally circulating wind around the centre is called the eye. The diameter of the circulating system can vary between 150 and 250 km. The eye is a region of calm with subsiding air. Around the eye is the eye wall, where there is a strong spiralling ascent of air to greater height reaching the tropopause. The wind reaches maximum velocity in this region, reaching as high as 250 km per hour. From the eye wall rain bands may radiate and trains of cumulus and cumulonimbus clouds may drift into the outer region.

Due to torrential rain, wind blowing from those regions are humid. It brings precipitation in oceanic regions. Due to torrential rains, heavy rain takes place on eastern coast of India and north east coast of China.

OR

Soil formation is the process refers to step by step procedure or methodical ways in which soil comes into existence while factors causing this formation are called soil-forming factors. Soil formation process: Soil formation is called pedogenesis. It depends on the weather the most. It is this weathering mantle which is the basic input for soil to form. The weathered material or transported deposits are colonised by bacteria and other inferior plant bodies like mosses and lichens. Several minor organisms may take shelter within the mantle and deposits. The dead remains of organisms and plants help in humus accumulation. Minor grasses and ferns may grow; later, bushes and trees will start growing through seeds brought in by birds and wind. Plant roots penetrate down, burrowing animals bring up particles, a mass of material becomes porous and sponge-like with a capacity to retain water and to permit the passage of air and finally a mature soil, a complex mixture of mineral and organic products forms

Five basic factors control the formation of soils:

i. Parent material
ii. Topography
iii. Climate
iv. Biological activity
v. Time

The role of climate and biological activity is important. The climatic elements involved in soil development are moisture and temperature. Precipitation gives water. Without water, chemical and biological activities are not possible.

Excess of water helps in the downward transportation of soil components through the soil and deposits the same down below:

i. Temperature acts in two ways-increasing or reducing biological activity.
ii. Biological activity increases in warmer temperatures. In humid tropical and equatorial climates, bacterial growth and action is intense and dead vegetation is rapidly oxidized leaving very low humus content in the soil.

28. **Monsoons:** The word monsoon is derived from the Arabic word ‘Mausam’ which means season. These monsoon winds are seasonal winds. The term was first used for the monsoon winds, blowing over the Arabian Sea. In this wind system, there is a reversal of wind direction according to seasons. In summer, monsoons blow from sea to land, and in winter monsoons blow from land to sea.

Origin: Monsoons are land and sea breezes on a large scale. These winds have a thermal origin. These are caused by the differential heating and cooling of land and water. The chain of events is from temperature through pressure and winds to rain. In summer, the land gets more heated than the sea resulting in low pressure on the landmasses and high pressure overseas. The winds blow from sea to land. In winter the conditions are reversed and winds blow from land to sea. Land wave breeze and sea-breeze follow a daily rhythm over small coastal areas, but the monsoons follow a seasonal rhythm over a large area.

The monsoons are developed under the following conditions:

i. The presence of the large landmass (continent).
ii. The presence of a large ocean.
iii. Long coastline.
iv. Seasonal extremes of the temperature of land and water.

Areas: Monsoons mostly blow in tropical areas.

The Himalayas separate these areas into two parts:

i. East Asia monsoons blowing over China, Japan, and Indo-China.

ii. Indian Monsoons of India, Pakistan, Bangla Desh, and Burma.

Summer Monsoons: The sun is vertical at the Tropic of Cancer. Rapid heating in the hot summer over Asia gives rise to the low pressure in Central Asia and Northwest India. There is high pressure over the oceans. So sea to land winds blow. These are known as S.W. Summer monsoons in India. These onshore winds give heavy and sudden rainfall, which is often termed as 4The burst of monsoon. The heavy rainfall is due to the presence of high mountains, the convectional rising of winds, and cyclonic activities. The rainfall is highly variable and uncertain. It is rightly said that the "Indian budget is a gamble on monsoons."

New Concept: According to Flohn, "The tropical monsoon is simply a modification of the general planetary wind system. The low-pressure system of Northern India is a northward extension of the equatorial low (N.I.T.C.). The S.E. Trade winds after crossing the equator become southwest during summer monsoons. During the winter N.I.T.C. (Northern Inter-Tropical Convergence) moves southward and the normal trade winds are reestablished as the N.E. winter monsoons.

Winter Monsoons: In winter the landmass of Asia becomes cold while the adjoining oceans are comparatively warm. High pressure develops over Central Asia and North-West India. It results in a reversal of wind directions so that land to sea winds blow. These are mostly dry and are known as North-East monsoon in India. After crossing the Bay of Bengal, these winds give rainfall over southeast coast of India.

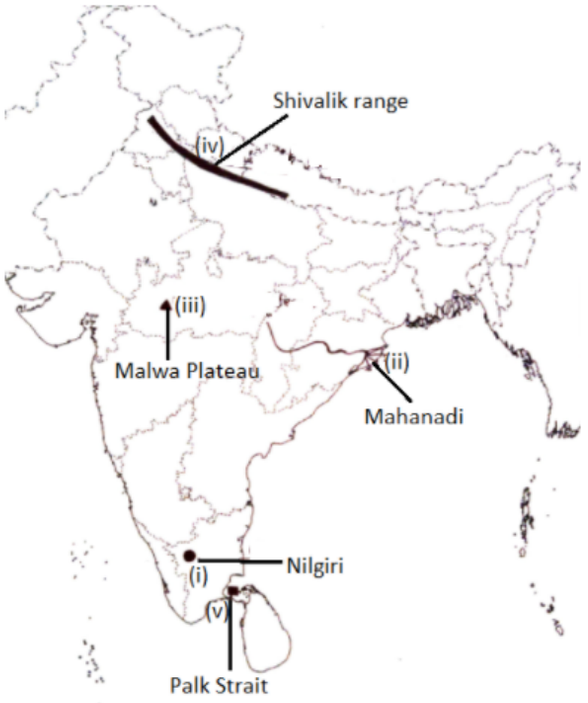
OR

The two Peninsular rivers display interesting differences in their regimes compared to the Himalayan rivers.

1. The Narmada has a very low volume of discharge from January to July but it suddenly rises in August when the maximum flow is attained. The fall in October is as spectacular as the rise in August. The flow of water in the Narmada, as recorded at Garudeshwar, shows that the maximum flow is of the order of 2,300 cusecs, while the minimum flow is only 15 cusecs. The Godavari has the minimum discharge in May, and the maximum in July-August. After August, there is a sharp fall in water flow although the volume of flow in October and November is higher than that in any of the months from January to May. The mean maximum discharge of the Godavari at Polavaram is 3,200 cusecs while the mean minimum flow is only 50 cusecs.
2. The Ganga has its minimum flow during the January-June period. The maximum flow is attained either in August or in September. After September, there is a steady fall in the flow. The river, thus, has a monsoon regime during the rainy season. There are striking differences in the river regimes in the eastern and the western parts of the Ganga Basin. The Ganga maintains a sizeable flow in the early part of summer due to snow melt before the monsoon rains begin. The mean maximum discharge of the Ganga at Farakka is about 55,000 cusecs while the mean minimum is only 1,300 cusecs.

Section D

29. i. **Nilgiri:** Located in Tamilnadu.
    ii. **Mahanadi:** Flows through the states of Chhattisgarh and Odisha.
    iii. **Malwa plateau:** Located in western Madhya Pradesh.
    iv. **Shiwalik Range:** Covers Himachal Pradesh and parts of Punjab and Haryana.
    v. **Palk Strait:** Inlet of the Bay of Bengal between southeastern India and northern Sri Lanka.



30. A. Oyashio Current

B. Australia
C. Temperate Steppe
D. Arabian plate
E. Eastern Madagascar