

4. Climate

1. Choose the right answer from the four alternatives given below

(i) What causes rainfall on the coastal areas of Tamil Nadu in the beginning of winters?

- (a) South-West monsoon**
- (b) Temperate cyclones**
- (c) North-Eastern monsoon**
- (d) Local air circulation**

Answer: (c) North-Eastern monsoon

(ii) What is the proportion of area of India which receives annual rainfall less than 75 cm?

- (a) Half**
- (b) One-third**
- (c) Two-third**
- (d) Three-fourth**

Answer: (b) One-third

(iii) Which one of the following is not a fact regarding South India?

- (a) Diurnal range of temperature is less here.**
- (b) Annual range of temperature is less here.**
- (c) Temperatures here are high throughout the year.**
- (d) Extreme climatic conditions are found here.**

Answer: (d) Extreme climatic conditions are found here.

(iv) Which one of the following phenomenon happens when the sun shines vertically over the Tropic of Capricorn in the southern hemisphere?

- (a) High pressure develops over North-western India due to low temperatures.**
- (b) Low pressure develops over North-western India due to high temperatures.**
- (c) No changes in temperature and pressure occur in north-western India.**
- (d) 'Loo' blows in the North-western India.**

Answer: (a) High pressure develops over North-western India due to low temperatures.

(v) In which of the following states in India do we find 'As' type of climate as per Koeppen's classification?

- (a) In Kerala and coastal Karnataka**
- (b) In Andaman and Nicobar Islands**
- (c) On Coromandel Coast**
- (d) In Assam and Arunachal Pradesh**

Answer: (c) On Coromandel Coast

2. Answer the following questions in about 30 words

(i) What are the three important factors which influence the mechanism of Indian weather?

Answer:

- a. Distribution of air pressure and winds on the surface of the earth.
- b. Upper air circulation caused by factors controlling global weather and the inflow of different air masses and jet streams.
- c. Inflow of western disturbances during the winter season and tropical depressions during the south-west monsoon period into India, creating weather conditions favorable to rain

(ii) What is the Inter-Tropical Convergence Zone?

Answer: Inter-Tropical convergence Zone is a low pressure zone located at equator where trade winds converge and the air tends to ascend.

(iii) What is meant by 'bursting of monsoon'? Name the place of India which gets the highest rainfall.

Answer: Bursting of monsoon refers to the sudden change in weather conditions during the southwest monsoon, characterized by an abrupt rise in the mean daily rainfall in India during the monsoon season. Mawsynram, located in the crest of Khasi hills in Meghalaya, receives the highest rainfall in the world.

(iv) Define 'climatic region'? What are the bases of Koeppen's classification?

Answer: A climatic region generally possesses a broad uniformity in climatic conditions caused by the combined effect of climatic factors. Koeppen's regions are based on the monthly values of temperature and precipitation.

(v) Which type(s) of cyclones cause rainfall in north-western India during winter? Where do they originate?

Answer: Cyclones known as western disturbances cause rainfall in north-western India during winter. These cyclones originate in the Mediterranean Sea.

3. Answer the following questions in not more than 125 words.

(i) Notwithstanding the broad climatic unity, the climate of India has many regional variations. Elaborate this statement giving suitable examples.

Answer: The climate of India has many regional variations, expressed in the pattern of temperature, winds and rainfall, rhythm of seasons, etc. The main examples of diversities in the monsoonal unity of Indian climate are following:

- Jaisalmer in Rajasthan may record a temperature of 50°C or more on a June day while the mercury hardly touches 19°C in Tawang (Arunachal Pradesh) on the same day.
- On a December night, the temperature may dip to – minus 45°C at Drass in Jammu and Kashmir, while it may be as high as 20°C-22°C at Thiruvananthapuram.
- Mawsynram receives 1080 cm of annual rainfall, while Jaisalmer in Rajasthan rarely gets more than 9 cm of rainfall during the same period.
- Cities like Hyderabad, Bhubaneswar and Patna get rains by the first quarter of June, while cities like Agra, Delhi and Chandigarh are awaited rain till the end of June or early July.
- In Kerala, the difference between day and night temperatures may be hardly 10 degree Celsius, but in the Thar Desert it may be 35°C.
- Most parts of the India get rainfall during June- September, but on the coastal areas of Tamil Nadu get rainfall in the beginning-of the winter season.

(ii) How many distinct seasons are found in India as per the Indian Meteorological Department? Discuss the weather conditions associated with any one season in detail.

Answer: The Indian Meteorological Department has recognised the following four seasons:

- a. The cold weather season
- b. The hot weather season
- c. The South-West monsoon season
- d. The retreating monsoon season.

The summer Season: It starts in the month of April and continues till the end of June. During these months, the days are long and nights are short. In the Northern plains, very hot winds called loo blow and cause dust storms. The southern part of India, specially the coastal areas of India, is less hot. The sea breeze keeps the temperatures low. The Thar Desert in Rajasthan and the western part of Gujarat is extremely hot. Dust storms occur almost every day in the

desert areas. The mountainous states like Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and north eastern states of India have a cool climate during this time of the year. The weather in this season is characterised by feeble high pressure conditions over the northern plain. As a result, winds start blowing from northwestern high pressure zone to the low air pressure zone over the Indian Ocean in the south. Western disturbances from the Mediterranean Sea cause rainfall in Punjab, Haryana, Delhi and western Uttar Pradesh. Northeast monsoon while crossing over the Bay of Bengal, picks up moisture and causes torrential rainfall over the Tamil Nadu coast, southern Andhra Pradesh, southeast Karnataka and southeast Kerala.