



## INDIAN SCHOOL AL WADI AL KABIR



<b>Class: VII</b>	<b>Department: SCIENCE 2021 -22</b>	<b>Date :07/10/21</b>
<b>Worksheet No:8</b>	<b>Topic: Winds, storms and cyclones</b>	<b>Note:A4 FILE FORMAT</b>
<b>NAME OF THE STUDENT:</b>	<b>CLASS &amp; SEC:</b>	<b>ROLL NO.</b>

### **I. VERY SHORT ANSWER TYPE QUESTIONS (1M):**

- 1) What is wind? [Hint: Moving air is called wind.]
- 2) Write the two main causes of wind. [Hint- Temperature and Pressure differences]
- 3) A fire alarm usually detects smoke in case of fire. Where such an alarm should be placed in a room? [Hint: In case of fire, the air above the fire becomes hotter and rises up. So, the alarm should be placed on the ceiling in a room, it can detect the smoke rising up.]
- 4) What is a cyclone? Name the factors which help in the development of a cyclone. [Hint: Strong windstorm caused by the difference in air pressure in the atmosphere. Factors like wind speed, wind direction, temperature and humidity help in development of cyclone.]
- 5) What are the two advanced technologies which help in making the forecast of a cyclone? [Hint: Satellites and radars.]
- 6) Suggest some precautions to be taken to prevent the roof of a tin sheet from flying away during a fierce wind storm. [Hint: Some precautions are: (i) Put heavy stones on it. (ii) Screw it tight.]
- 7) What is a tornado? [Hint: A dark funnel shaped cloud that reaches from the sky to ground]
- 8) Name the other two names of a cyclone. [Hint: Hurricane, Typhoon]

For question numbers 9-11, 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

9. Assertion (A): Amritsar is unlikely to be affected by a cyclone

Reason (R): A cyclone develops over a sea and Amritsar is very far away from the sea.

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

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

Reason (R): High speed wind cannot pass through holes in hanging banners and hoardings easily.

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

11. 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]

## **II. PASSAGE BASED QUESTIONS:**

Earth is surrounded all around with air. Air expands on heating and contract on cooling and exerts pressure in all directions. When warm air rises up, air pressure at that place is reduced and the cooler air moves to that place. The warm air is lighter than the cold air. Winds are formed by this movement of air. Two measurements are needed to describe wind: wind direction and wind speed. An anemometer is used to measure wind speed. Air pressure has a great effect on the weather. An area of low pressure containing rising warm air is called a cyclone. Cyclones usually cause rainy, stormy weather. Self-help is the best help .Therefore it is better to plan in advance and be ready with defence against any approaching cyclone.

- a. Air exert pressure in:
  - i. **all directions**
  - ii. downward direction only
  - iii. upward direction only
  - iv. sideways only
- b. When warm air rises up, it creates an area of
  - i. high pressure
  - ii. **low pressure**
  - iii. no pressure
  - iv. moderate pressure
- c. The instrument to measure the speed of wind is called:
  - i. anaeroid barometer
  - ii. **anemometer**
  - iii. wind vane
  - iv. Odometer
- d. The centre of a cyclone is called
  - i. **eye**
  - ii. neck
  - iii. a funnel
  - iv. Head
- e. When there is storm, one should:
  - i. goes out in the sea
  - ii. take a shelter under a tall tree
  - iii. carry an umbrella
  - iv. **stay inside the house.**
- f. Which of the following is not associated with cyclone?
  - i. Heavy rains
  - ii. strong wind
  - iii. sea waves
  - iv. **volcanic eruptions**

## **III. CASE STUDY BASED QUESTIONS:**

1) 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. Which of the following results would support his hypothesis?

- (a) **The strip of paper moves sharply upwards.**
- (b) The strip of paper moves sharply downwards.
- (c) The strip of paper lets wind pass, undisturbed.
- (d) The strip of paper wiggles violently in all directions.

## **IV a) SHORT ANSWER TYPE QUESTIONS: (2M)**

1. Why is it difficult to ride a bicycle against the direction of wind?

[Hint: **Blowing wind exerts a force on us in the direction opposite to the motion of our bicycle**]

2. Explain why, a bicycle tube overfilled with air may burst. [Hint-**air pressure exerted on the walls of the tube**]
3. A small paper ball is kept at the mouth of a glass bottle held horizontally as given in the figure. Explain why is it difficult to force the paper ball into the bottle by blowing air into the bottle. [Hint- **high speed wind is accompanied by a low air pressure**]



4. Observe the given figure and answer the following:



What happens when we blow air in the space between two inflated balloons filled with water?  
Give reason to support your answer

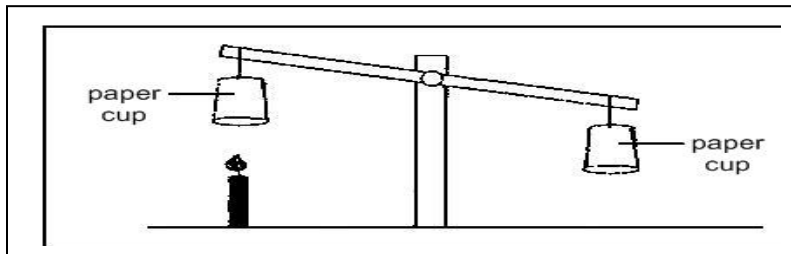
[Hint: The two balloons come closer. High speed wind is accompanied by a low air pressure]

5. List four precautions to be taken if you are staying in a cyclone hit area

[Hint: Do not drink water that could be contaminated. Always store water for emergencies  
Do not touch wet switches and fallen power lines.  
Do not go out just for the sake of fun.  
Cooperate and help others and friends]

6. What is a thunderstorm? [Hint- The atmospheric disturbance characterised by strong winds, rain, thunder and lightning.]

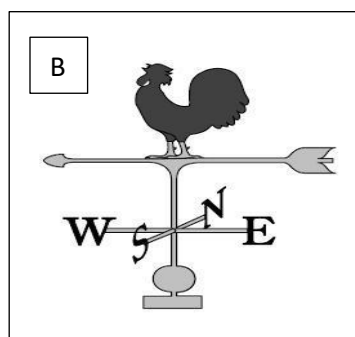
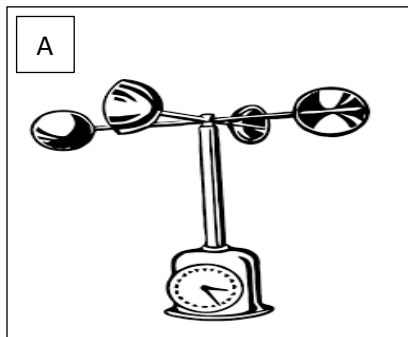
7. Observe the figure given below and answer the questions that follow.



a) Why is the balance of the cups disturbed? [Hint- The air above the first cup gets heated.  
Hot air being lighter rises up]

8. Explain why, if you hold a thin strip of paper just below your lips and blow air over its surface from your mouth, the strip of paper lifts up. [Hint- High speed wind is always accompanied by a low air pressure.]

9 Identify the figures A and B. Also write their uses.



[Hint-A-anemometer –to measure wind speed; B- Wind vane –to find direction]

10 .Why does hot air rise upward and cold air sinks downward? [Hint-Hot air-lighter, cold air-denser]

**IV. b) SHORT ANSWER TYPE QUESTIONS: (3M)**

1. Explain why, holes are made in hanging banners and hoardings. [Hint- Holes allows the high-speed wind to pass through, thereby reducing the damage caused due to high Pressure.]
2. Why does a cyclonic storm die after reaching land? [Hint- Friction with the land and Moisture deprivation]
3. Which one of the following places is unlikely to be affected by a cyclone? Why?  
a. Chennai b. Delhi  
[Hint- b. Delhi ; Places away from the sea are less likely to be hit by a cyclone]
4. 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 fan will expel the hot air more effectively? Explain why.  
[Hint: B's exhaust fan will expel the hot air more effectively because hot air rises up and her fan is at greater height than A's]
5. Why is it advisable not to shut all the doors and windows during a storm?  
[Hint: During storms, heavy winds passing over the house creates 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.]
6. When strong/high speed wind blows, an umbrella held upright at times gets upturned. Explain the reason. [Hint: High speed wind passing over the umbrella creates low pressure above the umbrella. Therefore, the pressure below the umbrella upturns it.]

**V. LONG ANSWER TYPE QUESTIONS. (5M)**

1. Describe about the destructions caused by cyclones.

Cyclones can be very destructive. Strong winds push water towards the shore even if the storm is hundreds of kilometers away. The water waves produced by the wind are so powerful that a person cannot overcome them. The low pressure in the eye lifts water surface in the center. 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. It also reduces the fertility of the soil. Continuous heavy rainfall may further worsen the flood situation. High-speed winds accompanying a cyclone can damage houses, telephones and other communication systems, trees, etc., causing tremendous loss of lives and properties.

2. Explain the formation of a thunderstorm. Also write down any four precautions to be taken During a thunderstorm.

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 down 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

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, 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.

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