

Board – CBSE

Class – 7

Topic – Winds, Storms and Cyclones

1. What are thunderstorms?

Ans:

Thunderstorms are high-speed rain-carrying winds that frequently develop in hot, humid places. The increased temperatures produce upward rising winds. These winds carry water droplets upward. As the water droplets rise upwards, they cool and freeze and fall again. This swift falling of water droplets, along with the rising air, creates lightning and thunder. This is called a thunderstorm. Thunderstorms may turn into a cyclone under conditions of very high temperature and low air pressures.

2. Explain the structure of a cyclone.

Ans:

The cyclone has a central calm area called the eye of the cyclone. A cyclone is essentially a violently rotating mass of air, 10-15km high. The diameter of the eye can vary from 10-30 km. It is a calm area free of winds and clouds. Around this area is a region of clouds for about 150km. This region has high-speed winds (150-250km/h) and thick clouds with heavy rains. Away from this region, the wind speed gradually decreases.

3. Explain the formation of a cyclone.

Ans:

Cyclone is a weather condition that forms as a result of low pressure and high temperature. It is formed over the sea and moves towards land. One part of the air gets heated up very fast and rises rapidly. Cold air from the surrounding regions rushes into the low-pressure area. This causes gale-force winds. The warm air cools as it rises and condenses to form water droplets and clouds. In this process, heat is released into the surroundings. This heat further heats up the air around

it, causing it to rise. The whole cycle is repeated over and over again until it forms a low-pressure region surrounded by high-speed winds revolving around it. This condition is called a cyclone. The low-pressure region in the centre is called the eye of the cyclone. It depends on temperature, wind speed, air pressure and humidity.

4. Explain why warm air is lighter than cold air.

Ans:

As the air heats up, it expands. Warm air, therefore, occupies more volume than cold air. Therefore, for the same amount of air, warm air has more volume than cold air. This decreases the density of air, making warm air lighter.

5. Demonstrate that warm air expands on heating.

Ans:

Take a boiling tube and cover its neck with a balloon. Place the boiling tube in a beaker of boiling water. It can be observed that the balloon inflates slightly. When the same boiling tube is placed in ice-cold water, it can be seen that the balloon deflates. When the boiling tube is placed in hot water, the air inside the boiling tube gets heated up. This causes the air to expand and the balloon to inflate. This shows that warm air expands on heating.

6. What is a cyclone watch?

Ans: Cyclone watch or cyclone alert is a warning issued 48 hours before an approaching cyclone. This is possible due to advances in satellite imagery and radars. A cyclone warning is issued 24 hours in advance of an impending cyclone.

7. How will you help your neighbours in case a cyclone approaches your village/town?

Ans.

- (i) I will make them aware of the cyclone forecast and warning service.
- (ii) Rapid communication of warning to the government agencies and all the

important places.

(iii) Construction of cyclone shelters in the cyclone-prone areas.

(iv) Helping them to shift essential goods, domestic animals etc., to safer places.

8. Explain why holes are made in hanging banners and hoardings.

Ans.

Air exerts pressure. Due to this pressure, banners and hoarding flutter and are torn when the wind is blowing fast. Therefore, holes are made in banners and hoardings so that wind passes through the holes and do not become loose and fall.

9. State two experiences that made you think that air exerts pressure.

Ans.

(i) Balloons and balls can be used only when they are inflated with air. When the balloon is overfilled with air, it bursts due to excessive air pressure.

(ii) Compressed air is used in the brake system for stopping trains.

10. You want to buy a house. Would you like to buy a house having windows but no ventilators? Explain your answer.

Ans.

No, a house that has no ventilators is not a safe or healthy house to live in. The air circulation is not there in such a house. So, it has no fresh air. Because warm air rises and goes out through ventilators and fresh air comes in through windows.

11. Suggest two methods to find out wind direction at a given place.

Ans.

(i) Take a piece of paper in your hand. Allow it to fall from your hand. It will flow in the direction in which the wind is blowing.

(ii) You can also use a wind-pane which helps us to know the accurate wind direction

12. What planning is required in advance to deal with the situation created by a cyclone?

Ans.

It is important to follow the following points to deal with a cyclone :

- (i) carefully listening to the warnings transmitted on T.V. and radio.
- (ii) moving to safer places.
- (iii) keeping an emergency kit ready.
- (iv) store food in waterproof bags.
- (v) not venturing into the sea.
- (vi) keeping all the emergency numbers.

13. Is it difficult to ride a bicycle against the direction of the wind? Why?

Ans. Yes, it is difficult to ride a bicycle against the direction of the wind as air exerts pressure in the opposite direction in which the bicycle is moving.

14. What is the direction of the wind in winter?

Ans.

In winter, the direction of the wind flow gets reversed; it flows from the land to the ocean.

15. How are satellites helpful in predicting weather patterns?

Ans:

Weather satellites take pictures of clouds, measure temperature, wind speed and wind directions. Thus, they help in predicting weather patterns.