INDIAN SCHOOL AL WADI AL KABIR

Class: IX	Department: SOCIAL SCIENCE	Subject: Geography
Chapter 3 Question Bank :1	Topic: The Dynamic Atmosphere & changing Climate	Year :2026-27

Q 1	**i) What is the atmosphere?** Ans. The atmosphere is a thick layer of gases that surrounds the Earth and makes life possible by providing air and regulating temperature. **ii) Define climate.** Ans. Climate is the average weather condition of a place over a long period of time. **iii) What is humidity?** Ans Humidity is the amount of water vapour present in the air at a given time. **iv) What is atmospheric pressure?** Ans. Atmospheric pressure is the force exerted by the weight of the air on the Earth's surface. **v) What is precipitation?** Ans. Precipitation refers to all forms of water that fall from the atmosphere to the Earth's surface, such as rain, snow, and hail. **vi) What happens to temperature in the mesosphere?** Ans. In the mesosphere, the temperature decreases with height, making it one of the coldest layers of the atmosphere. **vii) Why do meteorites burn in the mesosphere?** Ans: Meteorites burn in the mesosphere due to friction with the gases present in this layer. **viii) What is relative humidity?** Ans: Relative humidity is the percentage of moisture present in the air compared to the maximum amount it can hold at a given temperature. **ix) What is October heat?** Ans: October heat refers to the hot and humid weather conditions experienced during the retreating monsoon season.
Q 2	**A) State the importance of the troposphere.** 1. The troposphere contains about 75% of the total mass of the atmosphere. 2. All weather phenomena such as rain, storms, and clouds occur in this layer. 3. It supports life as all living organisms exist within it. **B) Give three features of the stratosphere**. 1. The stratosphere contains the ozone layer, which protects Earth from harmful UV rays. 2. The temperature in this layer increases with altitude. 3. It has very little turbulence, making it suitable for aircraft to fly. **C) State three functions of nitrogen.** 1. Nitrogen is the largest component of the atmosphere, making up about 78%. 2. It helps reduce the intensity of oxygen and prevents rapid combustion. 3. It is essential for plant growth through the nitrogen cycle. **D) Give three uses of oxygen.** 1. Oxygen is essential for respiration in humans and animals.

	2. It supports combustion and burning processes. 3. It is required for oxidation processes in nature and industry. **E) State three characteristics of humidity.** 1. Humidity refers to the amount of water vapour present in the air. 2. It is measured in terms of relative humidity, expressed as a percentage. 3. High humidity slows down evaporation and makes the air feel moist. **F) Give three features of atmospheric pressure**. 1. Atmospheric pressure is the force exerted by the weight of air on the Earth's surface. 2. It decreases as altitude increases. 3. It is measured using an instrument called a barometer. **G) State three features of wind**. 1. Wind is the movement of air from high-pressure areas to low-pressure areas. 2. It is characterized by its speed and direction. 3. Wind plays an important role in influencing weather conditions. **H) Give three features of the hot weather season.** 1. The hot weather season occurs in India from March to May. 2. During this season, temperatures rise significantly, especially in northern India. 3. Hot and dry winds known as loo blow during this period. **I) State three causes of climate change.** 1. Burning of fossil fuels releases large amounts of carbon dioxide into the atmosphere. 2. Deforestation reduces the number of trees that absorb carbon dioxide. 3. Industrial and agricultural activities release greenhouse gases like methane and nitrous oxide. **J) Give three causes of floods**. 1. Floods are often caused by heavy and continuous rainfall. 2. Overflowing rivers can lead to flooding in nearby areas. 3. Cyclones, dam bursts, and melting glaciers can also cause floods.
Q 3	**Explain the structure of the atmosphere.** a) The atmosphere is divided into five layers based on changes in temperature. b) The troposphere is the lowest layer where weather and life exist. c) The stratosphere contains the ozone layer that protects Earth from UV rays. d) The mesosphere is the layer where meteors burn upon entering the atmosphere. e) The thermosphere and exosphere are the upper layers where satellites orbit and communication take place.
Q 4	**Describe the composition of the atmosphere.** a) Nitrogen forms about 78% of the atmosphere and is important for plant growth. b) Oxygen makes up about 21% and is essential for respiration and combustion. c) Argon (0.93%) and carbon dioxide (0.04%) are present in smaller quantities. d) Water vapour varies from place to place and plays a key role in weather. e) Dust particles help in the condensation process and formation of rainfall.
Q 5	**Explain the elements of weather and describe how each element is measured, mentioning the instruments used.** a) Temperature is the degree of hotness or coldness of the air, and it is measured using a thermometer, usually in degrees Celsius. b) Atmospheric pressure is the force exerted by the weight of air on the Earth's surface, and it is

	measured using a barometer in millibars. c) Wind is the movement of air from high-pressure areas to low-pressure areas, and its speed is measured by an anemometer while its direction is shown by a wind vane. d) Humidity refers to the amount of water vapour present in the air, and it is measured using a hygrometer in terms of relative humidity. e) Precipitation includes all forms of water falling from the atmosphere such as rain, and it is measured using a rain gauge in millimetres.
Q 6	**Describe the composition of the atmosphere and the extent of its layers.** a) The atmosphere is composed mainly of gases such as nitrogen (78%), oxygen (21%), argon (0.93%) and carbon dioxide (0.04%), along with water vapour and dust particles, all of which are essential for life and weather processes. b) The troposphere is the lowest layer of the atmosphere, extending from about 8 km at the poles to 18 km at the equator, and it contains most of the atmospheric mass and all-weather phenomena. c) The stratosphere lies above the troposphere and extends up to about 50 km, and it contains the ozone layer which protects the Earth from harmful ultraviolet rays. d) The mesosphere extends up to about 80 km above the Earth's surface, and it is the layer where meteorites burn due to friction with air particles. e) The thermosphere (ionosphere) extends up to about 450 km and is the hottest layer, playing an important role in radio communication and satellite transmission, while the exosphere is the outermost layer that gradually merges into space and contains traces of hydrogen and helium.
Q 7	**Describe the main features of the hot weather season.** a) It is experienced from March to May. b) In March, the highest temperature is about 38° Celsius, recorded on the Deccan plateau. c) In April, temperatures in Gujarat and Madhya Pradesh are around 42° Celsius. d) In May, a temperature of 48°Celsius is common in the north-western parts of the country. e) The Deccan Plateau experiences a temperature up to 38 degrees. f) Towards the end of May, a vast low-pressure area develops in north India extending from the Thar Desert to the Chhota Nagpur plateau. g) Loo, strong, hot, and dry winds blow during the day over northern and north-western India which further increases the temperature. h) When the summer season is about to end, Kerala and Karnataka experience monsoon showers which help in the ripening of mangoes in these states known as ''Mango Showers''.
Q 8	**Describe the general weather conditions of the cold weather season.** a) Starts by mid-November in northern India and continues till February. b) December and January are the coldest months in the northern part of India. c) Temperature decreases from the south (24°C to 25°C) to north (10°C to 15°C). d) Days are warm and nights are cold. However, the coasts of Tamil Nadu receive most of its rains from NE Trade winds. e) In north India, a weak high pressure is developed. Light winds blow from west and North West in Ganga valley. f) The inflow of depression from west and northwest is the striking feature over the north-western plains known as the western disturbances caused due to low pressure conditions over the Mediterranean Sea bringing rainfall during the winter season. g) This rainfall is of great importance for the growing of rabi crops and is known as 'Mahawat". h) The peninsular region has no pronounced winter season.

Q 9	**Explain the progress of the advancing monsoon in India along with its characteristic features.** A low-pressure area is developed over the interior parts of India in summer. Winds from the southern hemisphere are attracted towards this low-pressure area. They cross the equator and reach India as the south-west monsoon winds. Near peninsular India, they divide into 2 branches – the Arabian Sea Branch and the Bay of Bengal Branch. **a)** Arabian Sea Branch of the monsoon reaches Mumbai by 10th of June. 1. It is obstructed by the Western Ghats and brings heavy rainfall to the windward side of the Western Ghats or Sahyadris. 2. They bring a fair amount of rainfall in the Deccan Plateau and causes some rainfall in Madhya Pradesh. 3. Thereafter, they enter the Ganga plains and mingle with the Bay of Bengal Branch. 4. Rajasthan and parts of Gujarat get scanty rainfall. **b)** The Bay of Bengal branch gets directed towards parts of southeast Bangladesh and coastal Myanmar to be deflected later. Due to Arakan hills along Myanmar's coast, it gets deflected and strikes the north-eastern parts of the country, causing heavy rainfall in the region. 1. Low temperature in northwest India causes the branch to split into two-one of which moves westward and the other one moves to the north and northeast India. 2. The westward branch reaches the Punjab plains along the Ganga plains while the other branch moves up the Brahmaputra valley to cause heavy and widespread rains in northeastern India. 3. Monsoon is known for its uncertainties. The alternation of dry and wet spells vary in intensity, frequency and duration. While it causes heavy floods in one part, it may be responsible for droughts in the other. 4. These winds are irregular in their arrival as well as retreat. Hence, it sometimes disturbs the farming schedule of millions of farmers all over the country.
Q 10	**What are the characteristic features of the retreating monsoons?** a) Season starts from October to November. b) The monsoon trough of low pressure becomes weaker and is gradually replaced by high pressure. c) High temperatures and humidity cause the daytime weather to become oppressive known as "October heat". d) Tropical cyclones, originating in the Bay of Bengal, hit the eastern coast of India and thickly populated Godavari, Krishna and Kaveri delta causing heavy rainfall and loss of lives and property. e) Coromandel Coast receives the bulk of its rains in this season.
Q 11	**Discuss the unifying role of the monsoons in India.** a) The Himalayas protect the sub-continent from extremely cold winds and enable northern India to have a uniformly high temperature. b) The peninsular plateau under the influence of the sea has a moderate temperature. c) The seasonal alternation of wind systems and weather conditions provides a rhythmic cycle of seasons. d) The Indian landscape, its animal and plant life, its entire agricultural calendar, and the life of the people, including their festivities, revolve around the phenomena of monsoon. e) Year after year, the people of India, from north to south and from east to west, eagerly await the arrival of the monsoon despite its uncertainties and uneven distribution of rainfall. f) Monsoon winds bind the whole country by providing water to set agricultural activities in motion. g) River valleys that carry water also unite as a single river valley unit.