

1. Which one of the following places receives the highest rainfall in the world:

- (a) Silchar (b) Mawsynram
(c) Cherrapunji (d) Guwahati

Ans: Mawsynram

2. The wind blowing in the northern plains in summers is known as :

- (a) Kal Baisakhi (b) Loo
(c) Trade Winds (d) None of the above

Ans: Loo

3. Which one of the following causes rainfall during winters in north-western part of India?

- (a) Cyclonic depression (b) Retreating monsoon
(c) Western disturbances (d) Southwest monsoon

Ans: Western disturbances

4. Monsoon arrives in India approximately in :

- (a) Early May (b) Early July
(c) Early June (d) Early August

Ans: Early June

5. Which one of the following characterizes the cold weather season in India?

- (a) Warm days and warm nights (b) Warm days and cold nights
(c) Cool days and cold nights (d) Cold days and warm nights

Ans: Cold days and cold nights

6. What are the controls affecting the climate of India ?

Ans: There are six major controls of the climate of any place. They are: latitude, altitude, pressure and wind system, distance from the sea (continentality), ocean currents and relief features.

7. Why does India have monsoon types of climate?

Ans: India has a monsoon type of climate because :

- (i) It is strongly governed by the monsoon winds.
- (ii) Pre-monsoon, monsoon and post-monsoon duration is called here seasons.
- (iii) India exists in the tropical area (viz. half of it is lying at south to the Tropic of Cancer between 23.5°N and 8°4'N).
- (iv) Here are atmospheric conditions of pressure and surface winds, upper air circulation and western disturbances and tropical cyclones.

(v) Here is an active coriolis force that deflects winds towards the right in the Northern Hemisphere and left in the southern Hemisphere.

(vi) Here acts the ENSO (El Nino Southern Oscillations).

8. Which part of India does experience the highest diurnal range of temperature and Why ?

Ans. The Thar desert region of Rajasthan experiences the highest diurnal range of temperature because it is in the interior part where the contrasts in temperature are very high.

9. Which winds account for rainfall along the Malabar coast ?

Ans. The South west monsoon winds give rainfall along the Malabar coast.

10. What are Jet streams and how do they affect the climate of India?

Ans: (i) These are fast blowing winds that blow above 12,000 metres, over the troposphere. These are actually, westerly winds blowing at higher altitude. Their velocity (speed) recorded in summer is about 110 km/h and about 184 km/h. in winter. These blow at the mid-latitude and over sub-tropical regions (north half of India).

(ii) Westerly jet streams pulls the cyclonic disturbances, called, western disturbances to the east which causes rainfall in the north India during winters. These streams are located over $27^{\circ} - 30^{\circ}$ north latitude. These create westerly disturbances. These disturbances are formed in the north and north-western parts (i.e. Punjab, Haryana, U.P., Delhi, Gujarat and Mumbai) of India. These are called the sub-tropical westerly jet streams.

(iii) In summer, these move towards extreme north and therefore, replaced by an easterly jet stream called the tropical easterly jet. These do heavy rain over peninsular India consisting of coastal plains. Western and Eastern Ghats, Central Highland and Deccan plateau bloc.

11. Define monsoons. What do you understand by “break” in monsoon?

Ans: Monsoons are generally rain bearing local winds. This term has been derived from the Arabic word “mausim” first used by the Arab traders who used to come India for trading through sea routes. It means season. We therefore, can state them seasonal reversal of the wind system in monsoon.

Break in Monsoon: Rains taking place only for a few days at a time is called “Break Monsoon”. In brief, the intermissions amid raining is break monsoon. It is related to the movement of the monsoon trough.

12. Why is the monsoon considered a unifying bond?

Ans: (i) The term “unifying bond” implies an attachment or affection of

something with another. Such conditions are formed when we talk of monsoon's attachment with India.

- (ii) This arrangement also ensures a moderate temperature in India. Again the seasonal reversal of the wind system provides a rhythmic cycle of seasons.
- (iii) India's folk songs, lore, stories, manner of dress and diet etc. are related to the monsoon.
- (iv) Entire agricultural calendar is based on monsoon. Farmer eagerly waits for monsoon to sow their kharif crops. Hence, we can state that monsoon in India acts as a unifying bound.

13. Why does the rainfall decreases from east to the west in Northern India ?

- Ans.**
- (i) The Southwest Monsoon winds cross the warm water of Bay of Bengal and give good rainfall to west Bengal and proceeds through the Ganga Plains towards the west.
 - (ii) As it proceeds towards Punjab and Haryana in the west the winds decreases in moisture content as on the way They shed off their moisture and thus the rainfall decreases from the east towards west in Northern India.

14. Seasonal reversal of wind direction takes place over the Indian Subcontinent. Give reasons.

- Ans.**
- (i) The pressure and wind conditions over India are unique.
 - (ii) During winter, there is a high-pressure area north of the Himalayas.
 - (iii) Cold dry winds blow from this region to the low-pressure areas over the oceans to the south.
 - (iv) In summer, a low-pressure area develops over interior Asia as well as over northwestern India.
 - (v) 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-easterly direction, crosses the equator, and turns right towards the low-pressure areas over the Indian subcontinent.
 - (vi) These are known as the Southwest Monsoon winds.
 - (vii) These winds blow over the warm oceans, gather moisture and bring widespread rainfall over the mainland of India.

15. The bulk of rainfall in India is concentrated over a few months. Give reasons.

- Ans.**
- (i) By early June, the low-pressure condition over the northern plains intensifies.

- (ii) It attracts, the trade winds of the southern hemisphere. These south-east trade winds originate over the warm subtropical areas of the southern oceans.
- (iii) They cross the equator and blow in a south- westerly direction entering the Indian peninsula as the south-west monsoon.
- (iv) As these winds blow over warm oceans, they bring abundant moisture to the subcontinent.
- (v) These winds are strong and blow at an average velocity of 30 km per hour.
- (vi) With the exception of the extreme north-west, the monsoon winds cover the country in about a month.

16. Tamil Nadu receives winter rainfall. Give reasons.

- Ans.**
- (i) During the winter season the temperature decreases from south towards the north.
 - (ii) During this season the northeast trade winds prevail over the country.
 - (iii) These winds blow from land towards sea and are thus dry winds.
 - (iv) When these winds blow over the Bay of Bengal they collect moisture and they give rain only to the eastern parts of Tamil Nadu and Andhra Pradesh.
 - (v) Thus Tamil Nadu receives winter rainfall.

17. The delta region of the east coast is frequently struck by cyclones. Give reasons.

- 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 depression which originate over the Andaman sea.
 - (iii) These cyclones generally cross the eastern coasts of India cause heavy and widespread rain.
 - (iv) These tropical cyclones are very often destructive.

18. Parts of Rajasthan, Gujarat and the leeward side of the Western Ghats are drought prone. Give reasons.

- Ans.**
- (i) The S. W monsoon winds enter the west coast of India but are obstructed by the north-south extent of western ghats.
 - (ii) These winds rise upwards and give good amount of rainfall to the windward side of western ghats.

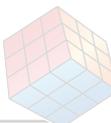
- (iii) When these winds cross the western ghats towards the leeward side they have very less moisture and they descend thus the temperatures increases and also the moisture retaining capacity also increases.
- (iv) Thus the rainfall decreases so on the leeward side of the western ghats drought prone area came into existence.
- (v) In Rajasthan and Gujarat the winds run almost parallel to the Aravallis and thus the rain is low.

19. Discuss the mechanism of monsoons.

Ans: Mechanism of Monsoons: The term mechanism denotes arrangement or pattern of something duly observed and recorded. India falls in monsoon type of climate owing to its location in south and southern Asia region. This region is called tropical region between 20°N and 20°S . Monsoons denote seasonal reversal in the wind during the year.

- (i) The differential heating and cooling of land and water creates low pressure on the landmass of India while the seas around experience comparatively high pressure.
- (ii) The shift of the position of Inter Tropical convergence Zone (ITCZ) in summer, over the Ganga plain (this is the equatorial trough normally positioned about 5°N of the equator. It is also known as the monsoon trough during the monsoon season).
- (iii) The presence of the high-pressure area, east of Madagascar approximately at 20°S over the Indian Ocean. The intensity and position of this high-pressure area affects the Indian Monsoon.
- (iv) The Tibetan plateau gets intensely heated during summer, which results in strong vertical air currents and the formation of low pressure over the plateau at about 9 km above sea level.
- (v) The 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.
- (vi) Normally when the tropical eastern South Pacific Ocean experiences high pressure, the tropical eastern Indian Ocean experiences low pressure. But in certain years, there is a reversal in the pressure conditions and the eastern Pacific has lower pressure in comparison to the eastern Indian Ocean. This periodic change in pressure conditions is known as the Southern Oscillation or SO. If the pressure difference is negative it would mean monsoon will be late and below average.

- (vii) A feature connected with the SO is the El Nino event during which a warm ocean current that flow past the Peruvian Coast, in place of the cold Peruvian current, every 2 to 5 years. The changes in pressure conditions are connected to the El Nino. Hence, the phenomenon is referred to as ENSO (El Nino Southern Oscillations).

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