



Class: VII	DEPARTMENT: SCIENCE 2023-24	DATE: 06-09-2023
WORKSHEET NO: 8 WITH ANSWERS	TOPIC: WINDS, STORMS AND CYCLONES	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

**I. OBJECTIVE-TYPE QUESTIONS**

1. When cold water is poured on a hot tin can, the shape gets distorted as:



- a. **the pressure inside the can is less than that outside.**
  - b. The pressure inside the can is more than that outside.
  - c. The pressure inside the can is the same as that outside.
  - d. The pressure inside the can is equal to atmospheric pressure.
2. Air moves faster between two places when the pressure difference between the places is:
- a. less
  - b. zero
  - c. **more**
  - d. equal to the atmospheric pressure.
3. Which of the following measures must be taken when one is stranded in a region experiencing a cyclone?
- a. Drive towards the eye of the cyclone.
  - b. **Stay indoors, away from the windows.**
  - c. Move to the highest point in the building.
  - d. Move out of your homes, into an open field.
4. Riding a bicycle would be easier:
- a. **In the direction of the wind**
  - b. Against the direction of the wind
  - c. During a storm
  - d. Both a and b

5. Observe the given figure. What do you conclude from the activity?



Fig. 8.4 Blowing between the balloons

- a. Reduced air pressure can lift objects.
  - b. High wind speed reduces air pressure.**
  - c. Air expands on heating.
  - d. Warm air is lighter than cold air.
6. Which among the following is not affected by a difference in air pressure?
- i. Hurricane ii. Tornado iii. Volcano
- a. i only
  - b. ii only
  - c. iii only**
  - d. both i and ii

*For the following questions, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below*

*i) Both A and R are true and R is the correct explanation of the assertion.*

*ii) Both A and R are true but R is not the correct explanation of the assertion.*

*iii) A is true but R is false.*

*iv) A is false but R is true*

7. Assertion (A): Air moves from the region where air pressure is low to the region where the pressure is high.

Reason(R): When warm air rises up the air pressure at that place is lowered and cold air from the surrounding areas rushes to fill its place.

**[Hint: [iv] A is false but R is true]**

8. Assertion (A): Holes are usually made in hanging banners and hoardings.

Reason (R): Holes allow the high-speed wind to pass through, thereby reducing the damage caused due to high pressure.]

**[Hint: i) Both A and R are true and R is the correct explanation of the assertion.]**

9. Assertion (A): Uneven heating on the earth is the main cause of wind movements.

Reason (R): Winds carrying water vapour bring rain.

**[Hint: ii) Both A and R are true but R is not the correct explanation of the assertion.]**

10. Assertion (A): On heating air expands and occupies more space.

Reason (R): The warm air is denser than cold air.

**[Hint: iii) A is true but R is false.]**

## II. VERY SHORT QUESTIONS (2M):

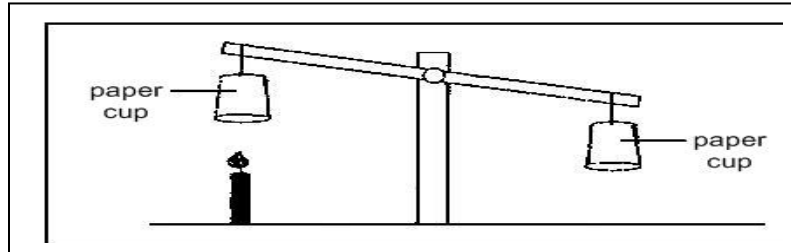
1. When strong/high-speed wind blows, an umbrella held upright at times gets upturned. Give reason.

**[Hint: High-speed wind passing over the umbrella creates low pressure above the umbrella. Therefore, the pressure below the umbrella upturns it.]**

2. Why does a cyclonic storm die after reaching the land?

**[Hint: Friction with the land and moisture deprivation]**

3. Observe the figure given below and answer the question that follows.



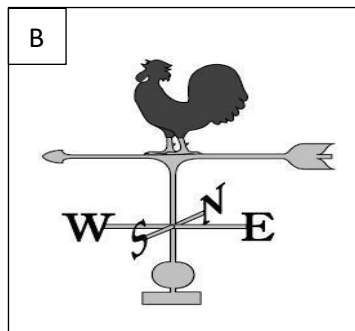
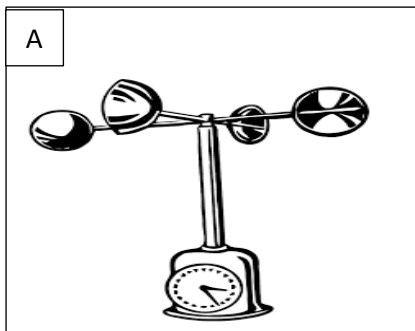
Why is the balance of the cups disturbed?

**[Hint: The air above the first cup gets heated. Hot air being lighter rises]**

4. A bicycle tube overfilled with air may burst. Why?

**[Hint: Due to air pressure exerted on the walls of the tube]**

5. Identify the figures A and B. Mention their uses.



**[Hint: A- Anemometer – to measure wind speed; B - Wind vane – to find the direction of wind]**

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

**[Hint: i. By seeing the direction of dry leaves released in the air.**

**ii. By seeing the direction in which it is difficult to ride the bicycle.]**

7. Why do the leaves of trees, flags and banners flutter when the wind blows?

**[Hint: Due to the pressure exerted by moving air.]**

8. Name two advanced technologies which help in making the forecast of a cyclone.

**[Hint: Satellites and radars.]**

### **III. SHORT ANSWER TYPE QUESTIONS: (3M)**

1. Why is it advisable not to shut all the doors and windows during a storm?

**[Hint: During storms, heavy winds passing over the house create a low pressure. The high pressure inside the house tries to fill the low pressure outside. Since this pressure is stuck inside the house, therefore, it pushes or lifts the roof off. So, unless the house is well-ventilated, the roof is more likely to blow off in a strong wind.]**

2. Mention the precautions to be taken if you are staying in a cyclone-hit area.

**[Hint: i. Do not drink water that could be contaminated.**

**ii. Always store drinking water for emergencies.**

**iii. Do not touch wet switches and fallen power lines.**

**iv. Do not go out just for the sake of fun.**

**v. Cooperate and help your neighbours and friends.**

**vi. Do not pressurise the rescue force by making undue demands.]**

3. Explain the formation of a thunderstorm.

**[Hint: Thunderstorms develop in hot, humid tropical areas like India very frequently. The rising temperatures produce strong upward rising winds. These winds carry water droplets upwards, where they freeze, and fall again. The swift movement of the falling water droplets along with the rising air create lightning and sound. It is this event that we call a thunderstorm.]**

4. What are the precautions to be taken during a thunderstorm?

**[Hint: If a storm is accompanied by lightning, we must take the following precautions:**

- Do not take shelter under an isolated tree. If you are in a forest, take shelter under a small tree. Do not lie on the ground.**
- Do not take shelter under an umbrella with a metallic end.**
- Do not sit near a window. Open garages, storage sheds and metal sheds are not safe places to take shelter.**
- A car or a bus is a safe place to take shelter. If you are in water, get out and go inside a building.]**

### **IV. LONG ANSWER TYPE QUESTIONS. (5M)**

1. Explain the formation of a cyclone. Name the factors which help in the development of a cyclone.

**[Hint: Before cloud formation, water takes up heat from the atmosphere to change into vapour. When water vapour changes back to liquid form as raindrops, this heat is released into the atmosphere. The heat released warms the air around. The air tends to rise and causes a pressure drop. More air rushes to the centre of the storm. This cycle is repeated. The chain of events ends with the formation of a very low-pressure system with very high-speed winds revolving around it. It is this weather condition that we call a cyclone. Factors like wind speed, wind direction, temperature and humidity contribute to the development of a cyclone.]**

2. Explain briefly the destruction caused by cyclones.

**[Hint: Cyclones can be very destructive.**

- i. The water waves produced by the wind are so powerful that a person cannot overcome them. The low pressure in the eye lifts the water surface in the centre. The rising water can be as high as 3–12 meters. It appears like a water wall moving towards the shore. As a result, the seawater enters the low-lying coastal areas, causing severe loss of life and property.**
- ii. It also reduces the fertility of the soil.**
- iii. Continuous heavy rainfall may further worsen the flood situation.**
- iv. High-speed winds accompanying a cyclone can damage houses, telephones and other communication systems, trees, etc., causing tremendous loss of lives and properties.]**

#### **V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS**

1. To expel hot air out of the kitchen, 'A' has an exhaust fan fitted on the window of her kitchen and 'B' has a similar exhaust fan fitted on the wall near the ceiling of her kitchen. Which of the exhaust fans will expel the hot air more effectively? Explain why?

**[Hint: The exhaust fan of B will expel the hot air effectively as hot air rises and her fan is at a greater height than A's.]**

2. A teacher hypothesises that high-speed winds lead to reduced air pressure. To demonstrate this, he cuts a long strip of paper, holds one end of it firmly and blows over it, from that end. What will happen to the strip of paper? Why?

**[Hint: The strip of paper moves sharply upwards. When air is blown over the top of the strip of paper, the air pressure decreases above the paper. The air pressure below the strip is relatively higher; it pushes the paper upward.]**

3. The table shows the estimated wind speed and pressure at the centre of a cyclone over a few days. Observe it and answer the questions given below.

Day	Wind speed (km/hr)	Pressure at the centre (hPa)
Tuesday	165	975
Wednesday	200	945
Thursday	240	940
Friday	210	950

- i. On which day is the cyclone likely to be most destructive?
  - a. Wednesday
  - b. Tuesday
  - c. Thursday**
  - d. Friday
- ii. What does the data in the given table show?
  - a. High-speed winds always form a cyclone.
  - b. The greater the wind speed, the higher the pressure at the centre.
  - c. The lower the pressure at the centre, the greater the wind speed.**
  - d. High-speed winds destroy life and property.

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