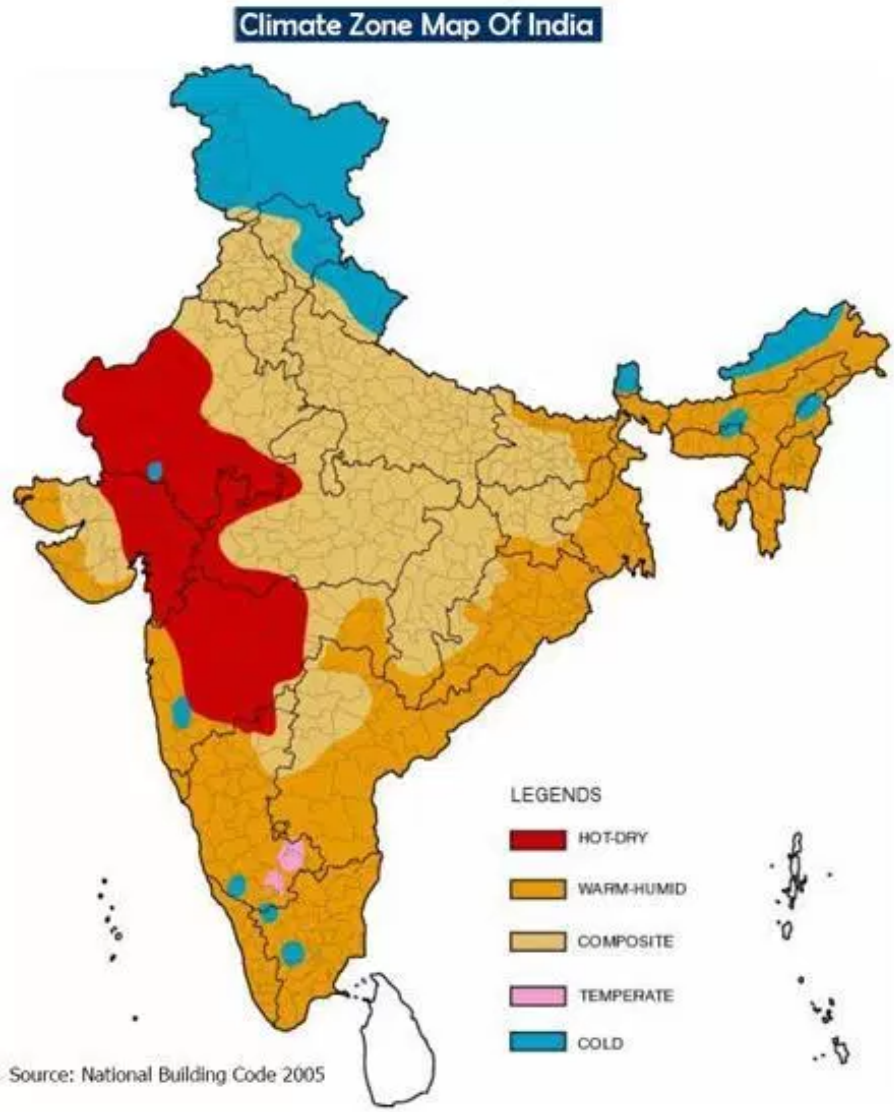
Chapter 3. The Climate of India



Very Short Questions

Question 1: What are 'Western Disturbances'?

Answer: Mediterranean Depressions originating over the Mediterranean Sea. These bring rain in winter to N.W. India.

Question 2: What is the most important feature of the tropical monsoon type of climate?

Answer: The most important feature of the tropical monsoon type of climate is alternation of Seasons.

Question 3: Define 'monsoon'?

Answer: The word Monsoon is derived from the Arabic language which means Mansoon or weather.

Question 4: State the main factors that affect the climate of Indian sub-continent.

Answer: Its latitudinal extent, presence of the Himalayas, and presence of the Indian Ocean, Arabian Sea and Bay of Bengal in the south affect the climate of India.

Question 5: Mention the cause of winter showers in Western Uttar Pradesh?

Answer: Westerly depressions originating in the Mediterranean Sea, cyclones are caused which give winter showers in Western Uttar Pradesh.

Question 6: Which parallel of latitude divides India into the northern and southern halves.

Answer: Tropic of Cancer (23.5° N latitude).

Question 7: Name the state in India through which the standard meridian of India and the Tropic of Cancer pass covering the longest distance.

Answer: Madhya Pradesh is the state in India where standard meridian of India, as well as the Tropic of Cancer pass covering the longest distance.

Short Questions

Question 1: Give two important characteristics of the South West Monsoon rainfall.

Answer: Characteristics of SW monsoon are:
(i) Orographic in nature.
(ii) Uncertain in amount and time.

Question 2: What is the direction of the summer monsoon?

Answer: South West. The intense heat that prevails over India causes the development of low pressure over the northern plains. It attracts the moisture bearing South East Trade winds from the southern hemisphere. After crossing the equator they are deflected to the right and blow over India as the south west monsoon winds.

Question 3: Which type of climate is experienced in the Northern Plains of India? State one main characteristic of this type of climate.

Answer: The northern plains experiences 'continental' type of climate as it is far away from the oceanic effect. The main characteristics of this type of climate is, that it experiences extremes of temperature in the months of summer and winter i.e. it is extremely hot in summer and extremely cold in winter.

Question 4: Why are there great variations in the climate of the Indian sub-continent.

Answer: India has diverse conditions. There are sharp variations in temperature and precipitation from place to place and Season to Season. The Indian climate is controlled by the following factors:
(i) Situation (ii) Relief (iii) Surface winds (iv) Upper current.

Question 5: Describe the process of retreat in case of summer monsoon.

Answer: By mid-September the South-West monsoon begins to withdraw from the Indian sub-continent. The retreating process gets accelerated gradually as the pressure over the land gets higher than the Sea. Cool winds begin to blow from the north and the South-West monsoon starts moving backward.

Question 6: State two important characteristic features of the monsoon rainfall in India.

Answer: (i) Reversal of wind system.
(ii) Uneven distribution of rainfall over the year.

Question 7: 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?

Answer: North-west India—Summer: South-west Monsoons (Bay of Bengal stream), Winter: Winter cyclones from Mediterranean Sea.
Coastal regions of Eastern India—Winter or North-east Monsoon or Retreating Monsoons.

Question 8: Name an area which receives rain in winter. What causes rainfall in this region and how does it benefit agriculture?

Answer: (i) Indo-Gangetic Plain receives rain in winter. Due to the temperate cyclones coming from the Mediterranean Sea these cyclonic rains are beneficial to crops of wheat and barley.
(ii) Chennai Coast and parts of Tamil Nadu from the winter monsoon. It helps in rice cultivation.

Question 9: What is 'October Heat'?

Answer: The retreating of monsoon winds results in clearing the sky. Consequently, the temperature increases. The land is still moist in these months. Owing to the high temperature, the humidity becomes very oppressive. This state of weather is known as October Heat.

Place	State	All time highest Maximum	Highest Maximum in 10 years	Highest Maximum in April 2016
Kozhikode	Kerala	37.2 (Apr 14, 1967)	37.0 (Apr 4, 2015)	37.9 (Apr 30)
Bangalore	Karnataka	38.3 (Apr 30, 1931)	37.6 (Apr 12, 2010)	39.2 (Apr 24)
Anantapur	Andhra Pradesh	43.2 (Apr 30, 1985)	42.9 (Apr 19, 2009)	44.5 (Apr 25)
Mumbai	Maharashtra	42.2 (Apr 14, 1952)	40.6 (Apr 2, 2009)	38.0 (Apr 27)
Delhi	Delhi	45.6 (Apr 29, 1941)	43.7 (Apr 18, 2010)	42.0 (Apr 16)
Lucknow	Uttar Pradesh	41.7 (Apr 30, 2014)	44.0 (Apr 18, 2009)	43.1 (Apr 16)
Bhubaneswar	Odisha	45.0 (Apr 23, 1985)	43.6 (Apr 9, 2010)	45.8 (Apr 11)
Patna	Bihar	44.6 (Apr 29, 1980)	43.5 (Apr 20, 2010)	44.5 (Apr 30)
Nizamabad	Telangana	46.8 (Apr 29, 1988)	44.4 (Apr 20, 2010)	45.1 (Apr 21)
Chennai	Tamil Nadu	42.8 (Apr 27, 1908)	43.0 (Apr 16, 2007)	41.8 (Apr 22)
Khajuraho	Madhya Pradesh	46.9 (Apr 29, 1993)	46.7 (Apr 26, 2008)	45.6 (Apr 16)
Ranchi	Jharkhand	42.6 (Apr 30, 1999)	42.4 (Apr 18, 2010)	42.0 (Apr 27)
Bankura	West Bengal	45.8 (Apr 15, 1973)	45.2 (Apr 21, 2009)	46.7 (Apr 23)

Long Questions

Question 1: Describe the climatic conditions which prevail over India during different Seasons.

Answer:

1. **The Cold Season:** The cold Season lasts from December to February.
   (a) Temperature: The sun is over head at Tropic of Capricorn. India has winter Season. January is the coldest month. The Southern parts have warm conditions (20°C) while low temperatures (10°C) are found in North-West India.
   (b) Pressure and Winds: High pressure is developed over N.W. part while a low pressure exists over Indian Ocean with the result winds blow from land to Sea. The out-blowing winds are Westerly in Northern plain and North Easterly over the rest of the country.
   (c) Rainfall: The North-east Monsoons are off-shore wind and are dry but these winds pick up some moisture while crossing Bay of Bengal and give rain to South-east coast of India. Some cyclones from Mediterranean Sea also bring a small amount of rain (10 to 20 cm.) to Northern plains. Night frost is common in the North-west parts.
2. **The Hot Season:** The hot Season lasts from March to May.
   (a) Temperature: As the sun's rays fall vertical over Tropic of Cancer, the temperature begins to rise. The average temperature is above 30°C, the maximum temperature rises to 50°C in Barmer (Rajasthan). The daily range of temperature rises in inland areas.
   (b) Pressure and Winds: Intense heat results in the development of low pressure over North-West India. A high pressure exists over Indian Ocean. South-West Monsoons begin to blow from Sea to land. 'Nor-westers' and 'Loo' blow over Northern plains.
   (c) Rainfall: Some areas receive convectional rainfall. The west coast also starts receiving rainfall. Most of the country is dry in title pre-Monsoon period.

3. **The Rainy Season:** The rainy Season lasts from June to September.
   (a) Temperature: The sun shines vertical over Tropic of Cancer. The temperatures are more than 30°C. With the onset of monsoon there is a drop in temperature (5°C to 10°C) with the result, July is not the hottest month.
   (b) Pressure and Winds: South-West Monsoons blow from Sea to land with a 'burst' on the West Coast. It blows in two currents.
   (I) The Arabian Sea Current (II) The Bay of Bengal Current.
   (c) Rainfall: Most of the parts of India receive rainfall in this Season. The Arabian Sea branch gives heavy rainfall on the west coast, but Deccan plateau lies in rain shadow of western Ghats. The Bay of Bengal branch gives heavy rainfall in Eastern Himalayas. The rainfall goes on decreasing up the Ganges Valley with the decrease in moisture. Rajasthan is practically a desert.

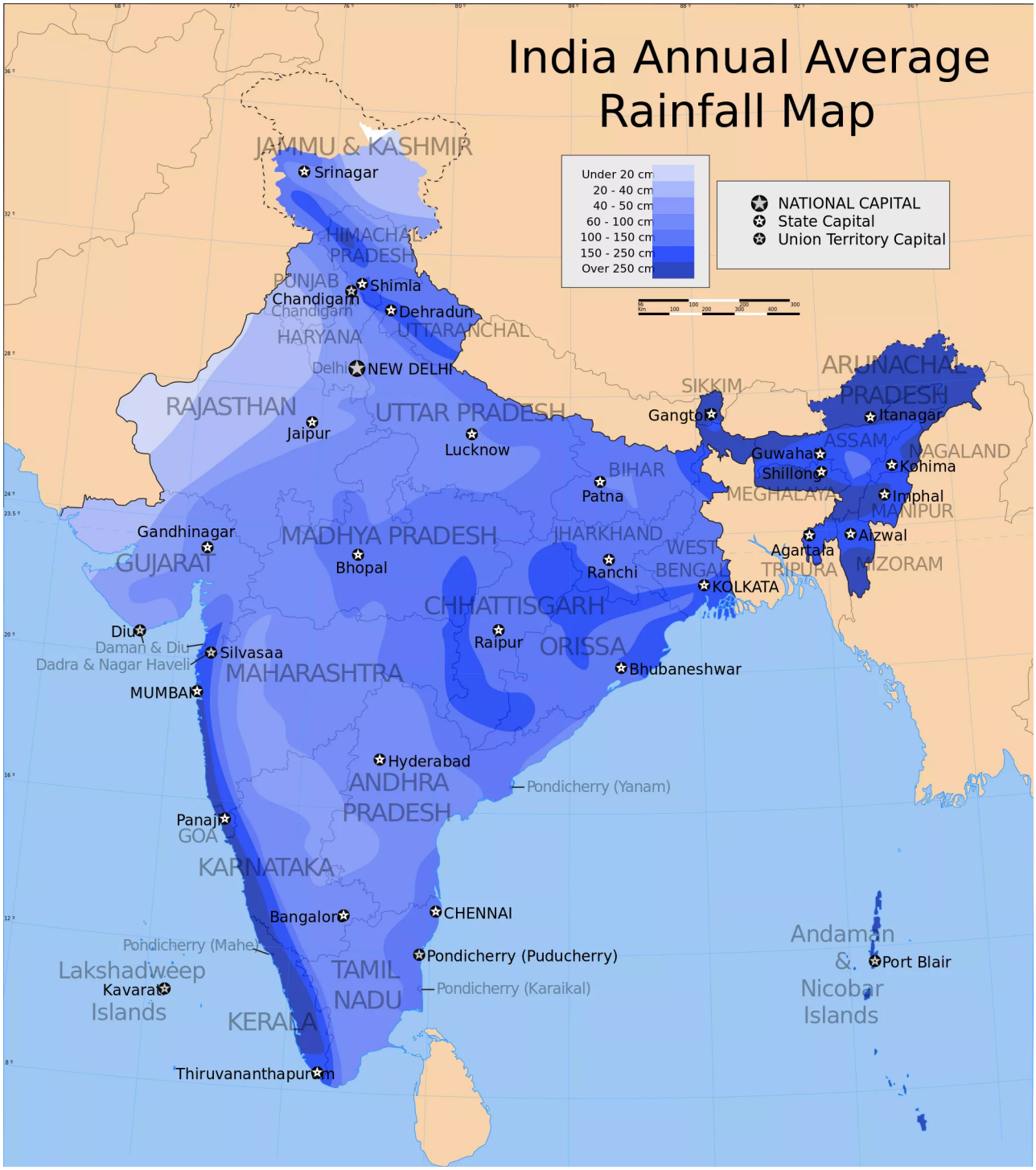
Question 2: Give two important characteristics of the summer monsoon rainfall in India.

Answer: Two important characteristics of the summer monsoon rainfall in India are as follows:
(i) The monsoon rainfall in India is unevenly spread and sporadic. Thus places like the western Ghats receive heavy rainfall of more than 200 cm whereas the desert regions of Rajasthan receive scanty rainfall of less 50 cm a year.
(ii) Monsoon rainfall in India is orographic in nature. Thus the windward slopes of the Western Ghats receive more rain than the leeward slopes.

Question 3: (i) Give an account of distribution of annual rainfall in India.
(ii) Explain how it is related to the relief, with examples.

Answer: (i) The average annual rainfall of India is 110 cm. Regional variations in the distribution are found due to differences in relief of the country. Rainfall is unevenly distributed throughout the country. India can be divided into the following rainfall regions:
Areas of heavy rainfall: These areas get more than 200 cm, of annual rainfall. These include Western Coast and Western Ghats, Sub-Himalayas, and the North-east parts of India.
Areas of moderate rainfall: These areas get annual rainfall of 100-200 cm. These include West: Bengal, Orissa, Bihar, Eastern parts of U.P., and Madhya Pradesh; coastal plains of Tamil Nadu.
Areas of very little rain: Jammu-Kashmir, Western Rajasthan (Thar Desert).

(ii) The Western Ghats: places to the windward side of the Ghats, e.g., Mumbai, Goa, Mangalore, Kerala coast get heavy rain, Places on the leeward side like Pune, the Deccan plateau, Chennai, get less rain.
Garo-Khasi Hills: Cherrapunji which is favourably situated in these hills, gets entrapped in the Bay of Bengal branch of the S.W. Monsoon and gets very heavy rain, Shillong which lies on the leeward side of these Hills gets less rain.
Aravalli Hills: These hills run parallel to the Arabian Sea branch of the S.W. Monsoon and is not conducive to rain. Besides, the Bay of Bengal winds of the S.W. Monsoon coming from the east is blocked and hence Rajasthan lying on the leeward side of these Hills, gets little rain. This is why Thar is a desert.
The Himalaya Mountains block the Bay of Bengal branch of the S.W. Monsoon from crossing the mountains. The places on the southern slopes of the Mountains get heavy rain.



Question 4: State three dominant characteristics of the monsoon.

Answer: The dominant characteristics of monsoon are:
(i) Seasonal reversal of direction in the winds system. The monsoon winds blow from land to Sea in winters and from Sea to land in summers.
(ii) Seasonal heavy rainfall and drought are common features of the monsoon.
(iii) Inspite of local variation in climatic conditions, it unites the whole sub-continent in a single climatic thread of monsoon type of climate.

Question 5: (i) 'Rainfall decreases as one travels up the Ganges Valley.' Why?
(ii) What is the direction of the summer monsoon on the Indo-Gangetic Plain?

Answer: (i) A branch of Summer Monsoon from Bay of Bengal moves up the Ganges Valley, it moves westwards along the Himalayas. The lower Ganges Valley receives the rainfall first and the upper Ganges Valley later on. Kolkata has an annual rainfall of 160 cm. As the branch of monsoon moves westward, it gets drier and drier. So it gives less rainfall. Varanasi gets 104 cm. of rainfall, Delhi gets 66 cm of rainfall.
(ii) Their direction on the Indo-Gangetic plain is east-west.

Question 6: The Coromandel coast has more rainy months but less rainfall than the Konkan Coast. Why?

Answer: Konkan Coast faces on-shore S. W. Monsoons during summer. These moist laden winds give heavy rainfall (more than 300 cm.). But these winds do not give much rainfall on the Coromandel Coast as it lies in the rain shadow of Western Ghats. Coromandel Coast also receives winter rainfall from N. E. monsoons, but on Konkan Coast these winds are off. shore and do not give any rainfall. N. E. Monsoon is a dry wind as it blows from the land. Thus, Coromandel Coast gets rainfall in both the Seasons, but the total blows amount is less than that of Konkan Coast.

Question 7: (i) What is meant by a 'Rain Shadow' area?
(ii) Give one example of 'Rain Shadow' areas in India.

Answer: (i) The leeward side of the hill is called 'Rain Shadow' area which remains dry because the winds are blocked by the hills.
(ii) An example of 'Rain Shadow' area in India is:
For Arabian Sea branch Chennai lies at leeward side of western ghats and falls under Rain Shadow area.

Question 8: (i) Why are there great variations in the climate of the Indian sub-continent?
(ii) Name any three local winds which blow in India and write briefly about each.

Answer: (i) There are great variations in the climate of the Indian sub-continent because of the vast longitudinal extent and different topographical features.
(ii) Mango showers-Good for the growth of mangoes. Kerala.
Loo-Hot dry winds from Rajasthan to Western U.P.
Kalbaisakhi-Thunderstorms in West Bengal and Assam.

Question 9: Why are Himalayas called perfect climate divide? Explain their two-fold functions in this regard.

Answer: (i) Himalayas act as a shield to protect the sub-continent from the bitter cold winds of Central Asia.
(ii) They also act as a barrier for the rain bearing winds from leaving our country.

Question 10: State the climatic significance of the Himalayas to the people of South Asia.

Or

Describe the two ways in which the Himalayas influence the climate of India.

Answer: The Himalayas play a very significant role in influencing the climate of South Asia by virtue of their high altitude, length and direction. They effectively intercept the summer

monsoons coming from Bay of Bengal and Arabian Sea and cause precipitation in the form of rain or snow. Besides, they prevent the cold continental air masses of Central Asia from entering into India.

Give Reasons

Give Geographical Reasons for the following:

Question 1: The latitudinal extent of India is responsible for the variation in the climatic conditions which prevail in the country.

Answer: The Northern plains lie to north of the Tropic of Cancer in the Temperate Zone. The winters are much colder. South India lies below the Tropic of Cancer, in the tropics and gets the direct rays of the sun. Hence it is hot through most of the year. The winters are not so cold.

Question 2: The Northern Plains of India have a Continental type of climate.

Answer: Northern plains have continental climate because it is away from the moderating influence of the sea.

Question 3: The northern plains of India do not freeze in winter.

Answer: The Himalayas prevent the bitterly cold winds of the north from entering into India and helps to keep the temperature of the northern plains at a moderate level.

Question 4: It is cooler on the mountain slopes than in the plains during summer.

Answer: Because the temperature decreases with altitude.

Question 5: Mention why does sub-continent have Tropical Monsoon climate.

Answer: Due to the pressure system, which is well developed over the land and Sea and due to the presence of a large land mass, and water body. Differential heating and cooling of land and water is the chief cause of the Tropical Monsoon type of climate.

Question 6: At a place like Bhopal one can see the midday sun exactly over head twice a year, while at vidisha, only a few kilometre north of it, one is not able to do so even once. Give the reason briefly.

Answer: Bhopal lies south of the Tropic of Cancer and Vidisha lies north of the Tropic of Cancer. Direct rays of the sun can be experienced only till Tropic of Cancer.

Question 7: Even in summer Shimla is cooler than Delhi.

Answer: Shimla is cooler than Delhi in summer as it is located at a higher altitude than that of Delhi. Thus due to Normal Lapse Rate Shimla enjoys a cooler climate than Delhi.

Question 8: Kochi has a lesser annual range of temperature than Agra.

Answer: Kochi has a coastal location while Agra has a continental location. Due to the influence of the moist winds from the sea it experiences a moderate climatic condition throughout the year. Whereas Agra has extreme temperature conditions resulting in high annual range of temperature.

Question 9: Explain why Nainital is cooler than Agra.

Answer: Nainital is a hill station located at a higher altitude. Since temperature decreases with altitude, it is cooler as compared to Agra which lies in the interior. It experiences continental type of climate.

Question 10: Patna receives heavier rain than Delhi.

Answer: Patna receives heavier rain than Delhi because the Bay of Bengal branch of South-West Monsoon goes up the Ganga plain as it proceeds up the Ganga valley, the amount of rain fall keeps decreasing East to West. Since Patna is located to the east of Delhi, it receives 102 cm of rain fall while Delhi gets 50 cm of rain fall annually.

Question 11: Mangalore is not cold even in the month of December.

Answer: Mangalore is located at the south of Tropic of Cancer along the Western Coast of India and enjoys the moderating influence of land and sea breezes throughout the year. The climate over there being equable or mari time type, the place does not experience any winter.

Question 12: India is known as the land of the endless growing Season. Explain.

Answer: India is known as the land of the endless growing Season because being a sub-tropical land it enjoys a growing Season throughout the year. Growing Season is that part of the year when the growth of vegetation is made possible by the favourable combination of temperature and rainfall.

Question 13: Explain the term 'Burst of Monsoon'.

Answer: The sudden outbreak of the monsoon winds with an intensifying low pressure over the north-western part of the sub-continent, associated by thunder and lightning is called the 'Burst of Monsoon'.

Question 14: Explain the term Retreating Monsoon.

Answer: South-West Monsoons begin to withdraw from the sub-continent during the first week of October. The sun begins to move towards equator. There is a decrease in temperature. Hot and sticky weather is found. Some tropical cyclones are developed which give heavy rainfall in coastal areas. Cool weather begins in North-West India, but the southern parts have an equable climate.

Question 15: The mango showers are beneficial local winds.

Answer: Mango showers are local winds which bring rain to Kerala in the month of May. It is good for the growth of mangoes.

Question 16: Mumbai is warmer than Kanpur in December.

Answer: Because it is close to equator as well as Sea.

Question 17: Chennai has a lower annual range of temperature than Lucknow.

Answer: Chennai is located at lower latitude and is closer to the equator as compared to Lucknow. Besides Chennai is close to Sea so its temperature gets moderated whereas Lucknow is in the interior.

Question 18: Jaipur has a higher annual range of temperature than Mumbai.

Answer: Jaipur has a higher annual range of temperature because it is in the interior and it has a continental type of climate, Very hot in summer and Very cold in winter as it is far away from the oceanic effect, where as Mumbai is a coastal area. It is very close to ocean and due to the oceanic effect, it has a moderate climate which makes annual range of temperature very low.

Question 19: Why does Kanyakumari experience an equable climate?

Answer: Since, Kanyakumari is located at the top of the Indian sub-continent where the Bay of Bengal and the Arabian Sea meet, moderating the climate making it equable or maritime.

Question 20: The North East Monsoons bring almost no rain to most of India.

Answer: The North-East Monsoon is a dry wind blowing from the Asian landmass. It collects moisture from the Bay of Bengal. It brings less rain to east India, Chennai coast.

Question 21: Punjab gets rain in winters. Why?

Answer: Punjab gets rainfall in the winter months due to the winter monsoons. The source of winter rainfall for Punjab is also the cyclonic rain received from western disturbances entering the Indian sub-continent from the North-west.

Question 22: Kanyakumari is the first to receive the south-west monsoon stream and the last to see its retreat.

Answer: West coast region is the first to receive rain from the South-west monsoon. Hence, Kanyakumari is the first to receive the South-west monsoon stream. By the first week of October the South-west monsoon begins to withdraw from India since Kanyakumari is the last station to see the retreat of the South-west monsoon.

Question 23: Why does the Tamil Nadu coast get rainfall in October?

Answer: The south-west monsoon begins to withdraw from India by the first week of October. It leaves Jammu-Kashmir, the Northern Plains, then peninsular India, moving southwards and westwards. When it reaches the Chennai coast on its way backwards, it is checked by the Eastern Ghats and imparts rain to the Chennai coast. Chennai gets about 60 cm of rain from the retreating monsoon.

Question 24: Mangalore and Chennai lie approximately on the same latitude, yet Mangalore receives its rainfall from June to September, while Chennai receives rainfall in November and December. What is the reason of this difference?

Answer: Since Mangalore is situated on the west coast, it receives the South-west monsoon in June but Chennai is situated on the east coast so it receives rain from the retreating monsoon in November and December.

Question 25: When the Malabar coast is receiving heavy rainfall in July, the Tamil Nadu coast is comparatively dry.

Answer: When the malabar coast is receiving heavy rainfall in July the Tamil Nadu coast is dry because it lies in rain shadow region of Arabian sea branch and Bay of Bengal is parallel to the coast.

Question 26: Western coastal plains receive more rainfall than the Eastern coastal plains.

Answer: Western coastal plain receives more rainfall than eastern coastal plain because western coastal plain lies on the windward side of western Ghats and gets rainfall more than 200 cm but Eastern coastal plain lies on the leeward side of the Western Ghats and gets a little rainfall (50 to 100 cm).

Question 27: Central Maharashtra receives little rainfall.

Answer: Central Maharashtra receives little rainfall because it lies in the rain shadow region of western ghats when Arabian sea branch strikes it.

Question 28: Mention why does Mumbai receive more rainfall than Pune.

Answer: This is due to the difference in location. Mumbai is situated on the windward slope of the Western Ghats and so it receives more rainfall whereas Pune lies on the leeward side.

Question 29: Mumbai receives rainfall in the summer season while Chennai receives rainfall from October to December. Why?

Answer: Mumbai receives rainfall in summer season by south west monsoon, which enters into India from western coast, where Mumbai liqs and gives it heavy rainfall but Chennai receives rainfall in the month of October to December by the retreating monsoon and the N.E. monsoon which come from north east direction.

Question 30: Though Mangalore and Mysore are on the same latitude, Mangalore experiences more rainfall than Mysore. Give reasons.

Answer: Mangalore experiences more rainfall than Mysore because Mangalore lies on windward side of Western Ghats and Mysore lies on leeward side of the Western Ghats.

Question 31: Western Rajasthan receives no rain from the Arabian Sea branch of the South West Monsoon winds.

Answer: The Arabian sea branch of South-West Monsoon strikes the Saurashtra peninsula and passes over the western Rajasthan, parallel to the Aravalli range. It hardly causes any min in Western Rajasthan because it undergoes thermal heating on blowing over the hot sands and gets unsaturated. As the area lies on the lee ward side of the Aravalli range, no rain is caused.

Question 32: Thar Desert gets very little rain.

Answer: Thar desert remain practically dry because there is no transverse mountain range to check the Monsoon which directly advances towards the Kashmir Himalaya. Of course, there is a mountain range in Rajasthan namely the Aravalli Hills but they stretch South-west to North-east direction. Thus, the Aravalli Hills are roughly parallel to the Arabian Sea Monsoon.

Question 33: 'Thar desert region remains dry in the whole Season'.

Answer: Reasons for the dryness of Thar desert region: The entire region of Thar desert of the Indian Union remains practically dry because there is no transverse mountain range to check the monsoon which directly advances towards the Kashmir Himalayas. Of course, there is mountain range in Rajasthan, namely the Aravalli hills but they stretch South-west to north-east , direction. Thus, the Aravalli Hills are roughly parallel to the Arabian Sea Monsoon. This is why it

does not prove an effective barrier and the Thar region lies in the rain shadow area of these hills for the Bay of Bengal branch of the monsoons coming from the Sea.

Question 34: Rajasthan receives very little rainfall.

Answer: Because it is parallel to the Aravallies.

Differentiate

Question 1: Mention two differences in the climatic conditions which prevail over Kerala and Uttar Pradesh in the month of June.

Answer: Kerala faces the South-West Monsoon which starts by the end of May and brings heavy rain. The climate is cooled. Uttar Pradesh on the other hand lies to the north, in the interior. It will get the rain from the Bay of Bengal branch of the South-West Monsoon which will reach there by the end of June or beginning July. This rain will also be much less as the winds continue dropping their moisture on the way. The plains are very hot in the month of June.

Question 2: Equable and Extreme climates.

Answer:

Equable Climate	Extreme Climate
1. In this climate summers are not very hot and winters are not very cold.	In this climate summers are very hot and winters are very cold.
2. The annual range of temperature is small.	The annual range of temperature is high.

Data based Questions

Question 1: Study the climatic data provided below and answer the questions that follow:

Month	J	F	M	A	M	J	J	A	S	O	N	D
Station A												
Temp °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
Rain 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												
Temp °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
Rain 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.

Answer: (i) 30°C – 24.4°C = 5.6°C.
(ii) 67.4 cms.
(iii) Station B as it gets more rainfall in the months of June, July, August.

Question 2: Given below is the climatic data of a station. Study the table and answer the questions that follow:

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	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	1.3	1.3	1.8	3.8	4.5	8.7	11.3	11.9	30.6	35.0	13.9

(i) Calculate the annual rainfall experienced by the station.
(ii) What is the annual range of temperature?
(iii) Name the wettest month.

Answer: (i) Annual rainfall experienced by the station is 128.7 cm.
(ii) The annual range of temperature is = 32·5 max. temp.
.. – 20·4 min. temp.
= 12·1
= 12·1°C.
(iii) The wettest month is November with the highest rainfall 35.0 cm.

Question 3: Study the climatic data provided below and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
Station A (sea level)												
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	29.6	30.5	26.5	11.9	1.1	0.2
Station B (800 m above sea level)												
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	1.3	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.

Answer: (i) The annual range of temperature of Station 'A' is 9.3°C. The range of tempera-ture is small because the Station 'A' is situated close to sea.
(ii) Station 'B' has the lower temperature because it is situated 800m above sea level (as we

move on the higher altitude the temperature decreases).
(iii) The annual rainfall of station B is = 31.8 cm.

Question 4: Given below is the climatic data of a station. Study the table and answer the questions that follow:

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature in Degree 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 in cms.	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?

Answer: (i) The annual range of temperature = highest temperature of the year – lowest temperature of the year
= 33.5 – 13.7 = 19.8°C.
The annual range of temperature is 19.8°C.
(ii) The total rainfall experienced by the station = 67.4 cm.
(iii) The driest month is November (0.2 cm rain).

Question 5: 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	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.

Answer: (i) Annual rainfall is 114.3 cm.
(ii) Suggested name is Chennai. Because the station is receiving most of its rain in October and November.
(iii) Retreating monsoon season.

Question 6: 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.
°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.

Answer: (i) Annual Range of temperature = 26.2°C – 24.6°C = 11.6°C.
(ii) Total Annual Rainfall = 24.5 + 23.1 + 15.0 + 2.4 + 0.1 + 11.0 + 9.3 + 7.2 + 4.0 + 9.4 + 14.5 + 20.4 = 140.9 cm.
(iii) The station is located on the eastern coast of India, because heavy rainfall is observed in winter season.

Question 7: (i) Study the table given below and answer the questions that follows:

Station	Months	J	F	M	A	M	J	J	A	S	O	N	D
A	Temperature in °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 °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

(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.
(ii) Give reason why Shillong gets hardly 200 cm., rainfall during the year, whereas Cherrapunji gets more than 1250 cm, of rainfall although they are situated very close to each other.

Answer: (i) (a) 68.4 cm
(b) 33.1 – 231 = 10°C
(c) N. E. Monsoon because the maximum rainfall is received in the month of October, November and December.
(ii) Cherrapunji is located in a funnel shaped depression within the Garo-Khasi hills, where South-west monsoon wind get entrapped and it continues to rain in heavy downpours during the rainy Season. On the other hand Shillong is situated in the rain shadow region.

Question 8: A cricket match at Chennai (Madras) from October 24 to 28 had to be abandoned because of bad weather. As a student of geography provide an explanation and 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 rainfall experienced in Chennai (Madras) city.

Answer: The cricket match had to be abandoned because of the retreating monsoon. A high pressure centre begins to build up over the southern region due to the migration of the sun towards the south. By the first week of October the South-west monsoon begins to withdraw from the country. The monsoon moves southwards and causes rain in the southern districts (Chennai) at the end of October.

Question 9: Study the table given below and answer the questions that follow:

Station	Month	J	F	M	A	M	J	J	A	S	O	N	D
A	Temperature 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 cm	2.5	1.5	1.3	10	1.8	7.4	19.3	17.8	11.9	1.3	0.2	1.0
B	Temperature in Degree C.	24.4	24.4	26.7	28.3	300	28.9	27.2	27.2	27.2	27.8	27.2	25.0
	Rainfall in cm	0.2	0.2	0.3	10	1.8	50.6	61.0	24.8	24.8	24.8	1.0	0.7

(i) Calculate the annual rainfall in station A.
(ii) What is the annual range of temperature in station B?
(iii) Which of the two stations has an equable climate?

Answer: (i) 67 cm
(ii) 5.6°C
(iii) Station B.

Question 10: Study the climatic data given below and answer the questions that follow:

Month	Jan	Feb	Mar	Apr	May	Jim	Jul	Aug	Sep	Oct	Nov	Dec
Temperature °C	23.8	25.0	27.7	28.3	30.2	30.3	30.4	33.3	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.

Answer: (i) 28° C.
(ii) 180.5 cm.
(iii) The station has a maritime climate as the range of temperature is very low i.e., 6.6° C.

Name the Following

Question 1: Name two types of cyclonic systems that affect India and two areas that receive rainfall from these systems.

Answer: Two cyclonic systems that affect India are:
(i) Temperate, cyclones-Region-North west of India (Punjab and Haryana)
(ii) Tropical cyclones – Region – eastern coast of India (A.P., T.N., W.Bengal).

Question 2: Name two important features of the Indian monsoon.

Answer: (i) Seasonal reversal Of wind system.
(ii) Rainfall by the monsoon winds is mainly induced by the relief (mountains) features of the

country (orographic rainfall).

Question 3: Name the source from where Western Himalayas gets its rainfall.

Answer: Western Himalayas gets its rainfall from the South-west monsoon.

Question 4: Name the areas receiving very heavy rainfall on account of favourable situation of a mountain

Answer: The west coast region of the southern Peninsula and the north-eastern part of India receive very heavy rainfall on account of favourable situation of the mountain ranges.

Question 5: Name the state in India where there is highest rainfall.

Answer: Meghalaya.

Question 6: Name the winds which are responsible for heavy rainfall in India.

Answer: South-West Monsoon winds and North-East Monsoon winds.

Question 7: Name the winds which provide relief rainfall to the Tamil Nadu coast?

Answer: Tamil Nadu coast gets relief rainfall when the South-west monsoon retreats.

Question 8: The source of the winter rain to Tamil Nadu.

Answer: North-East Monsoon.

Question 9: Name the state of Indian Union where the rainy season is very short?

Answer: Jammu and Kashmir is the only state in India which has a very short rainy season.

Question 10: Name the regions of moderate rainfall in India.

Answer: Madhya Pradesh, Eastern parts of U. P., coastal plains of Tamil Nadu, Bihar, Orissa and West- Bengal in India get moderate rainfall.