DEPARTMENT OF EDUCATION (S)
Government of Manipur

UNIT III
CLIMATE

SOLUTIONS

TEXTUAL QUESTIONS & ANSWERS

EXERCISES

1. Choose the correct answer from the four alternatives given below:

(i) The monsoon strikes at the southern tip of the Indian peninsula by the
(a) first week of May
(b) first week of June
(c) first week of July
(d) first week of August.
Ans - (b) first week of June

(ii) The monsoon covers the whole of India by
(a) mid - June
(b) mid – July
(c) mid – August
(d) mid - September
Ans - (b) mid – July

(iii) The withdrawal of the monsoon starts from western Punjab by
(a) early August
(b) early September
(c) early October
(d) early November
Ans - (c) early October

(iv) The wind blowing over the north and north – western parts of India in summer is
(a) Nor'wester
(b) north – east trade winds
(c) Loo
(d) western disturbance
Ans - (c) Loo

(v) Which one of the following causes light winter rain in the northern parts of India?
(a) Tropical cyclone
(b) South – west monsoon
(c) North east monsoon
(d) Western disturbances
Ans - (d) Western disturbances

2. Answer the following questions briefly:

(i) What are the factors that influence the climate of India?

Ans - The factors that influenced the climate of India are the latitude, altitude, pressure and wind, distance from the sea, ocean currents and relief features.

(ii) How do jet streams affect the climate of India?

Ans – The upper air circulation over India is dominated by a westerly jet stream. In winter it blows over India south of the Himalaya roughly parallel to 26^0N latitude. In summer, the westerly jet streams move north of the Himalaya but easterly jet streams flows over Peninsular India roughly parallel to 26^0N latitude.

(iii) What are the four different seasons of India?

Ans – The four different seasons of India are the cold season, the hot season, the south westmonsoon season and the retreating monsoon season.

(iv) What do you mean by 'break' in Monsoon?

Ans – An important feature of the monsoon is the occurrence of rainless interval in rainfall. These breaks in monsoon are caused by the movements of monsoon .The alternation of heavy rain and partial breaks very in frequency and duration. While it caused floods in one part, it causes droughts in other parts.

(v) What are the "post monsoon cyclones"?

Ans – As the sun moves towards the south during October – November, the low pressure area of northern plain also moves towards the south over the Bay of Bengal. This shifting is associated with cyclones. They are referred to as post monsoon cyclones.

(vi) How do the post monsoon cyclones originated?

Ans – The shifting of the low pressure areas from the north to the south over the Bay of Bengal is associated with the formation of cyclonic storms. These cyclones originated from the Andaman Sea.

(vii) What do you mean by "October heat"?

Ans – The south – west monsoon withdraws from the northern plains. By the first week of October the season is a transitional period from hot – wet conditions to cool – dry conditions. The retreat of the monsoon is marked by clear skies and the day temperature. Because of the high temperature and humidity, the weather becomes oppressive during the day. Such weather is known as "October heat" in the northern plains.

(viii) How does "October Heat" occur?

Ans – The sun moves towards the south during October and November. The day temperature raises the sun shines brightly due to clear sky because of high temperature and humidity the weather becomes oppressive and heated during the day. Thus, it occurs "October heat".

3. Give reasons as to why

(i) The amount of rainfall decreases from the east to the west in the Ganga Plain?

Ans – When the monsoon current moves westward toward the Ganga plain, from the north eastern region, it has lost most of its moisture. Hence the amount of rainfall decreases from the east to the west.

(ii) The Tamil Nadu coast receives winter rain?

Ans – When the north east trade wind blow over the Bay of Bengal during the cold season, they pick up moisture from the sea. Hence they provide rain in the eastern coast of Tamil Nadu.

(iii) Seasonal reversal of wind direction takes place over the Indian Sub-Continent.

Ans – India has a monsoon type of climate. Monsoons are the winds that change their direction with the change of seasons. According to the direction of the monsoon winds, the whole country is having the same season. When the wind blows offshore, the country has a cold season. While the winds blow on shore, the country has hot rainy season.

(iv) The bulk of India's rainfall is concentrated over a few months.

Ans – The duration of the monsoon is 110days from early June to mid-September. When it arrives, Rainfall starts and continues for several days. By mid-June, it covers the whole country. By early September, it withdraws from western Punjab and by early December it has completely withdrawn from the country.

(v) The interior parts of the Deccan Plateau receive little rain.

Ans – The Deccan Plateau lies in the rain shadow areas of the Western Ghats. The windward side of the Western Ghat gets very heavy rainfall while the leeward side of the Western Ghats receive little rain.

Hence the interior parts of the Deccan Plateau receive little rain as they lie on the leeward side of the Western Ghats.

4. Give a brief account of the mechanism of the monsoon.

Ans – The mechanism of the monsoon are –

(a) Differential heating and cooling of land and water creates low pressure over India and high pressure over the seas around it.

(b) Shifting of the position of Inter Tropical Convergence Zone (ITCZ) over the Ganga plain in summer. Normally it is position about 5°N of the equator and known as equatorial trough. It is referred to as Monsoon trough during the south - west monsoon season.

(c) Presence of the high pressure area, east of Madagascar over the Indian ocean at 20^{0}S. The intensity and position of this high pressure affects the Indian monsoon.

(d) Intense heating of the Tibetan plateau during summer results in strong vertical air currents and the formation of low pressure over the plateau at about 9km. above sea level.

(e) Movement of the westerly jet stream to the north of the Himalayas in early summer and the presence of the tropical easterly jet stream over the India peninsula at 14°N during summer.

5. Give an account of the onset of the south – west monsoon in India.

Ans – The monsoon are not steady as they face various atmospheric conditions on their way over warm tropical seas. The duration is about 110 days from early June to mid-September. When it arrives, rainfall starts and continues for many days. This is known as the burst of monsoon. It first strikes at the Southern tip of Indian peninsula in early June. The peninsula divides the monsoon into two – the Arabian Sea branch and Bay of Bengal branch. The Bay of Bengal branch meets the north – east in early June. The Himalayas deflect the monsoon winds westward towards Ganga plain. The Arabian Sea branch reaches Mumbai by June 10 and advances over Saurastra and central part by mid-June. The two branches meet over the north – western part of Ganga plain. By June 29, The Bay of Bengal branch causes rainfall at Delhi. In early July it reaches western Haryana and eastern Rajasthan. By mid-July, it covers the whole country.

6. Write an account of weather conditions of the cold season of India.

Ans – During the cold season from December to February the north – east trade winds blow over the country. As these winds originated from land, they do not provide rain and it is a dry season. But they provide rain in the eastern coast of Tamil Nadu as they pick up moisture from the sea. Temperature decreases from south to north and causes frost and snow fall in north – western and northern parts. Over the north – west parts develops a feeble high pressure with light winds. These winds blow down the Ganga valley during the season, the weather is fine with clear skies. Low temperature and light winds. This fine weather is sometimes disturbed by Western Disturbances originating from Mediterranean Sea. After crossing Iraq, Iran, Afghanistan, Pakistan, they reach northern part of India. They were brought into India by westerly jet winds and cause light winter rain.

7. Discuss the regional variations in the climate condition of India with example.

Ans – There are regional variations in the climate conditions of India as two important elements - temperature and precipitation differ from place to place and season to season. In summer day temperature rises up to 50ºC in Rajasthan whereas it is only 20ºC in Gulmarg in Jammu and Kashmir. In winter night temperature may be low as minus 40ºC in Drass in Jammu whereas it is 22ºC in Kerala. While most parts of the country receive rainfall from June to September, the coastal areas of Tamil Nadu get rainfall during October and November.

In the northern plains, rainfall decreases from east to west. The coastal areas enjoy moderate climate, but the interior parts of the country have seasonal contrasts in temperature conditions. The western coastal plain and north eastern part of India receive more than 400 cm of rainfall annually. Rainfall is low in interior parts in Deccan plateau as the region lie in the rain shadow areas of Western Ghats. The remaining parts of the country receive moderate rainfall.

8. Describe the characteristics and effects of the monsoon rainfall in India.

Ans – By early June, the south – east trade winds from Indian Ocean rush towards the low pressure areas over northern plain. These winds turn to the right when they cross equator and blow in a south – westerly direction.

They enter Indian Peninsula as south – west monsoon. The windward side of Western Ghats gets heavy rainfall of over 250 cm. The Deccan Plateau receives some amount of rain as it lies in rain shadow area of Western Ghats. The north – eastern region receives maximum rainfall and **Mawsynram** in southern side of the Khasi Hills is **the rainiest place in the world.** In the Ganga valley, rainfall decreases from east to west. An important

feature of the monsoon trough lies over northern plains, rainfall is good in these areas. Near the Himalayan foot hills, its movement causes long breaks in rainfall over the plains and widespread rainfall in the catchment areas of the Himalayan Rivers. These heavy rains cause devastating floods over the plains. The alternation of heavy rain and partial breaks vary in frequency and duration. While it causes widespread floods in one part, it causes droughts in other parts. Its irregular arrival disturbs the farming schedule of farmers.

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