

ICSE - GEOGRAPHY NOTES & QUESTION ANSWERS

8. CLIMATE OF INDIA

- ❖ India's climate is monsoon type, but their characteristics vary from place to place. Due to the vastness of the country and a variety of relief features, there are regional variations in the climate of India. The interior of the country, especially in the north, has a **continental** type of climate.
- ❖ The **coastal areas** have a more equable climate. In mountainous areas, **altitude** determines the climate. There is a great deal of variation in the amount of **annual rainfall**. The following examples will confirm this variety and diversity in the annual rainfall. The following examples will confirm this variety and diversity in the climate.

Contrasting Climate:

- In June, the highest temperature in Rajasthan may go up to 50°C, whereas in Drass and Kargil, the night temperature in January may go down to -45°C.
- Mawsynram near Cherrapunji in Meghalaya have an annual rainfall of 1200 cm, whereas in the Thar Desert, the annual rainfall is less than 13 cm.
- Kerala has tropical climate with warm and moist air, whereas Punjab has continental climate with severe heat alternating with severe cold.
- The Coromandel Coast remains dry in the months of July and August, whereas the Ganga delta and the coastal plains of Orissa are hit by strong storms almost every third or fifth day during these months.

Factors Affecting Climate of India:

- **Latitude** extent of the Indian Subcontinent are as under. Tropic of Cancer passes half-way through the subcontinent. Most of the subcontinent lies in the tropical and sub-tropical zones. Consequently, the temperature is generally high throughout the year.
 - **Influence of the Himalayas:** The east-west extension of the lofty Himalayas stands as a barrier against the cold winds from Central Asia. They also force the monsoon winds to shed most of their moisture within the country. Similarly, the Western Ghats force the rain-bearing winds from the Arabian Sea to shed their moisture on the western slopes.
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- **Altitude:** With increase in height, temperature decreases. Places located in the hills and mountains are cooler than the places in the plains. Ooty in the Nilgiris is pleasant throughout the year though it is relatively close to the Equator.
 - **Distance from the Sea:** Places situated near the sea experience a moderate climate, i.e. neither very hot nor very cold such as Chennai. Places situated in the interior of the country, such as Delhi and Amritsar, experience continental climate, i.e. very hot in summer and very cold in winter.
 - **Surface winds:** Monsoon winds cause abundant rainfall in the Indian Subcontinent. Winds blowing in from the north-west during the winter cause cold waves in northern India. During summer, hot and dry winds (loo) sweep over the northern plains of India causing a phenomenal increase in temperature. During winter, the monsoons retreat and bring rain only to certain parts of Tamil Nadu.
 - **Western disturbances:** During winter, there is a low pressure depression, called western disturbance, in north-west India. The rainfall in the northern states such as Punjab and Haryana is due to western disturbances or the cyclones which originate over the Mediterranean Sea.
 - **Jet streams:** The air currents, called jet streams, in the upper layers of the atmosphere are believed to determine the arrival and departure of the monsoons. However, research is going on to study the extent to which monsoons may be affected by these air currents.

Distribution of Rainfall:

- Rainfall is not evenly distributed. It mostly depends upon the relief and the direction of monsoon winds.
- Rainfall more than 200 cm annually is received in the following regions:
 - ◆ The Western Ghats and the West Coast Plain
 - ◆ Parts of north–east India (Assam and Meghalaya)
- Annual rainfall of 100 cm to 200 cm is received in the following areas:
 - ◆ The Himalayan region
 - ◆ The Ganga plains in Bihar and West Bengal
 - ◆ North–eastern parts of Peninsular Plateau
 - ◆ Parts of Eastern. Coast
 - ◆ Assam valley and Purvanchal Hills
- **Rainfall from 60 cm to 100 cm** is recorded in the interior of India in the north–south belt from Punjab to north of Tamil Nadu. These regions are away from the coast and are not in the path of moisture laden winds
- **Less than 60 cm rainfall** is received in the regions of Rajasthan, Jammu & Kashmir and Peninsular India.

Monsoon and its Mechanism:

- Throughout the country, there are four main seasons: **Hot and dry summer season** lasts from **March to May**. During this season, the sun is shining vertically over the Tropic of cancer and the belt of maximum temperature moves North West. The heat is intense. The temperature increases steadily from south to north with highest in the interior. The highest average temperatures are 38°C to 40°C in south, 40°C to 45°C in Central India and 45°C to 50°C in Rajasthan. The highest temperatures are recorded in Thar Desert of India and Pakistan as well as on the Indus Plains.
 - It is during May that the low pressure areas begin to develop over the land. But during this time, the winds do not blow from the sea and, therefore, the weather remains dry.
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- The low pressure over Northern Plains draws winds from the surrounding areas and gives rise to thunderstorm with dusty winds. The thunderstorms accompanied with strong winds and heavy rainfall occurs in Assam and West Bengal.
 - These local winds are called **Kal Baisakhi**, meaning ‘the calamity of the month of Baisakh. This rain in the month of **April/May** is **good for tea** in Assam and **jute and rice** in West Bengal. The little rainfall caused by thunderstorms along the Kerala and Karnataka coasts is very important for mango and is called **mango shower**, such rains are also called **cherry blossoms** in Karnataka.

South–west monsoon season or Rainy season:

- ◆ South–West monsoon season or Rainy season also called begins in June with the South–West monsoons and ends in September. The winds **blow from high pressure areas over the sea to the low pressure areas over the land**.
- ◆ These winds bring heavy rainfall accompanied by violent thunder and lightning. This sudden violent onset of rainfall is termed as the **Burst of the Monsoon**. The south–west monsoon winds are divided into two branches – the **Arabian Sea branch** and the **Bay of Bengal branch**.
- ◆ The Arabian Sea branch of south–west monsoon strikes the western coast of India in Kerala. It gives very heavy rainfall along the **windward side of Western Ghats**. The alignment of Aravalli is **parallel** to rain–bearing south–west monsoon winds. Moreover, Aravalli are **very low**.
- ◆ After picking moisture from Bay of Bengal, the Bay of Bengal branch moves towards north– east, the coasts of Myanmar and Bangladesh. Andaman and Nicobar Islands are the first to receive rainfall from this branch Moreover, **Mawsynram (near Cherrapunji)** in Meghalaya stands at the **end** of a funnel–shaped valley which acts as a **trap** for rain–bearing Bay of Bengal branch of south–west monsoon forcing them to shed moisture.

Retreating monsoon season:

- ◆ Retreating monsoon season lasts from **October to November**. During this period, monsoons start retreating or withdrawing first from the north and then from the south.
- ◆ In north-west India, the intensity of low pressure decreases by the middle of September and the monsoon retreats from most parts of north India.
- ◆ Due to high temperature in day time and high humidity, and comparative low in night temperature the weather becomes oppressive. This oppressive weather is commonly known as **October Heat**.

Cold and dry winter season:

- ◆ Cold and dry winter season commences at the end of **November and continues till March**. During this season, the weather remains cool and dry.
- ◆ This season is dry because the winds blow **from the land** which is without **moisture**.
- ◆ This is the time of **north-eastern** monsoon. At this time, the **eastern coast of India** receives some **rainfall** because the winds pick up some moisture as they pass **over the Bay of Bengal**.

QUESTIONS AND ANSWERS:

- 1) Name the area in India which receives rainfall from the western disturbances. State the importance of this rainfall.**

Ans: The North-West part of India, including parts of Punjab, Haryana, Jammu and Kashmir, Himachal Pradesh, northern Rajasthan, Uttaranchal and western Uttar Pradesh receive light to moderate rainfall in the winter months, from the western Disturbances.

These are cyclonic rains which are beneficial to the Rabi crops such as wheat and barley.

- 2) Though Mangalore and Mysore are on the same latitude, Mangalore experiences more rainfall than Mysore. Why?**

Ans i) Mangalore lies on the windward side of the Western Ghats and hence experiences heavy rainfall

ii) On the other hand, Mysore lies on the leeward side or rain shadow side of the Western Ghats, hence receives less rainfall.

- 3) What are 'Western Disturbances'? How do they affect the climate of India?**

Ans The weather conditions during winter are generally influenced by the distribution pattern of pressure in Central and West Asia. A low pressure known as the **Western disturbance** originates over the eastern Mediterranean region in winter. It moves towards India after it passes over Iran, Iraq, Afghanistan and Pakistan. This low pressure intensifies over northwest India and moves eastward. It causes rain in Punjab and Haryana and snowfall in the Himalayan belt.

- 4) Why does Kanyakumari experience an equable climate?**

Ans Kanyakumari experiences an equable climate because:

- a) It is located close to the equator (0° Latitude). On the equator the sun rays are almost vertical throughout the year, hence there is not much difference in the temperature.
- b) Kanyakumari is located on the sea coast; hence it has a moderating effect on the climate.

- 5) How are the sources of rainfall in the North-West part of India different from the rainfall experienced on the coastal areas of Eastern India in winter?**

Ans During winter, the source of rainfall in the North-West of India is Western disturbances from the Mediterranean Sea.

The coastal areas of Eastern India gets rainfall from North-East Monsoons which arises from Bay of Bengal, as well as the North-East Trades winds.

- 6) i) What is meant by a "Rain Shadow" area?**

ii) Give two examples of "Rain Shadow" areas in India.

Ans i) Area which gets little or no rainfall is called the "Rain Shadow" area. It is on the "Leeward side" of a mountain range. This side is completely opposite to the windward side of the mountain, which faces the rain bearing winds.

ii) Eg. (a) Eastern side of the Western Ghats, (b) Shillong plateau, which lies on rain shadow area of Khasi hills.

- 7) What is the general direction of winds prevailing over the Indian Sub-continent: (i) In April-May? (ii) In July?**

- Ans i) In April–May, general direction of winds prevailing over the Indian Subcontinent is north–east
 ii) In July, general direction of winds prevailing over the Indian Subcontinent is from south–west to north–east or north.

8) i) What is the most commercially important natural vegetation belt of India?

Ans The most commercially important natural vegetation belt of India is the tropical deciduous forests.

ii) In what rainfall range is this vegetation belt located?

Ans The rainfall range of this vegetation belt is between 140 cm to 200 cm.

9) What is meant by ‘the season of retreating monsoon’?

Ans The period of transition between the withdrawal of south–west monsoons in the months of October to November and the onset of the North coast monsoon is called the season of retreating monsoon.

10) In which season do cyclonic depressions originate in the Andaman Sea? Give one reason for such depression

Ans Depressions originate in the Andaman Sea during retreating monsoon season i.e. October and November. During the months of October–November, due to local variations of heat and moisture, tropical cyclones are caused over the sea surrounding the Andaman Islands.

11) Name the four states on the eastern coast which are frequently struck by tropical cyclones. State the characteristic features of the tropical cyclones.

Ans Tamil Nadu, Andhra Pradesh; West Bengal and Orissa are struck by tropical cyclones. They are characterized by strong winds; torrential rainfall and high waves along the coast. They are often very destructive to life and property.

12) How do the Western Ghats affect the rain bearing winds that blow in the region? Name the winds.

Ans The Arabian Sea branch of South–West Monsoon winds is moisture laden. As the winds blow on shore, they reach the barrier of the Western Ghats, are forced to rise and condense. Thus they shed all their moisture on the windward side, as a result of which, the western coasts gets heavy rain.

The rain bearing winds are the Arabian Sea branch of the south–west monsoons

Section II: [3 Marks]

1) Study the climatic data given below and answer the question.

Stn	Month	Jan	Feb	March	April	May	Jun	Jul	Aug	Set	Oct	Nov	Dec
A	Temp. in Degree C	12.7	15.0	22.1	31.8	37.2	39.1	37.2	33.4	28	26.7	16.1	13.6
	Rainfall in cms	2.1	2.3	1.0	0.9	1.5	5.6	18.3	18.9	15.1	0.6	0.3	1.8
B	Tem.° C	23.1	24.8	26.5	29.3	32	32.8	33.1	32.1	30.5	29.3	28.7	26.1
	Rain cms	15.3	10.1	0.3	0.1	1.3	4.5	6.1	10.2	10.5	20.1	16.8	19.0

i) Calculate the annual rainfall of station A.

Ans Annual rainfall station A = 68.4 cm. (Total of rainfall from January to December)

ii) What is the annual range of temperature in station B?

Ans Annual range of temperature in station B = maximum temperature – minimum temperature
 = 33.1°C – 23.1°C = 10.0°C (or 23.1°C to 33.1°C)

iii) Name the winds that bring most of the rainfall to station B. State one reason for your answer.

Ans: Station B gets most of its rainfall from the North–East monsoon.

These winds bring rainfall to the East coast of India during the months of October to January. Station B receives most of its rainfall and during the months of October to January, which is the season of retreating monsoons.

iv) The Indian subcontinent experiences contrasts in climatic conditions. Explain with at least two examples.

Ans: The Indian subcontinent experiences contrast in climate due to the various relief features such as the Himalayas, the Western and Eastern Ghats, the presence of the seas surrounding peninsular India and the vastness of the subcontinent. eg.:

- i) Punjab has a continental climate with severe heat alternating with severe cold, while Kerala, situated on the coastal belt has tropical climate with uniformly warm and moist air.
- ii) Cherrapunji in the north eastern part of India receives an annual rainfall of 1080 cm while in the Thar Desert the annual rainfall is about 13 cm.

2) a) State two differences between tropical cyclones and temperate cyclones.

Ans:

Tropical cyclones	Temperate cyclones
These types of cyclones are thermal in origin.	This type of cyclones are frontal in origin.
The winds velocity is very high; attaining 300 km/hr and active in summer season.	The wind velocity is very low, travel at a speed of 35 to 70 km/hr and active in winter season.
They are small in size and cause heavy rain.	They are bigger in size and cause less rain and destruction.

3) Study the climatic data given below and answer the question.

Stn	Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
A	Temp in Degree C	16.8	19.2	26.6	29.8	33.3	33.9	31.3	29	20.1	27	20.1	14.9
	Rainfall in cms	0.5	0.6	0.3	0.3	1.0	3.1	10.8	13.1	5.7	0.8	0.3	0.2
B	Temp in Degree C	24.5	25.7	27.7	30.4	33	32.5	31	30.2	29.8	28	25.9	24.7
	Rainfall in cms	4.6	1.3	1.3	1.8	3.8	4.5	8.7	11.3	11.9	30.6	35.0	13.9

i) Calculate the Average Annual Rainfall for station B

Ans: $128.7 \div 12 = 10.72$ cms

ii) Which of the two stations is located away from the sea? Give a reason to justify your answer.

Ans: Station A is located away from the sea, because there is high difference in temperature range and climate is extreme.

iii) Calculate the Annual Ranges of temperature for station A

Ans: Annual range of Temperature Ranges is $33.9 - 14.9 = 19^\circ \text{C}$

iv) Which is the driest month in station A as shown in the table?

Ans: December is the driest month at station A.

4) Study the climatic data given below and answer the question.

Stn.	Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
A	Temp. in $^\circ\text{C}$	14.4	16.7	23.3	30.0	33.3	33.3	30.0	29.4	28.9	25.6	19.4	15.6
	Rainfall in cms	2.5	1.5	1.3	1.0	1.8	7.4	19.3	17.8	11.9	1.3	0.2	1.0
B	Temp. $^\circ\text{C}$	24.4	24.4	26.7	28.3	30.0	28.9	27.2	27.2	27.2	27.8	27.2	25.0
	Rainfall cms	0.2	0.2	–	–	1.8	50.6	61.0	36.9	24.8	4.8	1.0	–

i) Calculate the annual rainfall for station A.

Ans: Annual rainfall for station A is

$$2.5 + 1.5 + 1.3 + 1.0 + 1.8 + 7.4 + 19.3 + 17.8 + 11.9 + 1.3 + 0.2 + 1.0 = 67.0 \text{ cm}$$

ii) What are the annual ranges of temperature at station B?

Ans: Annual range of temperature at station B is $30^\circ\text{C} - 24.4^\circ\text{C} = 5.6^\circ\text{C}$

iii) In which hemisphere do you think station A lies?

Ans: Station A lies in Northern Hemisphere.

iv) Which of these stations has an equable climate?

Ans: Station B has an equable climate, because the annual range of temperature is small

5) Name any two local winds which blow in India and write briefly about each.

Ans: i) **Loo:** These are hot dry westerly winds that blow during May and June in the afternoons in the northwestern parts of India, with temperatures rising to $45^\circ\text{C} - 50^\circ\text{C}$.

ii) **Kalbaisakhi:** They are local winds which bring very heavy showers in the month of April/ May caused by the north-westerly and northerly winds in West Bengal and Assam. They originate over the Chhota Nagpur plateau and are carried eastward by westerly winds. The rain is good for the tea crop of Assam and jute and rice in West Bengal.

iii) **Mango Shower:** Thunder storms which cause rainfall along the Kerala and Karnataka coasts. The little rainfall that they bring is important for mango, tea, and coffee plants. They are known as mango showers as they are important for the mango crop. They are also known as cherry blossom showers in Karnataka.

6) i) Name the place in India which receives the heaviest rainfall.

Ans: Mawsynram

ii) Name the state where the place is located

Ans: Meghalaya.

iii) Name the winds which are responsible for this heavy rainfall.

Ans: Bay of Bengal branch of the South – West Monsoons.

7) Name two important features of the Indian Monsoon

- Ans: i) **Seasonal reversal of wind system:** In the rainy season, it is south westerly (June to September) providing bulk of the rain on the western coast and eastern region. The retreating monsoon is north-easterly, providing rain only to the south-east coast of India
- ii) Rainfall by the monsoon winds is mainly induced by the relief (mountains) features of the country (**orographic rainfall**).

8) Explain why:

i) Mumbai is warmer than Kanpur in December?

- Ans: Mumbai experiences the maritime influence (moderating) by the Arabian Sea as it is near the coast. Kanpur is situated in the heart of the Northern Plain and experiences continental climate with extremes of temperature (very cold in winter and very hot in summer). Mumbai is nearer to the equator than Kanpur, hence it is warmer throughout the year.

ii) Account for the winter rain in northern India?

- Ans: The Mediterranean cyclones bring the winter rain in Northern India. These cyclones are also called the western disturbances or Temperate Cyclones.

9) What is meant by 'Burst of Monsoon'?

- Ans: i) The south-east trade winds after crossing the Equator are deflected towards the right because of the Coriolis force and reach the west coast as south-west monsoon.
- ii) These winds bring heavy rainfall accompanied by violent thunder and lightning.
- iii) This sudden violent onset of rainfall in the first week of June is termed as the Burst of the Monsoon.

10) State two important characteristic features of monsoon rainfall in India.

- Ans: i) South-West monsoon blows continuously from June to September bringing rainfall for the whole of the Sub-continent,
- ii) The rainfall by these winds is unequally distributed on account of various geographical factors.
- iii) Maximum rainfall takes place in one month, it is not well distributed.

11) Chennai has lower annual range of temperature than Lucknow. Give one reason.

- Ans: Chennai has lower annual range of temperature than Lucknow because Chennai experiences oceanic equable climate, due to its location near the sea. Lucknow is located in the interior and it experiences the continental type of climate. Therefore, annual range of temperature of Chennai is lower than that of Lucknow.

12) What is the cause of winter showers in western Uttar Pradesh and Punjab?

- Ans: Western Uttar Pradesh and Punjab get winter showers by the westerly depression or Western Disturbances which originate India from the Mediterranean Sea region and enter India from the North West. The low pressure depression intensifies over northwest and moves east ward causing rain in Punjab and Haryana.

13) Why does central Maharashtra have only a light rainfall?

- Ans: Greater parts of Central Maharashtra receives light rainfall because this region is located in the leeward side or rain shadow area of the Western Ghats. South-west monsoon winds shed their moisture on the windward side of the Western Ghats, with little moisture left as they reach central Maharashtra.

14) A Cricket match at Chennai (Madras) from October 24 to 28 had to be abandoned because of bad weather all through. As a student of Geography provide an explanation for this happening. Ensure that your explanation provides the technical name of this season in India, the atmospheric pressure conditions over the Bay of Bengal during this part of the year and the typical regime experienced in Chennai (Madras) city.

- Ans: October–November is the period of retreating monsoon in India, during which the Eastern coastal region receives rainfall. A high pressure begins to develop over the mainland and a low pressure builds up over the sea in the Bay of Bengal region. The monsoon winds retreat to the south. They pick up moisture over the Bay Bengal and are checked by the southern range of the Eastern Ghats, bringing rain to the Eastern portion of Karnataka, Andhra Pradesh, Orissa and Tamil Nadu. Thus, Chennai receives winter rain from the retreating monsoon during the months of October to November.

15) a) Name the season during which the North-East Trade winds dominate the Indian sub- continent

- Ans The North-East trade winds dominate over the Indian Sub-continent during the winter season.

b) In which season do the above mentioned winds get completely reversed? Name the four months covered by this season.

Ans: The trade winds are completely reversed during the south–west monsoon season. These monsoon winds blow during the months of June, July, August and September.

16) a) Why does the Coromandel Coast receive most of its rain during winter season?

Ans: The Coromandel Coast receives rainfall in winter because its location is on the windward side of the Eastern Ghats. This region receives rainfall from the north – east retreating monsoon winds

b) Why is the diurnal range of temperature during summer, greater at Bikaner (Rajasthan) than at Panjim (Goa)?

Ans: Bikaner is located in the dry, interior area where day temperature is very high and at night, it falls. It experiences continental type of climate. Panjim is located near the coast where climate is moderate.

17) a) Give two reasons to explain each of the following:

i) In spite of the Aravali Hills, many parts of Rajasthan do not receive much rain.

Ans: Rajasthan receives a little rainfall because:

- a) The Aravalli Hills are parallel to south–west winds; they do not intercept the monsoon winds.
- b) The Aravalli Hills are lower in height. The Aravalli range is unable to stop the moisture laden winds.

ii) The Malabar Coast has less rainy months but more rainfall than the Coromandel Coast.

Ans: a) The Malabar Coast lies on the windward side of the Western Ghats. It receives heavy rain (250–300 cm) from the south–west monsoon winds during June to September. Coromandel Coast lies on the leeward side of the Deccan plateau. The south–west winds progressively deposit less rainfall from west to east, Coromandel Coast thus receives only 30–40 cm of rainfall during these months.

b) The Coromandel Coast also receives rainfall during October–November from the retreating monsoon winds, but this is not very heavy.

Malabar Coast does not receive winter rains. Thus Malabar Coast has less rainy months but more rain.

iii) Name two factors affecting the temperature at a place.

Ans: The Altitude and distance from the sea affect the temperature of place.

iv) Name the months of retreating monsoons. Explain how these winds are different from the north–east Trade winds.

Ans: The retreating monsoons take place in October to November. These are the same winds of summer which come back due to the migration of the sun. North–east trade winds return between the months of December to February when north–western part becomes cold and winds give rainfall on Tamil Nadu coast after collecting moisture from the Bay of Bengal.

18) Mention the important factors that influence the climate of the subcontinent of India.

Ans: The following factors influence the climate of the Indian subcontinent:

- | | |
|---------------------------------|---------------------------------------|
| i) The Himalayas, | ii) Distance from the sea, |
| iii) The latitude | iv) Altitude (height above sea level) |
| v) Relief of the region | vi) Western disturbances |
| vii) Conditions over the oceans | viii) Jet streams (air currents) |

19) What is meant by October heat?

Ans: i) The Indian subcontinent by 23rd September i.e. the Autumn Equinox experiences an apparent shift of the sun southwards. The southwest monsoon begins to withdraw as a high pressure builds in the land. It is a transition period between the hot rainy season and cold dry season.

ii) The southwest monsoons retreat towards the south. They pick moisture from the Bay of Bengal and shed it on the eastern side of the Eastern Ghats. Chennai gets 60 cms rainfall from the Retreating Monsoons.

iii) During this time tropical cyclones originate in the Bay of Bengal, causing heavy rains in the Andaman and Nicobar Islands. By October the rest of India experiences clear cloudless skies, high temperatures and humidity. This sultry and oppressive weather is referred to as 'October heat'.

20) What is the importance of the South–West monsoon to the sub–continent?

Ans: The economy depends on south–west monsoon due to the following reasons:

- i) Agriculture is the main occupation.
- ii) Agro–based industries like food are the main industries.
- iii) It provides water for various purposes.
- iv) It provides HEP for domestic and industrial purposes.

21) Name one part of India that has its rainfall both in winter and summer.

Ans: Tamil Nadu coast or Coromandel Coast gets rainfall both in the winter and summer. It receives little rain from the Arabian Sea Branch of the South West monsoon winds. The region receives some rain from the north–east retreating monsoon.

22) What are trade winds? How do they affect South Asia?

- Ans: i) The trade winds are typical planetary surface winds blowing in lower latitudes i.e. tropical zone. They blow from the subtropical high pressure belts towards the low pressure tropical belts. They are north–east trade winds in the north and the south–east winds in the south, in the Northern and southern hemispheres.
- ii) The subcontinent in the summer season, in May, has high temperatures and the surrounding seas are cooler. So they develop high pressure conditions. The south–east trade winds, which blow from south–east in the Southern Hemisphere get deflected. As they cross the equator they get attracted to the low pressures in the continent, thus blowing from southwest to northeast. They are the South West monsoon winds bringing monsoons to the subcontinent

23) State three features of the distribution of rainfall in India?

Ans: In India the rainy season is from the month of June to September. India gets rainfall from the South West Monsoons which divides into two branches:

- i) The Arabian Sea branch: It brings rainfall on the western coast of India giving heavy rainfall on the windward side of the Western Ghats while the leeward side is comparatively dry. The rainfall is orographic. The duration and amount decreases as we go northward. These winds are also parallel to the Aravallis. Thus, Thar is a desert.
- ii) The Bay of Bengal branch: These winds advance northeastward and strike against Garo, Khasi, Jaintia Hills, thus giving heavy rain on the windward side of the mountain. This type is known as the relief rainfall. Shillong on the other side has little rain. The winds are then deflected towards the Ganga plain thus they do not have much moisture. The Gangetic plains receive less rainfall.
- iii) The retreating monsoons blow towards the sea. Depressions occur in the north bringing rainfall due to the westerly winds.
- iv) Also, in the south, tropical cyclones occur in the Bay of Bengal giving winter rain in Tamil Nadu.

24) Distinguish between Precipitation and Rainfall.

Ans:

Precipitation	Rainfall
Precipitation is a wider term.	Rainfall is a specific term.
Precipitation has its many forms which occur due to varied temperature viz. snow–fall, sleet, hail and even rainfall.	Rainfall is only one form of precipitation.
In precipitation, water vapour may change into liquid or solid form.	In rainfall water vapour changes into liquid form only.

25) Distinguish between Equable and Extreme or continental climates

Ans:

Equable Climate	Extreme / continental climate
Annual range of temperature is small.	Annual range of temperature is high.
The summers and winters are moderate with little variation in temperature. eg. The coastal regions of Mumbai and Chennai	Characterised by very hot summers and very cold winters. eg. Cities in the interior, such as Delhi, Lucknow

26) Why does Kanyakumari enjoy an equable climate? Give two reasons.

- Ans: i) Kanyakumari in Tamil Nadu at the southern tip of the Indian subcontinent enjoys an equable climate. It receives the first onset of the monsoon rains from the southwest monsoon winds. The duration and rainfall goes on decreasing as we go northwards.
Being near the sea, it enjoys a maritime climate i.e. moderate type. The type of rainfall is orographic.
- ii) The temperatures average 25° C throughout the year. Kanyakumari also receives rainfall from the retreating monsoon winds in October–November which bring winter rainfall to the area.
Due to the wind conditions and moderating affect of the sea, there are no extremes of temperature, so Kanyakumari has an equable climate.

27) What are the prevailing weather conditions over northern plains between April to June? Explain the reasons for such conditions.

Ans: During the months of April to June the northern plains experience hot dry weather conditions with temperature touching 40°C to 45°C.

This is accompanied by dust storms and strong dry and hot winds known as “Loo”.

Due to the apparent movement of the sun northwards, the sunrays fall vertically on the Tropic of Cancer.

The belt of maximum temperature moves northward during April–May creating a low pressure area over the Northern Plains.

28) Name the regions of the subcontinent which receive scanty rainfall (50–100 cm) Give reasons

Ans: The upper Ganga valley, eastern Rajasthan, parts of Punjab and Haryana and Jammu and Kashmir receive very little rainfall.

They experience a very short rainy season as they are last to receive the monsoon and the first to see it retreat.

The monsoon winds are almost devoid of moisture by the time they reach these regions. Large parts of the Deccan plateau, the Indus plains, western Rajasthan also receive scanty rainfall as they lie in the rain shadow area of mountains or parallel to mountain ranges.

29) Name the place in India which receives the heaviest rainfall. Give one reason.

Ans: Cherrapunji and Mawsynram in Meghalaya receive heaviest rainfall, with an average annual rainfall of 1080 cm.

The Bay of Bengal branches of the monsoon are deflected by the Arakan Yoma and the Garo– Khasi Hills. They pass over the Ganga–Brahmaputra Delta and approach the Lower Himalayan Ranges in Meghalaya. This region receives heavy rainfall as it lies on the windward side of the mountains.

Give reasons for the following:

30) Why does Punjab receive rainfall in winter, though it does not lie on the path of the retreating monsoon?

Ans Punjab is situated in the North Western region of the country; hence does not receive rain from the north–east retreating monsoon. It receives rainfall during winter from the Western Disturbances, which is a low pressure depression in northern India. It originates from the eastern Mediterranean region in winter and moves eastwards towards India. The low pressure intensifies over northwest India and moves eastward, thus causing rain in Punjab and Haryana.

31) Kolkata receives 144 cm of rainfall, while Delhi gets only 55 cm of rainfall annually from the south–west monsoon winds.

Ans Kolkata and Delhi lie on the path of the Bay of Bengal branch of the south west monsoon winds, as it proceeds from east to west. The amount of rainfall decreases as the winds proceed westwards. Thus Kolkata receives about 144 cm of rainfall as the moisture content is more while the winds blow over Kolkata. By the time they reach Delhi the monsoon winds have already shed most of their moisture hence Delhi receives only about 55 cm of rainfall.

32) Why does Delhi receive more rainfall than Jodhpur?

Ans Delhi receives rainfall from both the branches of the monsoon winds. Jodhpur lies further west which does not fall in the path of the Bay of Bengal branch of the monsoon winds. It lies in the rain shadow area of the Aravalli hills. A feeble branch of the Arabian Sea Monsoon does pass over the area but causes little rainfall as there is no barrier to it and the land is too heated.

33) Mawsynram receives the highest rainfall in the world. Explain why?

Ans The location of Mawsynram in Meghalaya is responsible for the highest rainfall (1080 cm) in the world. Mawsynram is located in the valley surrounded by Garo, Khasi and Jaintia hills which look like a big funnel. The moist winds coming from the Bay of Bengal enter this valley or funnel from beneath and are forced to rise up. This rising of winds causes further cooling and precipitations in the form of heavy rainfall.

34) Annual range of temperature at Thiruvananthapuram is 3°C while it is above 35°C in Delhi and surrounding areas.

Ans: i) Thiruvananthapuram lies on the coast and is hence influenced by the ocean winds which make the climate uniformly warm and moist. Trivandrum thus has a maritime climate.

Delhi on the other hand is situated in the interiors of India which have extremes of climate or continental climate. The moderating influences of the sea are limited to the coastal region only as the winds are blocked by the Western Ghats,

ii) The Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) divides the country into two halves: The North Temperate Zone and the South Tropical zone. Thiruvananthapuram lies in the South Tropical zone, nearer to the Equatorial region, hence the range of temperature is low.

Delhi lies in the North Temperate Zone, thus experiencing extreme weather conditions, with wide annual range of temperatures.

35) Ooty is a cold place in spite of being near the Equator.

Ans: The climate of a place is also affected by the altitude above sea level apart from other factors. Ooty though situated near the equator is a cold place because it is situated at a height of above 2000 m.

Temperature decreases with increases in altitude at the rate of 1°C for every 166m (6°C for every 1000m).

Hence, Ooty is cooler than the places on the plains situated on the same latitude.

36) Shillong gets about 250 cm of rainfall in a year, whereas nearby Cherrapunji gets more than 1,080 cm of rainfall.

Ans: The Bay of Bengal branch of the south west monsoons is deflected by the Arakan Yoma Mountains and the Garo and Khasi hills. The windward side of the Garo Khasi hills, gets heavy rainfall. Cherrapunji lies on the windward side of the north–eastern hills and hence receives heavy rainfall, an average of more than 1,080 cm annually.

On the other hand, Shillong which is twenty miles from Cherrapunji lies on the leeward side of the mountain range hence gets only about 250 cm of rainfall annually.

37) Why is the Thar region arid? Give three reasons.

Ans: The Thar region receives very little summer rain, less than 25 cm annually.

- i) The Arabian Sea Branch of the south–west monsoon does not give much rainfall as the Aravallis which are parallel to these winds do not form barriers to intercept them. The monsoon winds thus do not shed their moisture in this region.
- ii) The Bay of Bengal Branch of the south–west monsoon has little or no moisture by the time it reaches the Thar region, after traversing the Ganga valley.
- iii) The Thar region lies in the rainshadow of the Aravalli range, hence does not receive rain from the Bay of Bengal branch of the south west monsoon.
- iv) A part of the Arabian sea Branch which passes over the western part of Rajasthan reaches the western Himalayas. While crossing over the Thar Desert, these winds become warmer and increase their capacity to hold moisture instead of shedding them.

The Thar region thus receives little rainfall and is arid.

38) Why does the peninsular India record lower summer temperatures than Northern India? Give two reasons.

Ans: Peninsular India, stretching from the Rann of Kutch in the west to the Ganga–Brahmaputra delta in the East comprises of the Deccan Plateau, the Eastern and Western Ghats and the coastal regions.

- i) The peninsular plateau is a hilly region Due to higher altitudes the temperatures are lower than in the Northern plains. Temperature decreases with rise in altitude.
- ii) The peninsular region is also closer to the effect of the maritime climate, hence making the summer temperatures lower than in northern India.
- iii) The Peninsular region receives heavy rain from the south–west monsoon winds in summer and some rain from the North East monsoon during winter. The northern plains on the other hand receive less rainfall from the south–west monsoon and do not fall in the path of the moisture bearing north–east monsoon winds.

The Peninsular region thus, has lower summer temperatures than the northern plains.

39) Why Vishakhapatnam gets heavier rainfall than Hyderabad?

Ans: Visakhapatnam is located on the eastern coast of India. It receives rainfall from the Bay of Bengal branch of south west monsoons. The Eastern Ghats also get rainfall from the north–east monsoon winds.

Hyderabad, on the other hand, is located in the interior of South India on the Deccan Plateau which is a rain–shadow area of the Western Ghats. South–west monsoons after crossing Western Ghats become dry and give less rainfall. Hence, Vishakhapatnam gets heavier rainfall than Hyderabad.

40) Why is the Arabian Sea branch of the monsoon winds more powerful than the Bay of Bengal Branch?

Ans: The Arabian Sea Branch of the monsoon is more powerful than the Bay of Bengal branch because:

- i) The winds of the Arabian Sea Branch enter the Indian landmass after crossing a vast open sea, the Arabian Sea, which is larger than the Bay of Bengal. The winds originate over the Indian Ocean.
- ii) The Arabian Sea Branch faces the Western Ghats as it enters land, forcing it to shed most of its moisture–causing heavy rain. The Bay of Bengal branch meets mountain barriers after travelling a long distance over land.
- iii) The entire Arabian Sea branch goes over India whereas only a part of the Bay of Bengal Branch enters India, the rest going towards Myanmar and Thailand.

41) When and where does cyclonic rainfall occur in north India?

Ans: i) In the north during the winter months although the sky is clear, sudden cyclonic storms appear with rainfall or in the form of snow in Jammu and Kashmir and Himachal Pradesh. In Punjab, Haryana they give 15 cms of rainfall.

- ii) These storms occur due to the cyclonic depressions in the Mediterranean Sea. The low pressure area originates over the eastern Mediterranean regions and moves eastward towards India. The low pressure depression intensifies over northwest India and moves eastward causing rain in Punjab, Haryana and surrounding areas. They are also known as the Westerly Depressions.

42) What is the economic importance of:

- i) Mango showers in Kerala and Karnataka ii) Cyclonic rainfall in Punjab,
iii) Relief rainfall in Tamil Nadu, and iv) Kalbaisakhi in West Bengal and Assam**

- Ans: i) Mango showers on the Kerala coast are early rain showers of the south-west monsoons which are good for the mango trees.
ii) Cyclonic rainfall in Punjab during winters is highly useful for rabi crops in Punjab, Haryana and Western Uttar Pradesh. These cyclones come from the Mediterranean Sea.
iii) Relief rainfall in Tamil Nadu is beneficial for the millets and rice crops.
iv) Kal Baisakhi in West Bengal and Assam is good for tea crop in Assam and for jute and rice crops in West Bengal.

PREVIOUS YEARS BOARD QUESTIONS:

- 1) Name two states which receive rain in January and February. [2000]
2) What causes the winter rain? [2000]
3) Explain why:
a) Mumbai is warmer than Kanpur in December.
b) Account for the winter rain in northern India. [2001]
4) a) Name the place in India which receives the heaviest rainfall
b) Name the state where the place is situated.
c). Name the winds which are responsible for this heavy rainfall [2001]
5) Name two important features of the Indian monsoons.
6) Why are there great variations in the climate of Indian Subcontinent?
7) Name any two local winds which blow in India and write briefly about each.
8) Under what rainfall conditions are the Tropical Rain Forests found?
9) Study the climate data given below and answer the questions that follow:

Station	Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
A	Temp. in Degree C	14.4	16.7	23.3	30.0	33.3	33.3	30.0	29.4	28.9	25.6	19.4	15.6
	Rainfall in cms.	2.5	1.5	1.3	1.0	1.8	7.4	19.3	17.8	11.9	1.3	0.2	1.6
B	Temp. in Degree C	24.4	24.4	26.7	28.3	30.0	28.9	27.2	27.2	27.2	27.8	27.2	25.0
	Rainfall in cms.	0.2	0.2	—	—	1.8	50.6	61.0	36.9	4.8	4.8	1.0	—

- a) Calculate the annual rainfall for Station A.
b) What is the annual range of temperature at Station B?
c) In which hemisphere do you think Station A lies?
d) Which of these Stations has an equable climate?

10)

Station	Months	J	F	M	A	M	J	J	A	S	O	N	D
A	Temp, in Degree C	16.8	19.2	26.6	29.8	33.3	33.9	31.3	29	20.1	27	20.1	14.9
	Rainfall in cms.	0.5	0.6	0.3	0.3	1.0	3.1	10.8	13.1	5.7	0.8	0.3	0.2

B	Temp, in Degree C	24.5	25.7	27.7	30.4	33	32.5	31	30.2	29.8	28	25.9	24.7
	Rainfall in cms	4.6	1.3	1.3	1.8	3.8	4.5	8.7	11.3	30.6	35.6	35.0	13.9

- a) Calculate the Average Annual Rainfall for station B.
 b) Which of the two stations is located away from the sea? Give a reason to justify your answer.
 c) Calculate the Annual Range of Temperature for station A.
 d) Which is the driest month in station A as shown in the table? [2004]
- 11) State two differences between tropical cyclones and temperate cyclones [2004]
- 12) Name the area in India which receives rainfall from the Western Disturbances. State the importance of this rainfall. [2005]
- 13) Give reason: Though Mangalore and Mysore are on the same latitude, Mangalore experiences more rainfall than Mysore. [2005]

Station	Month	J	F	M	A	M	J	J	A	S	O	N	D
A	Temperature in degree C.	12.7	15.1	22.1	31.8	37.2	39.1	37.3	33.4	28	26.7	16.1	13.6
	Rainfall in cms	2.1	2.3	1.0	0.9	1.5	5.6	18.3	18.9	15.1	0.6	0.3	1.8
B	Temperature in Degree C.	23.1	24.8	26.5	29.3	32	32.8	33.1	32.1	30.5	29.3	28.7	26.1
	Rainfall in cms	15.3	10.1	0.3	0.1	1.3	4.5	6.1	10.2	10.5	20.1	16.8	19.0

- 14) Study the table given below and answer the questions that follow:
 a) Calculate the annual rainfall in station A.
 b) What is the annual range of temperature in station B?
 c) Name the winds that bring most of the rainfall to Station B. State one reason for your answer.
- 15) Give reasons for the following:
 a) It is cooler on the mountain slopes than in the plains during summer.
 b) Mumbai is warmer than Kanpur in December.
 c) Rajasthan receives very little rainfall.
- 16) Study the table given below and answer the questions that follow:[2006]

Station	Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
A	Temp. in Degree C	14.4	16.7	23.3	30.0	33.3	33.3	30.0	29.4	28.9	25.6	19.4	15.6
	Rainfall in cms.	2.5	1.5	1.3	1.0	1.8	7.4	19.3	17.8	11.9	1.3	0.2	1.0
B	Temp. in Degree C	24.4	24.4	26.7	28.3	30.0	28.9	27.2	27.2	27.2	27.8	27.2	25.0
	Rainfall in cms.	0.2	0.2	0.3	1.0	1.8	50.6	61.0	24.8	24.8	24.8	1.0	0.7

- a) Calculate the annual rainfall in station A
 b) What is the annual range of temperature in station B?
 c) Which of the two stations has an equable climate?
- 17) a) Explain two factors that influence the climate of South Asia.
 b) Which type of climate is experienced in the Northern Plains of India? State one main characteristic of this type of climate.
 c) Give a reason: Western coastal plains receive more rainfall than the Eastern coastal plains.
 d) Given below is the climatic data of a station. Study the table and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature °C	13.7	16.6	21.6	25.5	33.2	33.5	30.8	29.8	29.2	25.5	19.6	15.2
Rainfall cm	2.5	2.0	1.5	0.9	1.5	7.5	17.8	18.5	12.5	1.0	0.2	1.5

- i) Calculate the annual range of temperature.
 ii) What is the total rainfall experienced by the station?
 iii) Which is the driest month? [2007]
- 18) a) Name the source of winter rain in Tamil Nadu. How does Tamil Nadu benefit from it?
 b) Give a reason for each of the following:
 i) Patna gets a heavier rainfall than Varanasi.
 ii) The Arabian Sea branch of the South West Monsoon does not shed any moisture in Western Rajasthan.
 iii) India has varied climatic conditions.

d) Study the climatic data provided below and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Station A												
Temperature °C	24.4	28.4	20.7	29.3	30.0	29.9	29.8	27.8	26.9	26.3	25.1	24.8
Rainfall cm	0.1	0.1	0.5	0.6	3.8	26.6	26.6	30.5	26.5	11.9	1.1	0.2
Station B												
Temperature °C	8.1	8.9	15.6	20.1	25.2	24.3	24.1	22.7	20.6	18.4	14.1	9.6
Rainfall cm	0.4	0.3	0.3	1.1	1.3	3.2	7.7	10.3	5.8	0.7	0.4	0.3

- i) Calculate the annual range of temperature of Station A. Suggest a reason why the range is small one.
 ii) Which of the two Stations has the lower temperature? Why?
 iii) Calculate the annual rainfall of Station B. [2008]
- 19) a) Mention two main features of the Indian Monsoon.
 b) Mumbai receives rainfall in the summer season while Chennai receives rainfall from October to December. Why?
 c) Give reasons: Jaipur has a higher annual range of temperature than Mumbai.
 d) Given below is the climatic data of a station. Study the table and answer the questions that follow.
 i) Calculate the annual rainfall experienced by the station.
 ii) What is the annual range of temperature?
 iii) Name the wettest month. [2009]

- 20) a) Name the soil which is formed due to high temperature and heavy rainfall with alternating wet and dry periods. Name two states where this type of soil is found.
 b) Write any two characteristics of red soil.
 c) What is conservation of soil? Name any two farming techniques which help in soil conservation.
 d) Explain the following terms:
 i) Transported soil ii) In Situ iii) Humus. [2009]
- 21) a) Mention two differences in the climatic conditions which prevail over Kerala and Uttar Pradesh in the month of June.
 b) Name the source of the winter rain to Tamil Nadu.
 c) Give reasons for the following:
 i) The North East Monsoons bring almost no rain to most of India.
 ii) The mango showers are beneficial local winds.
 iii) The latitudinal extent of India is responsible for the variation in the climatic conditions which prevail in the country.

d) Study the climatic data provided below and answer the questions that follow.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Station A												
Temperature °C	21.0	22.6	26.3	29.2	29.7	27.5	25.1	24.5	24.8	25.5	22.5	20.5
Rainfall cm	0.1	0.1	0.5	1.5	2.7	11.4	16.7	9.0	13.4	9.0	2.7	0.3
Station B												
Temperature °C	24.4	24.4	26.7	28.3	30.0	28.9	27.2	27.2	27.2	28.3	27.2	25.0
Rainfall cm	0.2	0.3	0.3	1.7	1.9	50.2	61.0	37.0	27.0	4.8	1.4	0.3

- i) Calculate the annual range of temperature of Station B.

- ii) Calculate annual rainfall of Station A.
 iii) Presuming that both the stations are located in West India, state giving a reason as to which of the two lies on the windward side of the Western Ghats. [2010]
- 22) a) Give two important characteristics of the summer monsoon rainfall in India.
 b) 'Rainfall in India is Orographic in nature.' Give an example with reference to the distribution of rainfall and the effect of relief on its distribution.
 c) Give a reason to explain why:
 i) the coastal areas of India do not experience a significant variation in temperature between summer and winter months.
 ii) the annual rainfall in Rajasthan is less than 25 cm.
 iii) Coromandel Coast gets most of its rain during the winter season.
 d) Study the climatic data given below and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature °C	24.5	25.7	27.7	20.4	30.0	32.5	31.0	30.2	29.8	28.0	25.9	24.7
Rainfall cm	4.6	1.8	1.3	1.8	3.8	4.5	8.7	11.3	11.9	30.6	35.0	13.9

- i) Name the driest month.
 ii) Calculate the annual rainfall experienced by the station.
 iii) What is the annual range of temperature? [2011]
- 23) a) i) Name the type of climate prevailing over India.
 ii) Mention any two factors responsible for it.
 b) What is the direction of the summer monsoon? Why?
 c) Give geographical reasons for the following:
 i) Even in summer Shimla is cooler than Delhi.
 ii) The northern plains of India do not freeze in winter.
 iii) Kochi has a lesser annual range of temperature than Agra.
 d) Study the climate data given below and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature °C	23.8	25.0	27.7	28.3	30.2	30.3	30.4	30.3	30.0	30.3	25.5	24.2
Rainfall cm	0	0	1.1	1.5	2.1	45.3	46.5	45.4	43.3	20.1	3.0	0.1

- i) Calculate the mean annual temperature.
 ii) What is the total rainfall during the monsoon season?
 iii) Does the station have a maritime or a continental climate? Give a reason for your answer. [2012]
- 24) a) Name two types of cyclonic systems that affected India and two areas that receive rainfall from these systems.
 b) Give two important characteristics of the South West Monsoon rainfall.
 c) Give reasons for the following:
 i) When the Malabar Coast is receiving heavy rainfall in July, the Tamil Nadu coast is comparatively dry.
 ii) The Northern Plains of India have a Continental type of climate.
 iii) Central Maharashtra receives little rainfall.
 d) Study the climate data given below and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature °C	23.1	24.8	26.5	29.3	32	32.8	33.1	32.1	30.5	29.3	28.7	26.1
Rainfall cm	15.3	10.1	0.3	0.1	1.3	4.5	6.1	10.2	10.5	20.1	16.8	19.0

- i) Calculate the annual rainfall experienced by the station.
 ii) Suggest a name of this station, giving a reason for your answer.
 iii) Name the season during which the rainfall is heaviest. [2013]
- 25) a) Mention the different sources of rain in Punjab and Tamil Nadu during the winter season.
 b) State the benefits that are derived from the local winds that blow in summer in the following states:
 i) Kerala ii) West Bengal
 c) Mention a geographical reason for each of the following:
 i) Patna receives heavier rain than Delhi.

ii) Western Rajasthan receives no rain from the Arabian Sea branch of the South West Monsoon winds.

iii) Mangalore is not cold even in the month of December.

d) Study the climate data given below and answer the questions that follow:

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
°C	25.0	25.5	26.3	27.1	30.0	36.2	36.0	35.9	30.3	28.4	27.0	24.6
Cm	24.5	23.1	15.0	2.4	0.1	11.0	9.3	7.2	4.0	9.4	14.5	20.4

i) Calculate the annual temperature range.

ii) What is the total annual rainfall?

iii) Presuming that the station is located in India, give a reason for its location being on the east coast or the west coast of India.

[2014]