

CLIMATE

TEXTUAL EXERCISE:

1. Choose the correct answer from the four alternatives given below.
 - (i) Which one of the following places receives the highest rainfall in the world?
 - (a) Silchar
 - (b) Mawsynram
 - (c) Cherrapunji
 - (d) GuwahatiA. (b) Mawsynram
 - (ii) The wind blowing in the northern plains in summers is known as:
 - (a) Kaal Baisakhi
 - (b) Loo
 - (c) Trade Winds
 - (d) None of the aboveA. (b) Loo
 - (iii) 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 monsoonA. (c) Western disturbances
 - (iv) Monsoon arrives in India approximately in:
 - (a) Early May
 - (b) Early July
 - (c) Early June
 - (d) Early AugustA. (c) Early June
 - (v) Which one of the following characterises 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 nightsA. (b) Warm days and cold nights
2. Answer the following questions briefly.
 - (i) What are the controls affecting the climate of India?
 - A. There are six major controls of the climate of any place. They are:
 1. Latitude
 2. Altitude
 3. Pressure and wind system
 4. Distance from the sea
 5. Ocean currents
 6. Relief features
 - (ii) Why does India have a monsoon type of climate?
 - A. Our country India has a monsoon type of climate because the Indian climate is influenced by the winds which are called monsoon winds. This type of climate is based on distinct seasons and the reversal of monsoon winds. The monsoon climate occurs because of the differential heating of the land and water bodies. Air crosses the equator and turns right to the low pressure zone over the subcontinent of India after moving from a high pressure area over the southern Indian ocean. When these winds blow over the warm oceans, they pick up moisture from these oceans and pick up moisture from them and this results in rainfall in India

- (iii) Which part of India does experience the highest diurnal range of temperature and why?
- A. The Thar desert area of Rajasthan experiences the highest diurnal range of temperature because it is in the interior part where the temperature differences are very high.
- (iv) Which winds account for rainfall along the Malabar coast?
- A. The Arabian Sea branch of the South-West Monsoon winds account for rainfall along the Malabar Coast extending along with the states of Karnataka and Kerala.
- (v) What are Jet streams and how do they affect the climate of India?
- A. Jet streams are the narrow belt of high altitude westerly winds in the troposphere. They blow at a fast speed of about 110km/h in summers to about 184km/h in winters. The westerly jet streams are responsible for bringing western cyclonic disturbances to north west India resulting in rainfall in winters.
- (vi) Define monsoons. What do you understand by “break” in monsoon?
- A. i) The word, ‘Monsoon’ has been derived from the Arabic word ‘mausam’ which means season. The word monsoon, therefore, denotes a season in which the wind regime is completely reversed. The Arabs who traded with India named this seasonal reversal of the wind system as ‘monsoon’.
- ii) During the south-west monsoon period after having rains for a few days, if rain fails to occur for one or more weeks, it is known as Break in the Monsoon.
- iii) ‘Burst in the monsoons’ means sudden approach of the moisture laden winds associated with violent thunder and lightning. The monsoon “burst” on the south-west coast of India around the first week of June.
- (vii) Why is the monsoon considering a unifying bond?
- A. i) The Monsoon exercises an all-embracing and unifying influence on the weather condition of India.
- ii) Despite climate contrasts and variations from region to region, the monsoons provide a rhythmic cycle of season year after year.
- iii) It is around this seasonal rhythm that the Indian human life, animals and plants life, its entire agriculture calendar, its festivals revolve.
- iv) The Himalayan ranges act as a physical barrier separating India from Central Asia, and gives a tropical touch to the Indian climate.
- v) The Himalayas protect the sub-continent from extremely cold winds from central Asia. This enables northern India to have uniformly higher temperature when compared to other areas on the same latitude.
- vi) The Peninsular plateau under the influence of the sea from three sides has moderate temperature.
- vii) The monsoon winds bind the whole country by providing water to get the agricultural activities in motion. The river valleys which carry this water also unite as a single river valley unit.
- So, the whole Indian climate can be described by just one word, ‘Monsoon’. It plays a very important unifying role in the Indian climate.

3. Why does the rainfall decrease from the east to the west in Northern India.
- A. Rainfall decreases from the east to the west in Northern India because there is a decrease in the moisture of the winds. Consequently, states like Gujarat and Rajasthan in western India get very little rainfall.
4. Give reasons as to why.
- (i) Seasonal reversal of wind direction takes place over the Indian subcontinent?
- A. Seasonal reversal of wind direction over the Indian subcontinent takes place due to pressure differential. El Nino has major role to play in the seasonal reversal of wind direction over the Indian subcontinent.
- (ii) The bulk of rainfall in India is concentrated over a few months.
- A. The rainfall received by India is largely due to the south-west monsoon winds. The duration of the monsoon is between 100 to 120 days. Hence, the bulk of rainfall received by the country is concentrated over a few months.
- (iii) The Tamil Nadu coast receives winter rainfall.
- A. During the winter season, the winds prevailing in the country are the Northeast trade winds. Due to the geographical location, the east coast receives rainfall as the north east trade winds blow from sea to land in this location. Hence the coast of Tamil Nadu receives winter rainfall.
- (iv) The delta region of the eastern coast is frequently struck by cyclones.
- A. The delta region of the eastern coast of India is frequently struck by cyclones. This is because the cyclonic depressions that originate over the Andaman Sea are brought in by the sub-tropical easterly jet stream blowing over peninsular India during the monsoon as well as during the October to November period.
- (v) Parts of Rajasthan, Gujarat and the leeward side of the Western Ghats are drought-prone.
- A. Parts of Rajasthan, Gujarat and the leeward side of Western ghats are drought-prone because they receive scanty rainfall. The monsoon winds are left with very less moisture by the time they reach Rajasthan and Gujarat so these areas are drought prone.
5. Describe the regional variations in the climatic conditions of India with the help of suitable examples.
- A. Though there is an overall unity in general pattern of monsoon, there are still some regional variations in climatic conditions. The two important elements that cause these variations are temperature and rainfall.
For example in summer the temperature is about 50 degrees in Rajasthan and on the same day it is about 20 degrees in Pahalgam of Jammu and Kashmir.
In the same way on a winter night temperature at Drass it may be as low as minus 45 degrees and in Thiruvananthapuram it is 20 degrees.
6. Discuss the mechanism of monsoons.
- A. i) The differential heating and cooling of land and water creates low pressure on the landmass of India, while the seas around experience comparatively a high pressure.
- ii) The shift of the position of Inter Tropical Convergence Zone (ITCZ) in summer, which 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 also affects the Indian Monsoon.
 - iv) The Tibetan high-level plateau gets intensely heated during summer, which results in strong vertical air currents and the formation of high pressure over the plateau at about a kilometre above the sea level.
 - v) The movement of the westerly jet to the north of the Himalayas, and the presence of the tropical easterly jet over the Indian peninsula during summer.
7. Give an account of weather conditions and characteristics of the cold season.
- A. Weather conditions and characteristics of cold season:
- i) The cold season begins from mid-November till February. The temperature decreases from south to north. The average temperature of Chennai is between 24° - 25° Celsius, while in the northern plains, it is between 10° -15° Celsius.
 - ii) December and January are the coldest months in northern parts of India. The weather is marked by clear skies, low temperature, low humidity and variable winds.
 - iii) Days are warm, nights are cold. Higher areas of Himalayas experience snowfall. North-East Trade winds blow over the country. They blow from land to sea. For most parts of the country, it is dry season. Tamil Nadu gets rain from these winds, here they blow from sea to land.
 - iv) Western Disturbances (cyclonic disturbances) move into India from the Mediterranean Sea and blow over northern and North-western parts of India. They cause much needed winter rains over the northern plains and snowfall in the Himalayas. The total amount of rainfall is about 70 cm. They are important for the cultivation of rabi crops. Locally these rains are also known as “Mahawat”.
 - v) The peninsula region does not have a well-defined cold season. Due to the moderating influence of the sea, there is not much noticeable seasonal changes in temperature pattern in winters.
8. Give the characteristics and effects of the monsoon rainfall in India.
- A.
- i) The arrival and departure of the monsoon is uncertain.
 - ii) The amount of rainfall they shed is also uncertain.
 - iii) Most parts of India receive rainfall from these winds.
 - iv) The life of the people, including festivals and other economic and social activities revolve around the monsoon.
 - v) India is an agricultural land. Monsoons are vital in agricultural production.
 - vi) Despite climatic contrasts and variations, the monsoons provide a rhythmic cycle of seasons, year after year.