

Answer the following questions.

1. What are the controls affecting the climate of India.

Ans- There are six major controls of the climate of any place. They are -:

- (i) Latitude.
- (ii) Altitude.
- (iii) Pressure and wind system.
- (iv) Distance from the sea (continentality)
- (v) Ocean currents.
- (vi) Relief features.

2. Why does India have monsoon type of climate?

Ans- The monsoon type of climate is characterised by a distinct seasonal pattern. The weather conditions greatly change from one season to the other. These changes are particularly noticeable in the interior parts of the country. The coastal areas do not experience much variation in temperature though there is variation in rainfall patterns.

Four main seasons can be identified in India - The cold weather season, The hot weather season, the advancing monsoon, and the retreating monsoon with some regional variations.

3. Which winds account for rainfall along the Malabar Coast.

Ans- Surface winds account for rainfall along the Malabar Coast.

4. What are Jet Streams and how do they affect the climate of India.

Ans- Jet streams are a narrow belt of high altitude (above 12,000 m) 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 separate jet streams have been identified. The most constant is the mid-latitude and the subtropical jet stream. Over India, these jet streams blow south of the Himalayas, all through the year except in summer. The western cyclonic disturbances experienced ~~disturbances~~ in north and

northwestern parts of the country are brought in by the westerly flow. In summer, the subtropical westerly jet stream moves north of the Himalayas with the apparent movement of the Sun. An easterly jet stream, called the tropical easterly jet stream blows over peninsular India, approximately over 14°N during the summer months.

5. Define monsoon. What do you understand by "breaks in monsoon".

Ans. The seasonal reversal in wind direction during a year is called monsoon. Monsoon tends to have 'breaks' in rainfall; which means that there are wet and dry spells in between. The monsoon rains take place only for a few days at a time and then come to rainless intervals.

6. Why is monsoon considered an unifying bond?

Ans- Despite great moderating influences on the climate of India, there are great variations in the temperature conditions. Nevertheless, the unifying influence of the monsoon on the Indian Subcontinent is quite perceptible. The seasonal alteration of wind systems and the associated weather conditions provide a rhythmic cycle of seasons.

7. Why does the rainfall decrease from East to west in Northern India?

Ans- The western coast and northeastern India receives over about 400 cm of rainfall annually. However, it is less than 60cm in western Rajasthan and adjoining parts of Gujarat, Haryana and Punjab. Rainfall is equally low in the interior of the Deccan Plateau, and east of Sahyadris. The third area of low precipitation is around Leh in Jammu and Kashmir. The rest of the country receives moderate rainfall.

Snowfall, is restricted to the Himalayan region. Owing to the nature of monsoon the annual rainfall is highly variable from year to year. Variability is high in the regions of low rainfall such as parts of Rajasthan, Gujarat and leeward side of the Western Ghats. As such, while areas of high rainfall such as parts of Rajasthan, Gujarat and the leeward side of the Western Ghats. As such, while areas of high rainfall are liable to be affected by floods, areas of low rainfall are drought prone.

8. Give reasons

(i) The bulk of rainfall in India is concentrated over a few months.

Ans- The bulk of rainfall in India is concentrated over a few months. The inflow of the south-west monsoon into India brings about a total change in the weather. Early in the season, the windward side of the Western Ghats receive very heavy rainfall, more

than 250 cm. The Deccan Plateau and parts of Madhya Pradesh also receive some amount of rain in spite of lying in the rain shadow area. The maximum rainfall of this season is received in the north-eastern part of the country. Mawsynram in the southern ranges of the Khasi Hills receives the highest average rainfall in the world. Rainfall in the Ganga Valley decreases from the East to West. Rajasthan and parts of Gujarat get scanty rainfall.

(ii) The Tamil Nadu coast receives winter rainfall.
Ans 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 the westerly flow. They cause the much needed winter rain over the plains and snowfall in the mountains. Although the total amount of winter rainfall locally known as 'mahawat'

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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 patterns during ~~the~~ winters due to moderating influence of the sea.

(iii) The Delta region of the Eastern Coast is frequently struck by cyclones

Ans - The low-pressure conditions, over Northwestern India, get transferred to the Bay of Bengal by Early November. This shift is associated with the occurrence of cyclonic depressions, which originate over the Andaman sea. These cyclones generally cross the eastern coasts of India cause heavy and widespread rain. These tropical cyclones are often very destructive. The thickly populated deltas of the Godavari, the Krishna and the Kaveri are frequently struck by cyclones, which caused great damage to life and property. Sometimes, these cyclones arrive at the coasts of Odisha, West Bengal and Bangladesh.

(iv) Parts of Rajasthan, Gujarat and leeward side of Western Ghats are drought prone. Owing to the nature of Monsoons, the annual rainfall is highly variable from year to year. Variability is high in the regions of low rainfall such as parts of Rajasthan, Gujarat and the leeward side of Western Ghats. As such, while areas of high rainfall are liable to be affected by floods, areas of low rainfall are drought prone.

9. Describe the regional variations in the climatic conditions of India with the help of suitable examples.

Ans - Despite an overall unity in the general pattern there are perceptible regional variations in climatic conditions within the country. The two important elements, which cause this variations, are - temperature and precipitation. For example, in Summer, the mercury occasionally touches 50°C in some parts of the Rajasthan Desert, whereas it may be around 20°C in

Pahalgam in Jammu and Kashmir. On a winter night, the temperature at Drass in Jammu and Kashmir may be as low as minus 45°C . Tiruvanthapuram, on the other hand, may have a temperature of 20°C .

10. Discuss the mechanism of monsoon.

Ans - To understand the mechanism of monsoons, the following facts are important -:

⇒ The differential heating and cooling of land and water to create a low pressure on the landmass of India while the seas around experience comparatively high pressure.

⇒ The shift in the position of ITCZ in summer, over the Ganga plain.

⇒ The presence of the high-pressure area, east of Madagascar, approx. 20°S over the Indian Ocean. The intensity and position of this high pressure area affect the Indian monsoon.

⇒ The Tibetan plateau gets insanely overheated during summer, which results in strong

vertical air currents and the formation of high pressure over the plateau at about 9 km above sea level.

⇒ The ~~movement~~ movement of the westerly jet stream to the North of the Himalayas and the presence of the tropical easterly jet stream over the Indian peninsula during summer.

11. Give an account weather conditions and characteristics of the cold season.

Ans - The weather conditions greatly change from one season to the other. These changes are particularly noticeable in the interior parts of the country. The coastal areas do not experience much variation in temperature though there is variation in rainfall patterns. The cold weather seasons 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 the South to the North. The average temp. of Chennai, on the

Eastern coast is between 24°-25° Celsius, while in the northern plains, it ranges between 10°-15° Celsius. Days are warm and nights are cold. Frost is common in the North and the higher slopes of Himalayas experience snowfall.

12. Give the characteristics and effects of the monsoon rainfall in India.

Ans ⇒ The duration of the monsoon is between 100-200 days from Early June to mid-September.

⇒ Around the time of its arrival, the normal rainfall increases suddenly and continues for several days. This is known as the 'burst' of the monsoon.

⇒ The monsoon has characteristic wet and dry spells or 'breaks' in rainfall. The monsoon rains take place only for a few days at a time. They are interspersed with rainless intervals.

⇒ The moisture is carried ~~and~~ by pulsating South westerlies that are

affected by different atmospheric conditions, thereby giving monsoon rains an uncertain character.

The annual rainfall is highly variable from ~~time to time~~ year to year.

⇒ The rainfall is unevenly distributed across the Indian landscape. Parts of the western coast and north-eastern ~~coast~~ India receive the maximum rainfall. Regions such as parts of Rajasthan, Gujarat, Leh and the leeward side of the Western Ghats receive very little rainfall.

Effects of monsoon rainfall in India are -

⇒ Indian Agriculture is largely dependent upon the water from the monsoon rains. Late, low or excessive rains have a negative impact upon crops.

⇒ Due to uneven distribution of rainfall across the country, there are some

regions that are drought prone and some that are flood afflicted.

⇒) The monsoon provides India with a distinct climatic pattern. Hence, in spite of the presence of great regional variations, it has a unifying influence upon the country and its people.