

CLASS: VII

CHAPTER: 3

CLIMATES OF INDIA

Competency-Based Questions with Answers

NCERT-aligned | Case Studies • Application • Reasoning • HOTS

A. CASE STUDY & APPLICATION-BASED QUESTIONS

Q1. Aarav lives in Mumbai, while his cousin Vihaan lives in Nagpur. Both places are at nearly similar latitudes, but Mumbai generally has less extreme temperatures. (a) Which climatic factor explains this difference? (b) How does this factor affect temperature?

Answer: Proximity to the sea. The sea moderates temperature, so coastal Mumbai generally experiences less extreme summers and winters than inland Nagpur.

Q2. Meera visits Shimla during summer and notices that the weather is much cooler than in the plains where she lives. (a) Which factor causes this difference? (b) Explain why.

Answer: Altitude. Temperature generally decreases as altitude increases. Therefore, places at higher elevations are usually cooler than nearby lowland areas.

Q3. Rohan is studying why Kanniyakumari remains warm for most of the year, while places much farther north experience colder winters. What geographical factor helps explain this difference?

Answer: Latitude. Kanniyakumari is closer to the Equator and receives more direct solar energy, whereas places farther north receive the Sun's rays more obliquely.

Q4. Sana's family is travelling from the western coast towards the Deccan Plateau during the monsoon. She notices that the western slopes of the Western Ghats receive much more rainfall. Why does this happen?

Answer: The Western Ghats act as a barrier to moisture-laden monsoon winds. The winds rise along the western slopes, causing heavy rainfall there. The Deccan Plateau on the eastern side receives comparatively less rainfall.

Q5. Kabir observes that the Thar Desert can have very hot days but considerably cooler nights. It also receives very little rainfall. Which type of climate is associated with this region?

Answer: The Thar Desert has an arid climate, characterised by very little rainfall and large differences between daytime and night-time temperatures.

B. MONSOON-BASED COMPETENCY QUESTIONS

Q6. Ananya learns that during summer, the Indian landmass becomes very hot and develops low pressure. Moist winds then move from the ocean towards the land. Explain the sequence that leads to monsoon rainfall.

Answer: Summer heating → low pressure develops over land → winds move from relatively higher-pressure ocean areas towards land → winds carry moisture → moisture condenses → rainfall occurs.

Q7. Dev says, “The southwest monsoon winds bring rain because they come from the ocean.” Is this explanation complete? Give a better explanation.

Answer: No. The winds come from the ocean and carry large amounts of moisture. When this moist air rises and cools, water vapour condenses and produces rainfall.

Q8. Isha is studying the winter monsoon. She learns that land cools faster than the ocean during winter. How does this difference in heating and cooling affect wind direction?

Answer: In winter, relatively high pressure develops over the cooler land, while the warmer ocean has relatively lower pressure. Winds therefore generally blow from land towards the ocean.

Q9. Arjun notices that parts of eastern and southern India receive rainfall during the winter season from winds that are generally dry over land. How can these winds become moisture-bearing?

Answer: The winds can pick up moisture after passing over the Bay of Bengal and then bring rainfall to parts of eastern and southern India.

Q10. Nisha reads that the southwest monsoon normally reaches the southern tip of India in early June and covers the subcontinent by around mid-July. Why is the arrival of the monsoon important for India?

Answer: The monsoon provides a major share of India's rainfall. It is important for agriculture, water supplies, ecosystems and many economic activities.

C. CLIMATE AND HUMAN LIFE

Q11. Rahul's village depends heavily on monsoon rainfall for farming. One year the monsoon is much weaker than usual. Mention two possible effects on the village.

Answer: There may be reduced crop production and water shortages. A poor harvest can also affect farmers' incomes and local food prices.

Q12. Priya notices that people in different parts of India wear different types of clothes and eat different foods. How can climate contribute to these differences?

Answer: Climate influences temperature, rainfall, crops and availability of resources. These factors affect clothing, food habits, housing and daily activities.

Q13. A farmer wants to decide when to sow a crop. Why is knowledge of the local climate useful?

Answer: Climate information helps the farmer understand seasonal temperature and rainfall patterns, allowing farming activities and crop choices to be planned appropriately.

Q14. A region receives reliable monsoon rainfall, while another region experiences frequent rainfall shortages. How might their economies differ?

Answer: The region with reliable rainfall may have more dependable agricultural production and water availability. The region with frequent shortages may face lower agricultural output, economic difficulties and possible migration.

D. CLIMATE-RELATED DISASTERS

Q15. A cyclone warning is issued for a coastal district. A school principal decides to postpone outdoor activities and advises families to follow official warnings. Why is this a sensible response?

Answer: Cyclones can bring very strong winds, heavy rainfall and damaging conditions. Following warnings and changing plans can reduce risks to people and property.

Q16. Sameer sees satellite information showing a strong low-pressure system developing over the sea. Why might meteorologists closely monitor such a system?

Answer: A strong low-pressure system over the sea can intensify and potentially develop into a cyclone. Monitoring allows authorities to provide timely information and warnings.

Q17. During very heavy rainfall, a river rises rapidly and water spreads over nearby normally dry land. What is this event called, and what is one possible cause?

Answer: It is a flood. Heavy rainfall can produce more runoff than the land and drainage systems can absorb, causing rivers or other water bodies to overflow.

Q18. Kavya lives in a mountainous area where heavy rainfall is followed by a sudden movement of soil and rocks down a slope. What has most likely happened?

Answer: A landslide has occurred. Heavy rainfall can weaken and saturate slopes, increasing the likelihood of slope failure.

Q19. A hill town experiences repeated landslides after heavy rain. Trees have also been removed from nearby slopes. How could deforestation increase the risk?

Answer: Removing vegetation can reduce the stability of soil and slopes and can increase runoff. This can make slopes more vulnerable to erosion and landslides.

Q20. During a prolonged hot and dry period, a forest fire spreads rapidly because strong winds are blowing. Identify two conditions that can help a forest fire spread.

Answer: Dry conditions and strong winds can help a forest fire spread rapidly.

E. CLIMATE CHANGE

Q21. Aditya learns that burning coal, petroleum and natural gas releases greenhouse gases. Why is this important in the study of climate change?

Answer: Burning fossil fuels increases greenhouse gases in the atmosphere. These gases trap additional heat and contribute to global warming and climate change.

Q22. Tara says, “The greenhouse effect is always harmful.” Is this statement correct?

Answer: No. The natural greenhouse effect is essential for life because it helps keep Earth warm enough. The problem is the additional greenhouse effect caused by increased concentrations of greenhouse gases due to human activities.

Q23. A city replaces some fossil-fuel-based energy with renewable energy and improves energy efficiency. Is this an example of mitigation or adaptation?

Answer: It is mitigation because these actions help reduce greenhouse-gas emissions and address the causes of climate change.

Q24. A coastal community strengthens its disaster-preparedness system and develops plans for dealing with future climate-related hazards. What type of response is this?

Answer: This is adaptation and resilience-building because the community is preparing to cope with changing conditions and reduce the effects of hazards.

F. HIGHER-ORDER THINKING QUESTIONS

Q25. Two cities are located at nearly the same latitude. City A is on the coast, while City B is far inland. Predict which city is likely to experience a greater annual temperature range. Give a reason.

Answer: City B is likely to experience a greater annual temperature range because inland areas are less influenced by the moderating effect of the sea.

Q26. A student claims that altitude is the only reason why India's climate varies from place to place. Why is this conclusion incorrect?

Answer: Altitude is only one factor. India's climate is also influenced by latitude, proximity to the sea, winds and topography. These factors work together.

Q27. Why does India experience such great climatic diversity despite being one country?

Answer: India has a very large geographical area with mountains, plateaus, plains, deserts and coastal regions. Differences in latitude, altitude, distance from the sea, winds and topography create varied climatic conditions.

Q28. Suppose the Himalayas did not exist. How might India's climate be different?

Answer: The Himalayas help protect the Indian subcontinent from extremely cold winds from Central Asia and influence monsoon rainfall. Without them, northern India's climatic conditions and rainfall patterns could be substantially different.

Q29. Why can a change in monsoon rainfall affect more than just farmers?

Answer: Monsoon rainfall affects water availability, food production, prices, industries, employment, transport and livelihoods. Therefore, changes in rainfall can have wider economic and social effects.

Q30. A town has rapid construction, little vegetation and large areas covered by concrete. The town becomes warmer than nearby rural areas. What phenomenon does this illustrate?

Answer: It illustrates the urban heat island effect, in which built-up areas can become warmer than surrounding areas because buildings and paved surfaces absorb and retain heat.

G. SOURCE-BASED / ANALYTICAL QUESTIONS

Q31. Mawsynram receives around 11,000 mm of average annual rainfall. What does this tell us about India's rainfall distribution?

Answer: It shows that rainfall is highly unevenly distributed across India. Some regions receive extremely heavy rainfall, while others, such as desert regions, receive very little.

Q32. A weather report predicts a weak monsoon season. A farmer decides to conserve water and review crop choices. How does this show the importance of climate information?

Answer: The farmer is using information about expected rainfall to reduce risk and plan agricultural activities. Climate and weather information can support better decision-making.

Q33. A community uses traditional observations of plants and animals to anticipate seasonal changes but also checks official forecasts. Why is combining these approaches useful?

Answer: Traditional observations provide local knowledge and clues, while scientific forecasts use systematic observations, measurements and analysis. Using both can improve awareness, while official warnings should guide safety decisions.

Q34. A student says, “If one year has very heavy rainfall, India's climate has permanently changed.” Explain why this reasoning is incorrect.

Answer: Climate refers to long-term patterns, generally studied over several decades. A single year's rainfall is a short-term observation and cannot by itself establish a permanent change in climate.

Q35. Imagine a region where the sea suddenly disappeared and became land. How could this affect its climate?

Answer: The moderating influence of the sea would be lost. The region could experience greater temperature extremes, with hotter summers and colder winters compared with its previous coastal conditions.

H. CHALLENGE QUESTIONS

Q36. Explain the relationship among land heating, pressure, winds and rainfall during the summer monsoon.

Answer: Strong summer heating makes the land hotter and creates relatively low pressure. Winds move from relatively higher-pressure areas over the ocean towards the low-pressure land. These winds carry moisture. When the moist air rises and cools, condensation occurs and produces monsoon rainfall.

Q37. Why is the Western Ghats region much wetter on its western side than on the eastern side?

Answer: Moisture-laden monsoon winds from the Arabian Sea meet the Western Ghats and are forced to rise. This produces heavy rainfall on the windward western slopes. The eastern side lies in the rain-shadow region and generally receives less rainfall.

Q38. How are climate, agriculture and the economy interconnected in India?

Answer: Climate determines temperature and rainfall patterns, which influence agricultural production. Agriculture supports livelihoods and supplies raw materials and food. Therefore, changes in climate or monsoon rainfall can affect employment, incomes, food prices and the wider economy.

Q39. Why should disaster preparedness be considered an important part of understanding India's climate?

Answer: India experiences hazards such as cyclones, floods, landslides and forest fires. Understanding climatic conditions and risk patterns helps communities prepare, respond to warnings and reduce damage.

Q40. “Climate is not just about temperature and rainfall; it influences the way people live.” Explain with examples.

Answer: Climate influences agriculture, food, clothing, housing, festivals, livelihoods and economic activities. For example, farmers plan crops according to rainfall and seasons, while people adapt their clothing and daily routines to local temperatures.

★ QUICK REVISION — MOST IMPORTANT COMPETENCY CONCEPTS

- Latitude → affects heating from the Sun.
- Altitude → higher places are generally cooler.
- Sea → moderates coastal temperatures.
- Winds → transport heat and moisture.
- Topography → mountains and landforms influence rainfall and temperature.
- Summer monsoon → land heats → low pressure → moist ocean winds → rainfall.
- Winter monsoon → land cools → relatively high pressure → winds move towards ocean.
- Western Ghats → receive heavy rain on western slopes and influence rainfall over the Deccan Plateau.
- Climate → affects agriculture, culture, livelihoods and economy.
- Climate hazards → cyclones, floods, landslides and forest fires.
- Climate change → long-term changes increasingly influenced by human activities.
- Mitigation → reduce causes of climate change.
- Adaptation/resilience → prepare for and cope with impacts.

Prepared for exam practice from Chapter 3, Climates of India, Class VII, Exploring Society: India and Beyond, Part-I.
Questions are designed for application, reasoning and competency-based assessment.