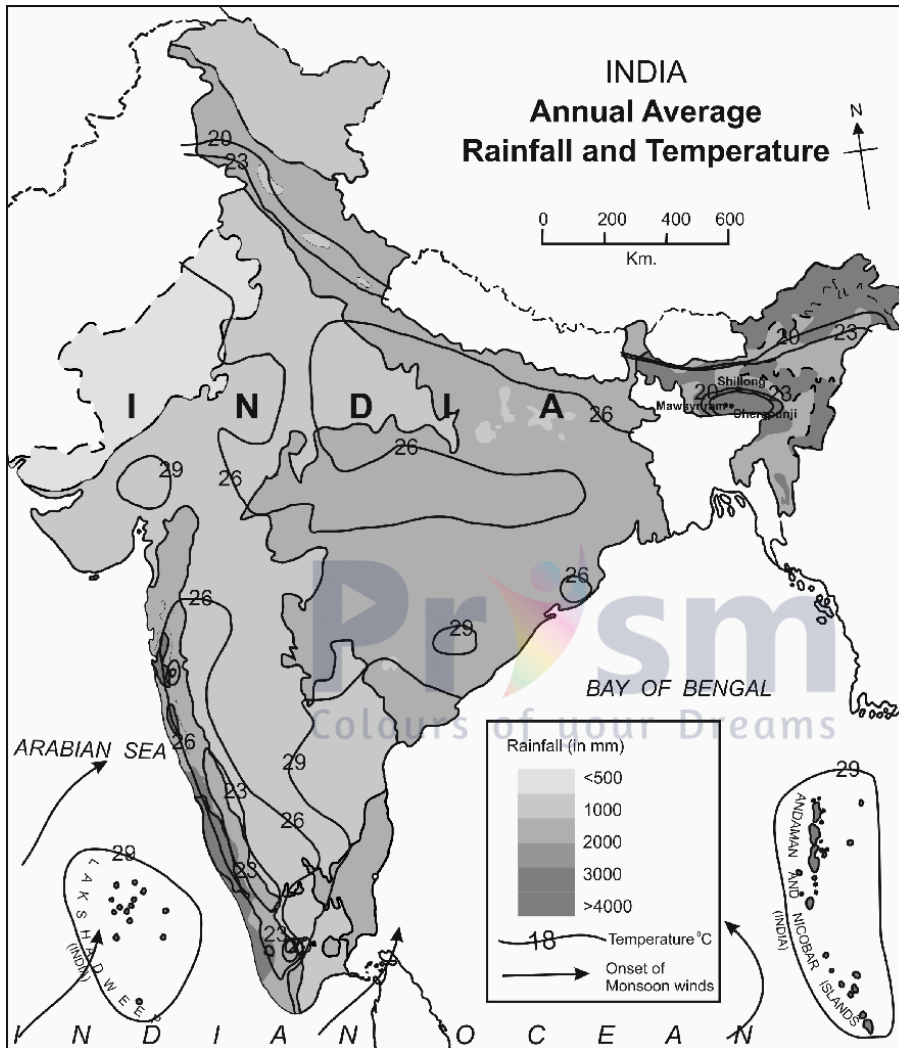


Chapter: 4

Q.1 Observe the given map and answer the questions given below it. (India)

4

1



- i. Which region gets more than 4000 mm of rainfall.
- ii. Identify the regions with maximum and minimum temperature.
- iii. In which direction is the temperature increasing.
- iv. Identify the direction of the winds shown. What are they known as?
- v. Which winds are responsible for the rainfall in India.
- vi. On which part of Peninsular India are semi-arid climatic conditions found and why?

Ans i. North-eastern region.

- a. Maximum temperature : Western part of India Rain shadow area of plateau region.
- ii. b. Minimum temperature : Extreme northern part of Jammu and Kashmir.
- iii. Central part to southern part.
- iv. The direction of the winds is south-west. They are called south-west monsoon winds.
- v. South-west monsoon winds and North-east monsoon winds are responsible for rainfall in India.
 - i. Semi-arid climatic conditions are found in central part of Peninsular India because it lies to the leeward
 - vi. side of the Eastern and Western Ghats.
 - ii. Hence, this region receives very little rainfall from the south-west and north-east monsoons.

Q.2 State whether the given statement is right or wrong and correct the wrong one.

4

1 India and Brazil have the same seasons at the same time

Ans Wrong

India and Brazil have the opposite seasons.

2 Brazil gets a lot of rainfall because of the South west monsoon winds.

Ans Wrong

India gets a lot of rainfall because of the South west monsoon winds.

3 India faces tropical cyclones frequently.

Ans India faces tropical cyclones frequently - **Right**

4 The fact that Brazil lies on the equator affects its climate in a big way.

Ans Wrong

Brazil lies between equator and Tropic of Capricorn.

Q.3 Give Geographical Reasons

18

1 Tropical cyclones occur rarely in Brazil.

Ans i. In Brazil, the differences in temperatures in the coastal regions near the Equator are negligible.

ii. The winds move in the vertical direction in this region.

iii. In addition, the convergence zone of the trade winds is weak here. As a result, cyclones occur rarely in Brazil.

2 Convectional type of rainfall is not prominent in India.

Ans i. Convectional type of rainfall is common in the equatorial region throughout the year due to high temperature and humidity.

ii. This kind of rainfall is common in regions near the Equator, such as Amazon basin in South America.

iii. India lies in the tropical region.

Hence, convectional type of rainfall is not prominent in India

3 Snowfall doesn't always occur in Brazil.

Ans i. Snowfall doesn't always occur in Brazil because its location within the tropical regions makes snowfall very rare.

ii. Snow does not occur in hot and humid tropical regions.

iii. It occurs in the southern-most states of Brazil, particularly in places of higher elevations.

4 India receives precipitation from the North East monsoon winds.

Ans i. After September, the Temperature starts reducing in the north and air pressure starts rising.

ii. The north-east monsoons are dry winds that start blowing from north towards south towards Indian ocean

i.e. it blows from land to sea.

iii. While blowing over the east coast, winds pickup moisture from the Bay of Bengal and bring rains in the eastern coast.

5 There is not much difference in the range of temperature in Manaus.

Ans i. The temperature in Manaus reflects its geographical location. Being so close to the Equator, Manaus receives a lot of Sun's heat.

ii. As a result, the temperature remains high throughout the year.

iii. Hence, there is not much difference in the range of temperature in Manaus

6 The north eastern part of Brazilian Highlands receives very less rainfall.

Ans i. The Escarpment acts as a barrier to the winds coming from the Atlantic Ocean and cause orographic rainfall in the coastal region.

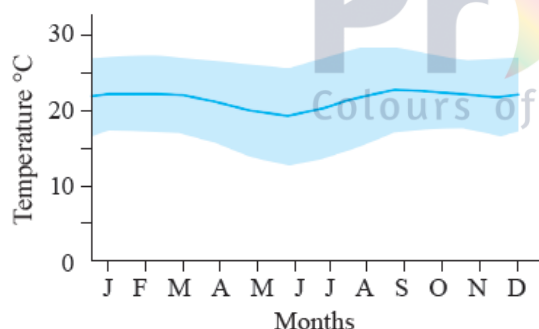
ii. The effect of these winds gets reduced beyond the highlands giving rise to the rain shadow area in the north-eastern part of the Brazilian Highlands.

iii. Hence, the north-eastern part of Brazilian Highlands also known as 'Drought Quadrilateral' receives very less rainfall.

- 1 Below information is regarding annual average temperatures of the continental location of Brasilia and Bhopal . Explain it with the help of a graph.

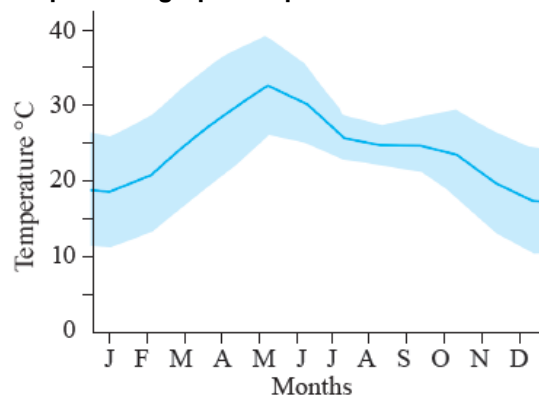
Average temperature (°C)		
	Brasilia	Bhopal
Jan	21.9	18.2
Feb	21.9	20.7
Mar	21.7	25.5
April	20.8	29.8
May	19.6	33.6
June	18.9	31.2
July	19.9	26.6
Aug	21.3	25.7
Sep	22.3	26
Oct	22.1	24.8
Nov	21.7	20.9
Dec	21.3	18.5

Ans Temperature graph Brasilia

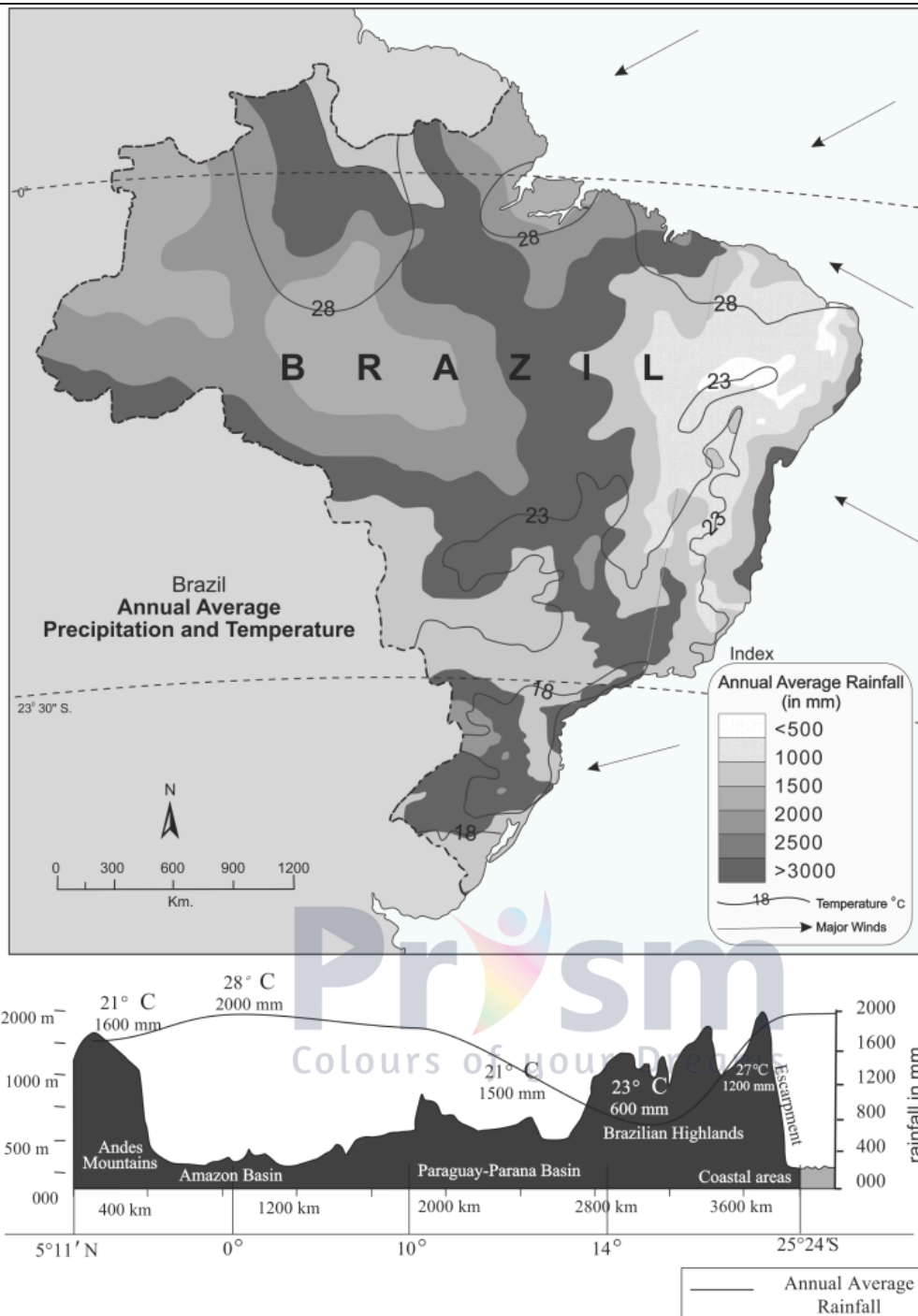


In Brasilia, at an average temperature is 22.3°C, September is the hottest month of the year. The lowest average temperature in the year occur in June, when it is around 18.6°C.

Temperature graph Bhopal



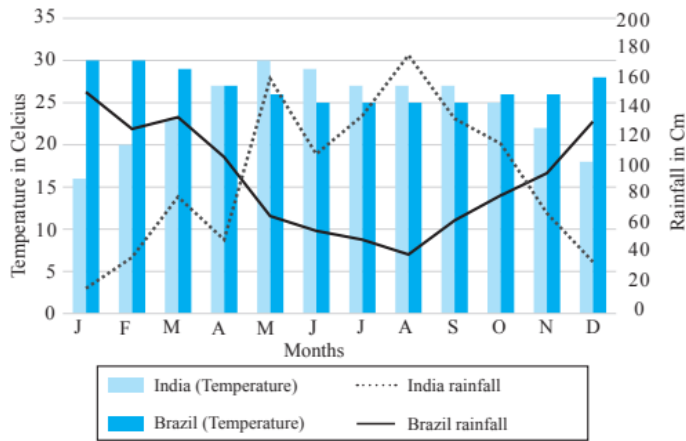
In Bhopal, May is the warmest month of the year with average temperature 33.6°C. January is the coldest month, temperatures averaging 18.2°C.



- Correlate these winds and rainfall.
- In which part of Brazilian are the average temperature low ?
- Identify the rain-shadow area in Brazil
- In which region do you find a higher temperature
- Considering the latitudinal extent of Brazil, where will you find temperate climate in Brazil.
- Describe the winds blowing between 0° to 5° N and S.

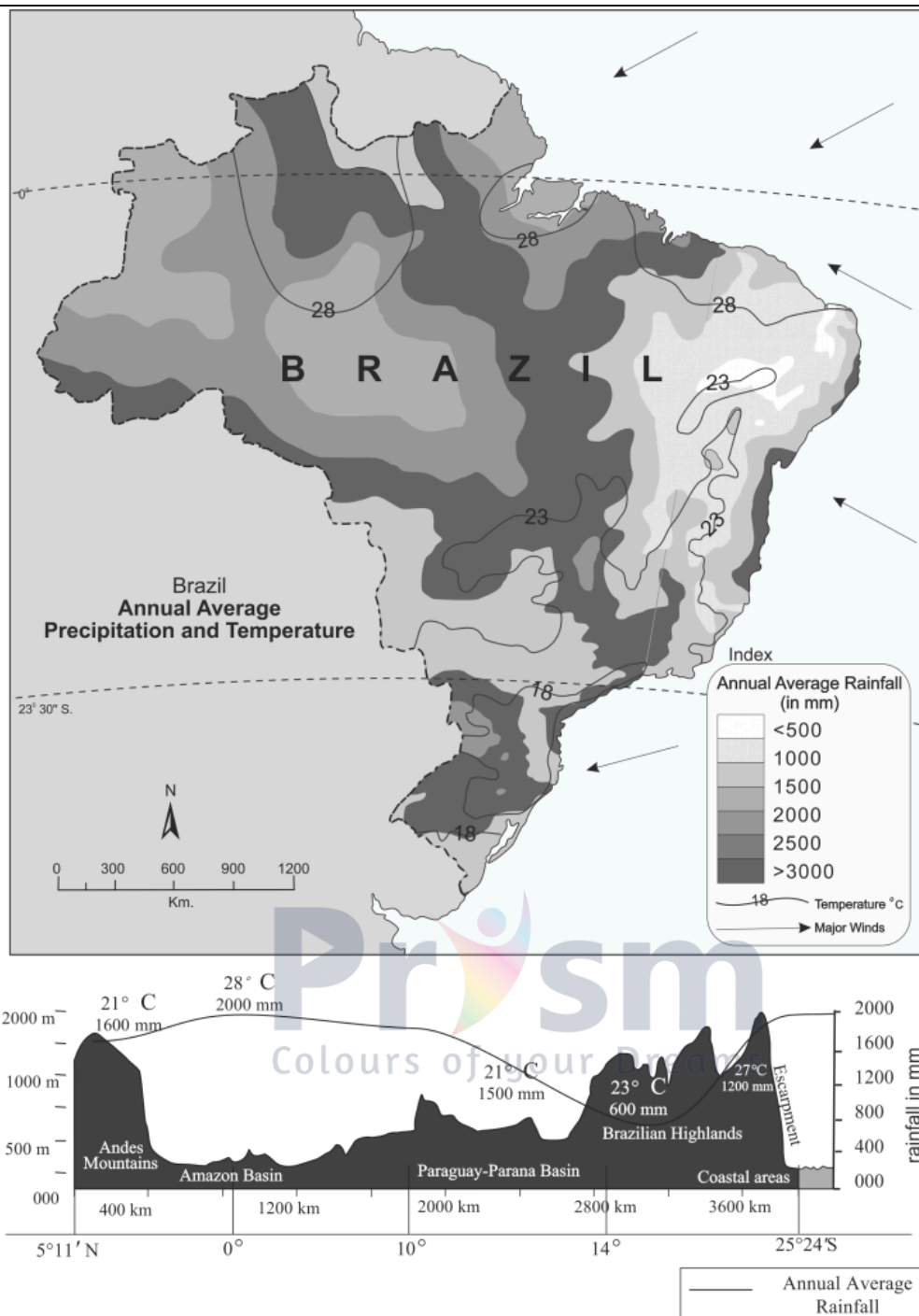
- Ans**
- The North-east and South-east winds given heavy rainfall in the coastal areas where these winds are obstructed by the Brazilian Highlands.
 - Southern part
 - North-east coastal area.
 - Amazon basis region. Central Part
 - Southern part of Brazil.
 - The winds move in vertical direction between 0° to 5° N and S Jones because of the extreme low pressure.

Temperature and Rainfall in Brazil and India



- What are the minimum and maximum temperatures of India?
- What difference do you find in the rainy period in Brazil and India?
- In which month does Brazil get less rainfall?
- In which month does India get higher rainfall?
- In which month does India get lesser rainfall?
- In which month does Brazil have a higher temperature?

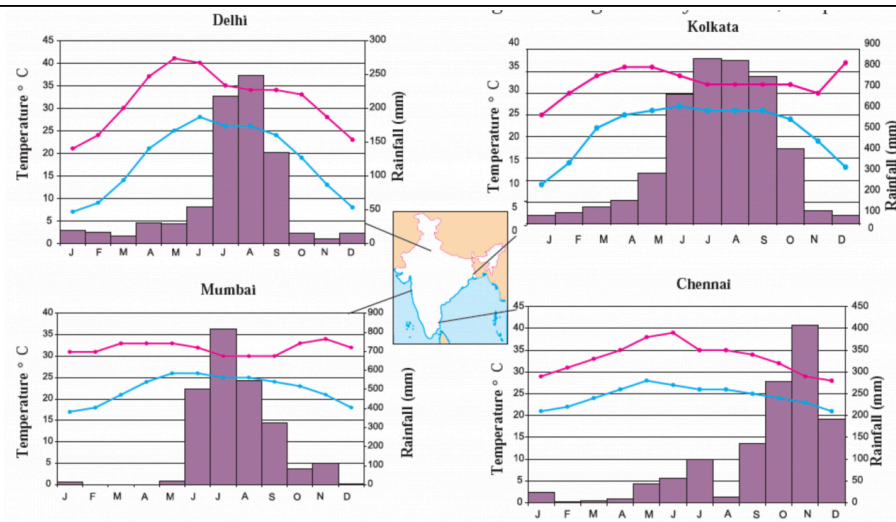
- Ans**
- The minimum and the maximum temperatures of India are 17° C and 30° C respectively.
 - The rainy period in Brazil is experienced from November to April where as in India it is experienced from May to October.
 - Brazil gets less rainfall in the month of August.
 - India gets higher rainfall in the month of August.
 - India gets lesser rainfall in the month of January.
 - Brazil experiences a higher temperature in the months of January and February. (According to the graph, both Jan and Feb are showing 30° C.)



- Considering the isotherms of Brazil what is the average range of temperature in Brazil?
- In which area does it rain more
- From which directions are winds flowing towards Brazil.
- What could be the reasons behind that?
- What could be the obstruction in the way of these winds?
- Which type of rainfall will occur because of these winds?

- Ans**
- 18 °C to 28 °C.
 - Amazon basin.
 - The winds are blowing in from North-east and South-east directions.
 - Sea winds from high pressure blow towards land which has low pressure during the day.
 - Brazilian highland becomes the obstructions in the way of these winds.
 - Orographic rain will occur because of these winds.

5



- What difference do you find in the rainy seasons of Chennai and other cities of India ? Why ?
- What similarity do you see in the temperature curves of Delhi and Kolkata ?
- Calculate the average range of minimum and maximum temperature of all the four cities.
- In which city is the range minimum ? what can you infer from this ?
- In which city is the range maximum ? what can you infer from this about its climate ?
- Based on the temperature and rainfall of Mumbai, comment upon its climate.

Ans Chennai experiences rainy season in the months of October, November, December whereas in Delhi, Kolkata and Mumbai it lasts from June to September. This is because, during winter months the north-east monsoon blows over the country. They are offshore dry winds as they originate from land. Thus they do not bring rainfall to the major part of India. Only a part of north-east monsoon gives rainfall to Chennai and other coastal areas of Tamil Nadu after picking up moisture from the Bay of Bengal and striking against windward slopes of Eastern Ghats.

- The temperature curves of Delhi and Kolkata reflect lowest temperatures in the month of January. The temperature starts rising upto the month of April in both the cities. After April it starts receding up to the month of November.
- The annual range of minimum and maximum temperature of all the four cities is as follows:

Annual range of temperature		
Delhi	$41 - 21 = 20^{\circ} \text{C}$	$28 - 7 = 21^{\circ} \text{C}$
Kolkata	$38 - 25 = 13^{\circ} \text{C}$	$27 - 9 = 18^{\circ} \text{C}$
Mumbai	$34 - 30 = 4^{\circ} \text{C}$	$26 - 16 = 10^{\circ} \text{C}$
Chennai	$39 - 28 = 11^{\circ} \text{C}$	$28 - 21 = 7^{\circ} \text{C}$

- Mumbai has minimum range of temperature. Mumbai being a coastal city experiences equable climate throughout the year due to the moderating influence of the sea. In this type of climate, it is neither too hot in summer, nor too cold in winter.

- Delhi has the maximum range of temperature because it experiences an extreme continental climate due to the fact that it is far away from the sea. In this type of climate, summers are very hot and winters are very cold.

- The climate of Mumbai is warm and humid. The cool weather prevails from December to February and hot weather from March to May. The rainy season, brought by south-west monsoon, is from June to September, lasting through October and November. During these months the weather becomes hot again due to rising temperatures.

- In India, the rainy season lasts from June to September. However, July experiences the highest rainfall.

- Classify the cities as cities with equable and extreme climate.

Type of climate	Cities
Extreme	Delhi
Equable	Chennai, Mumbai, Kolkata

1 Compare the climate of Brazil and India.

- Ans**
- Brazil enjoys tropical climate in the north and temperate climate in the south. It is hot in the north near the Equator.
 - While temperatures in the southern part are comparatively lower. The climate is also cooler in the Highlands.
 - The coastal areas experience mild and humid climate due to proximity to the sea.
 - On the other hand, in India, climate varies from tropical monsoon in south to temperate in north.
 - Peninsular India is bounded by water bodies on three sides. The Bay of Bengal, the Indian Ocean and the Arabian Sea have a great impact on the climate of the coastal regions.
 - The coastal areas experience equable climate throughout the year.
 - South India, being closer to the Equator remains nearly warm throughout the year, while northern parts of India being away from the Equator have warm summers and cold winters.

2 Write the names of the States/Regions in appropriate columns :

Bihar, Tocantins, Pernambuco, Alagoas, Eastern Maharashtra, Western part of Rajasthan, Gujarat, Rio Grande Do Norte, Paraiba, Western Ghats, Eastern Himalayas, Western Andhra Pradesh, Roraima, Amazonas, West Bengal, Roraima, Rio Grande do Sul, Santa Catarina, Goa

States /Regions	India	Brazil
High rainfall
Moderate rainfall
Low rainfall

States /Regions	India	Brazil
High rainfall	Western Ghats, Eastern Himalayas, Goa, Eastern Maharashtra.	Amazonas, Rio Grande do Sul.
Moderate rainfall	West Bengal, Western Andhra Pradesh.	Santa Catarina, Roraima.
Low rainfall	Bihar, Western part of Rajasthan, Gujarat.	Tocantins, Pernambuco, Alagoas, Rio Grande Do Norte, Paraiba.

3 Explain the importance of the Himalayas and the Indian ocean with respect to the climate of India.

- Ans**
- The Himalayas are one of the most important factors influencing Indian climate.
 - The Himalayas form an obstruction which separates India from the rest of Asia and protect it from the cold winds of northern Asia, and at the same time they force the rain-bearing monsoon winds to shed rainfall in the Northern Plains of India.
 - The Indian Ocean has a great impact on the climate of the coastal regions of India. Places near the sea experience equable climate. It is neither too hot in summer nor too cold in winter.
 - Moreover, high pressure conditions develop over the Indian Ocean during the summer months as it is relatively colder than the Indian mainland.
 - The rain-bearing winds from Indian Ocean blow towards the low pressure areas from the southwest and bring rains to a great part of India.

4 Obtain information regarding annual average temperature of the continental annual average location of Brasilia and Bhopal and explain it with the help of a graph.

- Ans**
- Brasilia is located on the Brazilian highland towards east. Brasilia has tropical savana climate the average temperature is 21°C summer starts from October to April alongwith rainy season and winter from May to September.
 - Bhopal is centrally located near tropic of cancer. It lies on Malwa plateau. The city has uneven elevation. It has humid sub-tropical climate. The average temperature in summer ranges 30°C to 40°C which starts in late march till mid-June in winter the temperature drops down to 18° C which starts October to February.
 - The temperature range in Bhopal is extreme but in Brasilia the range of temperature is almost the same and steady throughout the year.

5 Describe in brief the changes occurring in the climatic conditions of India while going from South to North.

- Ans**
- In India, temperature decreases while going from south to north during winter season.
 - India is located just above the Equator. The southern India is closer to the Equator than the northern India.

Hence, the south is warmer than the north.

iii. The coastal regions of Peninsular India experience equable climate due to moderating influence of the sea, whereas places away from the sea towards the interior and north of the country have extreme climate.

iv. In this type of climate, summers are very hot and winters are very cold.

v. As we move towards Himalayas, the temperature decreases. This is because, relief of the land plays an important role in influencing the climatic conditions.

vi. As we go higher, the temperature decreases. Most of the hill stations enjoy cool climate due to their high altitude.

vii. Similarly, the distribution of rainfall is also determined by the relief features and the direction of the monsoon winds.

viii. The Western Coastal Plains and western slopes of Western Ghats receive very heavy rainfall.

ix. As we approach parts of Deccan Plateau, amount of rainfall decreases.

x. Ganga plains, Punjab and Haryana receive moderate rainfall. Whereas Rajasthan, and Ladakh receive very low rainfall.

6 Discuss the factor affecting the climate of Brazil

Ans i. The main factors affecting the climate of Brazil are latitudinal extent, altitude of a place and proximity to the sea.

ii. Brazil experiences wide range of climatic variations due to its vast latitudinal extent. For example, near Equator it is hot while temperate type of climate is found near Tropic of Capricorn.

iii. The coastal regions receive heavy rainfall from trade winds whereas north-eastern part of Brazil is a rain shadow area and receives very low rainfall.

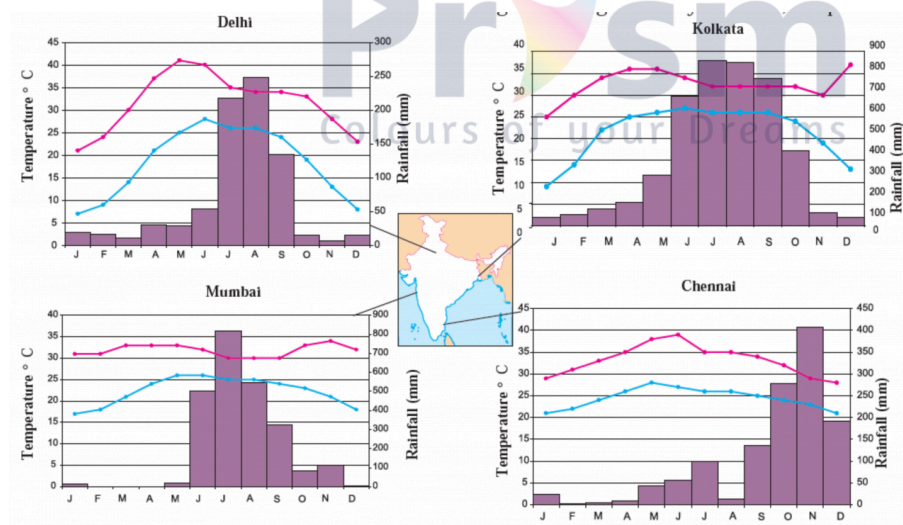
iv. The temperatures in northern part are higher than the southern part due to proximity to Equator.

v. In coastal regions near the Equator, differences in temperatures are negligible due to the moderating influence of the sea.

vi. The climate is cooler in the highlands

Q.6 Extra Question (Not to use)

1



i. In which month does India experience the highest rainfall.

ii. Classify the cities as cities with equable and entrance climate.

iii. Complete the table

Regions	Climatic characteristics
1. Amazon valley	a.
2. Highland	b.
3. Pant anal	c.
4. Southern coastal region	d.
5. Southern most region of Brazil	e.

iv. Complete the table.

Seasons	India	Brazil
1.
2.

v. Complete the table

Stales / Regions	India	Brazil
1. High rainfall
2. Moderate rainfall
3. Low rainfall

vi. What difference do you find in the rainy seasons of Chennai and other cities of India? Why?

Ans i. July month.

ii. Delhi and Kolkata have extreme climate Mumbai and Chennai have equable climate.

iii.

Regions	Climatic characteristics
1. Amazon valley	Hot and humid climate
2. Highland	Cool and, high rainfall
3. Pant anal	Hot and humid climate
4. Southern coastal region	Cool and humid
5. Southern most region of Brazil	Cool, temperate climate

vi.

Seasons	India (Months)	Brazil (Months)
1. Summer	April to Jun	October to March
2. Winter	October to March	April to September

v.

Stales / Regions	India	Brazil
1. High rainfall	Western Ghats Eastern Himalaya Goa.	Tocantins Roroima Amazon roranma Rio - Grand . do - Sul.
2. Moderate rainfall	Bihar, west Bengal, Gujarat	Santa Caterina
3. Low rainfall	Easter Maharashtra western part of Rajasthan western Andhra Pradesh	Pernambuco, Alagoas Rio Grande. Do - Norte Paraiba

vi. Chennai receives rainfall from October to December where as other cities get rainfall from June to September. Because Chennai gets rainfall from North-east monsoon winds which blow from October to December.