Class 7 Science

Chapter 14 Wind and Storm

Short Question and Answers

II. Very Short Answer Type Questions

1. A movement (usually horizontal) of air in the atmosphere. **Ans:** Wind
2. A scale used to represent the category of a cyclone **Ans:** Simpson Scale
3. Name for cyclone in East Asia **Ans:** Typhoon
4. When the eye of storm hits land **Ans:** Landfall
5. Tornadoes formed over sea **Ans:** Waterspouts

III. Short Answer Type Questions

Q.1 Why is there an uneven heating of the Earth?

Ans: Because the Earth is spherical and receives different amounts of sunlight at different places. The equator gets more direct sunlight than the poles, leading to uneven heating.

Q.2 Why do rain-bearing winds from over the ocean blow towards the land in summer?

Ans: During summer, land heats up faster than water. The warm air over land rises, creating a low-pressure area. Cooler air from the ocean (high pressure) rushes in to fill the gap, bringing rain.

Q.3 Why does warm air rise?

Ans: Warm air is lighter and less dense than cold air, so it rises upward in the atmosphere.

Q.4 Explain why roofs can be blown off during a storm.

Ans: During a storm, fast-moving air above the roof creates low pressure. The higher pressure inside the house pushes the roof upwards, causing it to blow off.

Q.5 Why does a wind vane point towards the direction of the wind?

Ans: A wind vane aligns itself so that its arrow points in the direction from which the wind is coming. The tail catches the wind, and the pointer indicates the wind’s origin.

Q.6 On what factors does atmospheric pressure depend upon?

Ans: Atmospheric pressure depends on the temperature, altitude, and moisture content of the air.

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Long Question and Answers

IV. Long Answer Type Questions

Q.1 Explain how a wind is set up in the atmosphere.

Ans: Wind is created in the atmosphere due to the uneven heating of the Earth's surface by the sun. Different parts of the Earth receive different amounts of heat. For example, during the day, land heats up faster than water. The air above the land becomes warm, expands, becomes lighter, &rises, creating a low-pressure area.

In contrast, cooler air over water or nearby areas creates a high-pressure area. Air always moves from high pressure to low pressure. So, the cooler air rushes in to take the place of the rising warm air. This movement of air is what we call wind.

Thus, wind is set up due to differences in temperature and air pressure, caused by the uneven heating of the Earth's surface.

Q.2 Describe a simple experiment to show that air in the atmosphere exerts pressure.

Ans: Take a glass tumbler and fill it completely with water. Cover the mouth of the glass with a stiff card or thick paper. Hold the card firmly in place and quickly turn the glass upside down. Now gently remove your hand from the card while keeping the glass upside down.

You will observe that the card does not fall, and water stays inside the glass. This happens because the air pressure from below the card is greater than the weight of the water above, which holds the card in place.

This experiment clearly shows that air exerts pressure on objects.

Q.3 You are given a fully blown balloon, a tub of hot water, and a tub of ice-cold water. Using these items, explain how you would show that air expands on heating and contracts when it cools down.

Ans: Take a fully blown balloon and place it in a tub of hot water. You will observe that the balloon expands slightly. This happens because the air inside the balloon gets heated, expands, and takes up more space. Now, take the same balloon and place it in a tub of ice-cold water. You will notice that the balloon shrinks. This is because the air inside cools down, contracts, and occupies less space.
This simple activity shows that air expands on heating and contracts on cooling.

Q.4 Draw a diagram and explain briefly how a cup anemometer works.

Ans: **A simple explanation:**
A cup anemometer has three or four cups attached to arms, which are fixed on a central axis. When wind blows, the cups rotate. The number of rotations per minute is measured to calculate wind speed. (You can draw a circular device with 3–4 hemispherical cups on arms, fixed to a rod with a scale.)