

Long Answer Questions

Q.1. What are the variations in precipitation in India?

Ans. (i) There are variations not only in the form and types of precipitation but also in its amount and the seasonal distribution.

(ii) Precipitation is mostly in the form of snowfall in the upper parts of the Himalayas but it rains over the rest of the country.

(iii) The annual precipitation varies from 400 cm in Meghalaya to less than 10 cm in Ladakh and western Rajasthan.

(iv) Most parts of the country receive rainfall from June to September but some parts like the Tamil Nadu coast gets most of its rains during October and November.

Q.2. What are the six major controls of the climate of the world?

Ans. (i) Latitude: Due to the round shape of the Earth, the amount of solar energy received varies according to latitude. As a result, air temperature decreases from the equator towards the poles.

(ii) Altitude: As one moves up to the higher altitudes, the atmosphere becomes less dense and temperature decreases. Therefore, hills are the cooler during summers.

(iii) Pressure and winds: Pressure and wind system of an area depend on the latitude and altitude of the place. Thus, it influences the temperature and rainfall pattern.

(iv) Distance from the sea: If the region is close to the sea, it makes the temperature moderate but if it is away from the sea, it experiences extreme weather conditions.

(v) Ocean currents: Ocean currents along with the onshore winds affect the climate of a coastal area. Any coastal area with warm or cold currents flowing fast, it will become warm or cold if the winds are onshore.

(vi) Relief: High mountains act as barriers for cold and hot winds. They may also cause precipitation if they lie in the path of rain-bearing winds. The leeward side of mountains remains dry, whereas the windward side is able to receive rain.

Q.3. State how the pressure and wind conditions over India are unique.

Ans.

- During winter, a high pressure area develops north of the Himalayas.
- Cold dry winds blow from this region to the low pressure areas over the oceans to the south.
- In summer, a low pressure area develops over interior Asia as well as over northwestern India.
- This causes a complete reversal of the direction of winds during summer.
- Air moves from the high pressure area over the southern Indian ocean in a south-westerly direction, crosses the equator and turns right towards the low pressure area over the Indian sub-continent.
- These winds are known as south-west monsoon winds.
- These winds blow over the warm oceans, gather moisture and bring widespread rainfall over the mainland of India. State how the pressure and wind conditions over India are unique.

Q4. What do you understand by the phenomenon of ENSO?

Ans. (i) Normally, when the tropical eastern south pacific ocean experiences high pressure, the tropical eastern Indian Ocean experiences low pressure.

(ii) But in certain years, there is a reversal in the pressure conditions and the eastern pacific has low pressure in comparison to the Indian Ocean.

(iii) This periodic change in pressure conditions is known as Southern Oscillation (SO).

(iv) The difference in pressure over Tahiti, in the Pacific Ocean and Darwin in northern Australia is computed to predict the intensity of the monsoon.

(v) A feature connected with the SO is the El Niño, a warm ocean current that flows past the Peruvian coast, in place of the cold Peruvian current every 2 to 5 years.

(vi) The changes in pressure conditions are connected to the El Nino. Hence, the phenomenon is referred to as ENSO (El Nino Southern Oscillations).

Q.5. How does the process of withdrawal of monsoon take place in India?

Ans. (i) Withdrawal or the retreat of monsoon is a more gradual process.

(ii) The withdrawal of the monsoon begins in the northwestern states of India, by early September.

(iii) By mid-October, it withdraws completely from the northern half of the peninsula.

(iv) The withdrawal from the southern half of the peninsula is fairly rapid.

(v) By early December, the monsoon withdraws from the rest of the country.

Q.6. What is the role of 'western disturbances' in the Indian climate?

Ans. (i) A characteristic feature of the cold weather season over the northern plains is the inflow of cyclonic disturbances from the west and the northwest.

(ii) These low pressure systems originate over the Mediterranean sea and Western Asia and move into India, along with easterly flow.

(iii) They cause the much needed winter rains over the plains and snowfall in the mountains.

(iv) Although the total amount of winter rainfall, locally known as 'Mahawat' is small, it is very useful for rabi crops.

These winds are called western disturbances since they came from the western part of India.

Q.7. State the chief characteristics of the hot weather season in India.

Ans. (i) India experiences the hot weather season from the month of March to May.

(ii) The temperature in the northern plains of India is between 42 to 45°C and in the Deccan plateau, between 35 to 38°C.

(iii) Towards the end of May, an elongated low pressure area develops in the region extending from the Thar Desert to Patna and Chotanagpur plateau.

(iv) During the hot weather season, strong, gusty, hot, dry winds known as the 'Loo' blows. Direct exposure to these winds may even prove to be fatal.

(v) Dust storms are very common during the month of May in northern India. These storms bring temporary relief as they lower the temperatures.

(vi) This is also the season of localised thunderstorms associated with violent winds and torrential rains known as Kaal Baisakhi in West Bengal.

Q.8. Give a brief account of how monsoons advance into India.

Ans. (i) In early June, the low pressure conditions over the northern plains intensify.

(ii) These south-east trade winds cross the equator and blow in south-westerly direction, entering the Indian peninsula as the south-west monsoons.

(iii) As these winds blow over warm oceans, they bring abundant moisture to the sub-continent.

(iv) These winds are strong and blow at an average velocity of 30 km per hour.

(v) Early in the season, the windward side of the Western Ghats receives very heavy rainfall, more than 250 cm.

(vi) The maximum rainfall of this season is received in the northeastern part of the country. Mawsynram in Khasi Hills receives the highest average rainfall in the world.

(vii) Rainfall in the Ganges valley decreases from east to the west Rajasthan and parts of Gujarat get scanty rainfall.

Q.9. Give a brief account of the condition and characteristics of the retreating monsoons.

Ans.

- This is the transition period during the months of October and November.
- With the apparent movement of the Sun towards the south, the low pressure trough over the northern plains becomes weaker. This is gradually replaced by a high pressure system.
- The south-west monsoon winds weaken and start withdrawing gradually.
- By the beginning of October, the monsoon withdraws from the northern plains.
- The months of October and November form a period of transition from hot rainy season to dry winter conditions.
- When monsoons retreat, skies get clear and the temperature rises.
- While day temperatures are high, nights are cool and pleasant. The land is still moist.
- Owing to the conditions of high temperature and humidity, the weather becomes oppressive during the day. This is commonly known as October Heat.
- The low pressure conditions get transferred to the Bay of Bengal by early November.
- The cyclonic depressions originate from the Andaman Sea and cause heavy and widespread rains on the eastern coast.

- These tropical cyclones are often very destructive and affect the coast of Odisha, West Bengal and Bangladesh.

Q.10. What is the distribution of rainfall in India?

Ans. (i) The western coast and northeastern India receive rainfall of over about 400 cm.

(ii) It is less than 60 cm in western Rajasthan and adjoining parts of Gujarat, Haryana and Punjab.

(iii) Rainfall is equally low in the interiors of the Deccan plateau and east of the Sahyadris.

(iv) A third area of low precipitation is around Leh in Jammu and Kashmir.

(v) The rest of the country receives moderate rainfall.

(vi) Snowfall is restricted to the Himalayan region.

Q.11. Differentiate between South West (S.W.) monsoons and North East (N.E.) monsoons.

Ans.

S.N o.	S.W. Monsoons (Advancing monsoon)	N.E. Monsoons (Retreating Monsoon)
1.	They blow from south-west to north-east from June to September.	They blow from north-east to south-west from the month of Dec., Jan. and Feb.
2.	These are onshore humid winds because they blow from sea to land.	These are offshore dry winds because they blow from land to sea.
3.	These are warm winds as they come from lower latitudes near equator.	They are rather cool winds.
4.	These warm and humid winds cause widespread rainfall.	These cold and dry offshore winds give no rains to India except Coromandel coast.
5.	These winds are known for their vagaries or uncertainties.	They do not suffer from the vagaries.

Q.12. Why do the north-east trade winds change their direction while blowing through the Ganga valley?

Ans. (i) A feeble high pressure area develops over the north-western part of India in the cold weather season. Light winds begin to blow outwards.

(ii) These dry north-westerlies winds come in contact with the Indian trades (north-easterlies) over the Ganga valley.

(iii) The direction of north-easterlies changes as a result of this contact as well as under the influence of topography.

(iv) Their direction is north-westerlies down the Ganga valley and northerlies over the Ganga-Brahmaputra Delta.

(v) Over the Bay of Bengal, the trade winds retain their original north-easterlies direction, as they are free from the influence of any topography over the sea.

Q.13. Why are the deltas of the Krishna, Kaveri and Godavari frequently struck by cyclones?

Ans. (i) The low pressure conditions over north-western India, get transferred to the Bay of Bengal by early November.

(ii) This shift is associated with the occurrence of cyclonic depressions which originate over the Andaman Sea.

(iii) These cyclones generally cross the eastern coasts of India and cause heavy and widespread rains.

(iv) These tropical cyclones are often very destructive.

(v) The thickly populated deltas of the Godavari, the Krishna and the Kaveri are frequently struck by cyclones, which cause great damage to life and property.

(vi) Sometimes, these cyclones arrive at the coasts of Odisha, W. Bengal and Bangladesh. The bulk of rainfall of the Coromandel coast is derived from depression and cyclones.

Q.14. Which part of India experiences the highest diurnal range of temperature and why?

Ans. (i) Diurnal range of temperature is the difference between maximum and minimum temperature of a day.

(ii) Diurnal range of temperature is high in desert regions like Rajasthan, Thar Desert and interior parts of Rann of Kutch.

(iii) In these sandy areas, the day temperature may rise to 50° and drop down to near freezing point the same night.

(iv) It is so because the sand absorbs heat very fast during day and loses heat very fast at night.

Q.15. Give reasons why parts of Rajasthan, Gujarat and the leeward side of the Western Ghats are drought prone.

Ans. (i) Western Rajasthan and part of Gujarat are desert type regions with extreme climate. Intense thermal heating makes the desert land very dry.

(ii) The Arabian Sea branch runs parallel to Aravallis, providing no barriers to the clouds, leaving it again a dry region.

(iii) The Bay of Bengal branch is unable to reach up to western part and in winters even western disturbances also hardly give any rains to this region.

(iv) The leeward side of the Western Ghats also lies in the rainshadow of S.W. monsoon.

(v) With the result, regions lying at the same latitude are unable to receive rains, if they are on the leeward side of the Western Ghats.

Q.16. Have you heard of onset of monsoons? How does it take place in India?

Ans. (i) With the arrival of monsoon, the normal rainfall increases suddenly and carries on for several days.

(ii) This is also known as 'burst of monsoon' and can be distinguished from the pre-monsoon showers.

(iii) The monsoon arises at Southern tip of Indian peninsula generally by the first week of June approximately.

(iv) Then it gets divided into two—The Arabian Sea branch and Bay of Bengal branch.

(v) Then it starts moving upwards, the Arabian Sea branch reaches Madhya Pradesh/U.P. in about ten days.

(vi) The Bay of Bengal branch also advances rapidly and arrives in Assam in the first week of June.