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Chapter - 4 Climate

2. Answer the following questions Briefly.

① What are the factors affecting the climate of India?

⇒ The factors controlling the climate of India are :

- (i) Latitude
- (ii) altitude
- (iii) Pressure and wind System
- (iv) Distance from the Sea
- (v) Relief or mountains.

3. Why does India have a monsoon type of climate?

⇒ India has a monsoon type of climate because of the strong influence of the monsoon winds over the Sub - Continent. The Summer monsoon cause heavy rainfall when they blow from Sea to land. The winter monsoon winds blow from the interior of the Continent to the Sea & do not cause much rain. There is a Seasonal reversal of the wind System 'monsoon'.

4. Which part of India does experience the highest diurnal range of temperature & why?

⇒ The Thar desert experience the highest diurnal range of temperature. This is because during the day the temperature rise to over 50°C & at night due to the absence of the Sun & lack vegetation the temperature drops to below 15°C the same night.

5. Which winds account for rainfall along the Malabar Coast?

⇒ Arabian Sea, Branch of the South West Summer Monsoons.

⑤ What are jet streams & how do they affect the climate of India?

⇒ Jet streams are a narrow belt of high altitude (above 12,000m) westerly winds in the troposphere. Their speed varies from about 110 km/h in summer to about 184 km/h in winter. A number of jet streams exist but the most constant one is the mid-latitude & the Sub-tropical westerly jet stream. The jet streams located over 27° - 30° north latitudes are known - as Subtropical westerly jet streams. These ~~jet~~ Jet streams blow south of the Himalayas through out the year except in summer. These are responsible for the western cyclonic disturbances experienced in the north & north western parts of the country. These jet streams move north of the Himalayas with the apparent migration the Sun. During the summers at about 14° N, an easterly jet streams called the Subtropical easterly jet stream blows over peninsular India.

⑥ Define monsoons. What do you understand by "break" in monsoon?

⇒ The word monsoon has been derived from the Arabic word 'mausim' which means season. In this season the winds blow from land to sea for 6 months & from sea to land for 6 months. This break in the monsoon rain takes place only for a few days at a time. These breaks are related to the movement of the monsoon trough. When the axis of the monsoon trough lies over the plains, then the rainfall is heavier there. When the trough moves towards the Himalayas, the plains are dry but there is heavy rainfall over the mountains.

⑦ Why is the monsoon considered a unifying bond?

The Subcontinent of India has a great variation in temperature conditions, despite the moderating influence exerted by other factors. The Monsoons have a unifying influence as the rainfall that is caused affects the entire country water is thus supplied for agriculture activities as well as to the rivers for use all over the country. The Monsoon thus binds the entire continent, where all wait eagerly for their arrival.

Q-③ Why does the rainfall decrease from the east to the west in Northern India?

⇒ The low-pressure area in India lies in the northwest, toward which the Southwest Monsoon winds are attracted. After depositing moisture in South India, the Bay of Bengal branch of the Southwest Monsoon strikes the Khasi-Garo Hills. After causing heavy rainfall on the windward slopes, these winds turn westwards because of the presence of the lofty Himalayas. These winds then keep depositing rainfall they go up the Ganga valley towards the low-pressure area. The rainfall deposited thus keeps on decreasing as the winds proceed from East to west in Northern India, as this is the last region to be affected by the Monsoon.

Q-④ Give reason as to why:-

(i) Seasonal reversal of wind direction takes place over the Indian Subcontinent?

⇒ Land & water are of different densities, so the rate of heating & cooling varies. The Indian Subcontinent is surrounded by water on three sides. In summer the land mass of India is warmer than the surrounding sea, therefore there is low pressure. The sea is cooler, thereby having higher pressure. So the winds blow from sea to land in winter.

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The land has high pressure while the sea has low pressure. Therefore, the winds blow towards the sea. Thus a seasonal reversal of wind direction takes place.

(ii) The bulk of rainfall in India is concentrated over a few months.
⇒ In India the bulk of the rainfall is concentrated over a few months. The main source of rainfall is the monsoon wind which blows when there is intense low pressure on the land. The surrounding water body is cool & has high pressure. This ideal temperature & pressure is caused in May, when the rain falls between June - September & it becomes cooler (high pressure). Rest of the year is practically dry.

(iii) The Tamil Nadu coast receives winter rainfall winds.
⇒ During the winter season the Tamil Nadu coast receives rain from the north east monsoon which blows from land to sea. They don't cause any rain in the northern part of the country but while crossing the Bay of Bengal they pick up moisture & cause rain on the eastern coast of South India, mainly the Tamil Nadu coast.

(iv) The delta region of the eastern coast is frequently struck by cyclones.

⇒ The delta region of the eastern coast is frequently struck by cyclones as the low pressure conditions over north western India get transferred to the Bay of Bengal by early November. This shift is responsible for the occurrence of cyclonic depressions which originate over the Andaman Sea. These then cross the eastern coast causing heavy widespread rain leading to great damage to life & property.

1. Part of Rajasthan, Gujarat & the leeward side of the western Ghats are drought-prone.

⇒ Relief / Mountains play an important role in the distribution of rainfall in India. The moisture-laden winds (Southwest Monsoons) cause heavy rain on the windward slopes of the western Ghats & Khasi-Garo hills. As the winds cross over to the leeward slopes, there is less rainfall as most of it has been deposited on the slopes facing the winds. All the area on the leeward side is deprived of rain & is drought-prone. Rajasthan also lies in the rain shadow of the Aravalli hills.

⑤ Describe the regional variations in the climatic conditions of India.

⇒ There is a great regional variation in the climatic conditions of India (mainly temperature & rainfall). In summer, the temperature rises above 50°C in some parts of Rajasthan while in Jammu & Kashmir it is about 20°C . The temperature in Deesa during winters goes down to even minus 45°C while at Thiruvananthapuram it is 22°C . The precipitation varies from over 400 cm in Meghalaya to less than 10 cm in Ladakh & western Rajasthan. While the precipitation in most of India is in the form of rain, the mountains experience snowfall. The larger part of the country receives rain between June to September. Parts of Tamil Nadu receive rain between November to December. Coastal regions have a moderate climate whereas areas in the interior have an extreme or continental climate.

⑥ Discuss the mechanism of Monsoon.

⇒ The following facts are important to understand the mechanism of the Monsoon.

- 1) The difference in the heating & cooling rate of land & water bodies in Summer there is low pressure on the land & high pressure in the Sea.
- 2) The Shift of the position of the Inter. Tropical Convergence Zone in Summer over the Northern plains (its normal position is about 5°N of the Equator)
- 3) The presence of the high-pressure area, east of Madagascar, affects the Indian Monsoons.
- 4) The intense heating of the Tibetan plateau in Summer causing low pressure
- 5) The Movement of the westerly & easterly jet Streams over the Indian peninsula during Summer.

⑦ Give an account of weather conditions & characteristics of the cold seasons.

→ During the Cold Season, the skies are clear, temperature & humidity are low & the winds are feeble & variable. The temperature is higher in the South due to the moderating influence of the Sea but decreases as one goes northwards where it ranges between 10° & 15°C . Frost is common in the north & there is snowfall in the higher slopes of the Himalayas. Winds blow from land to Sea & are dry except when they pick up moisture from the Bay of Bengal & cause rainfall in Tamil Nadu.

A characteristic feature of the cold weather season is the

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cause it was a new experience

hesitated to eat food with the family because he felt he was not

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Low-pressure system which enters northwest India from the Mediterranean Sea. These are also known as the temperate or westerly depression cyclones & cause winter rain & snowfall in the hills/mountains. The rain is beneficial for the growth of 'Rabi' crops.

- ③ Give the characteristics & effects of the monsoon rainfall in India
- ⇒ The Monsoon rain has certain characteristics which make it unique.
- (a) Monsoon winds are unreliable, as the exact time of arrival & departure is not the same year after year.
 - (b) The rainfall is unevenly distributed. Certain areas receive heavy rainfall (windward and slopes of the western ghats) while in other areas the rainfall is less (Thar Desert). Causing floods & droughts.
 - (c) The Monsoon rain is concentrated within the three months (June - September) of the year while the rest of the year is more or less dry.
 - (d) There is a seasonal reversal of winds. Then Monsoon rains are important in India's its effect can be seen when they arrive. All over the country people eagerly wait for its arrival. The farmers are ready to sow their seeds & the agricultural ~~activities~~ activities begin. Water is provided to the rivers which carry it to different parts of the country. Plants & animals rejuvenate with the coming of the Monsoon. The supply of water through rivers is very important for the generation of power.