

**Class: VII**  
**Subject: Physics**  
**Topic: Winds storms and cyclones**  
**No. of Qs: 20**

Q 1. How satellites are helpful in predicting weather patterns?

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

Q 2. How cyclones are formed?

Sol: Due to unequal heating of sea, warm air rises up creating a low air pressure region. Cold air rushes in, which forces up more hot air and the current of air sets up. Due to rotation of earth, cold air swirls around the low pressure area.

Q 3. Why wind blows from a region of high air pressure to low pressure area?

Sol: Due to unequal heating of earth, air expands and rises up creating a low pressure area. To maintain the balance in air pressure, air from a region of high pressure blows towards low pressure area. Thus, the wind blows from a region of high pressure to low pressure area due to the pressure gradient created.

Q 4. How thunderstorms claim more lives than cyclones?

Sol: Though cyclones are most destructive but a large number of people lose their lives due to lightning during thunderstorms. Thus, thunderstorms claim more lives than cyclones.

Q 5. Why winds do not flow in straight N-S direction?

Sol: Because earth rotates from west to east direction. Therefore, winds blow in an easterly direction.

Q 6. (i) Why monsoon winds are known as seasonal winds?

(ii) Why sea breeze blow during day?

Sol: (i) During the months of June to September due to high temperature, sea breeze blows from sea to land which carry high amount of moisture and cause rainfall in India. So, these are known as summer monsoon winds.

(ii) Sea breeze blows during day because

- a. Land gets heated quickly so low pressure develops over land.
- b. Water takes time to heat so high pressure is over the water.  
So, air blows from sea to land in order to maintain the equilibrium.

Q 7. (i) How winter monsoon winds cause rainfall in Tamil Nadu?

(ii) Why land breeze blows during night?

Sol: (i) Winter monsoon winds blow from Indian landmass to sea, some of it passes over Bay of Bengal and cause rainfall on coastal areas of Tamil Nadu.

(ii) Land breeze blows during night because

a. Land loses heat quickly and cools down so there is high air pressure on land.

b. Water retains heat for a longer time so low air pressure develops over land.  
So, air blows from land to sea in order to maintain the equilibrium.

Q 8. What happens when air gets heated?

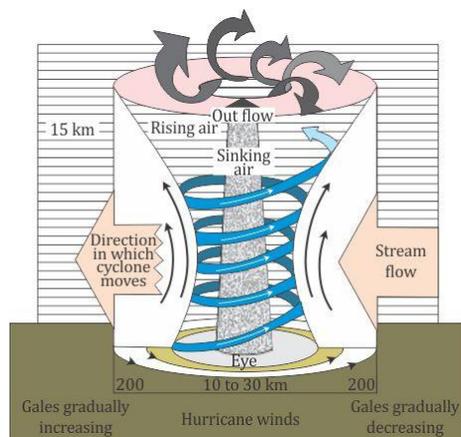
Sol: The air particles are very loosely bound with each other and have large intermolecular distances between them. When air is heated, intermolecular distance between them increases due to which the air becomes light and expands and thus moves up.

Q 9. When we are flying a kite, then the wind coming from our back side helps. Give reason.

Sol: When we are flying a kite, then the wind coming from our back side helps because wind from back side strikes the kite and exerts pressure on it to make it fly higher.

Q 10. What is eye of a storm?

Sol: The centre of a cyclone is a calm area. It is called the eye of the storm. The diameter of the eye varies from 10 to 30 km. It is a region free of clouds and has light winds.



Q 11. How the tornadoes blow off roofs during storm?

Sol: During tornadoes, winds move speedily and thus a low pressure is created above the roofs in comparison to lower surface due to which an up thrust acts over them and thus, tornadoes blow off roofs during storm.

Q 12. When is a storm expected?

Sol: When the pressure difference between two areas is very high then cool air rushes at very high speed towards low pressure area. In such a condition storm is expected.

Q 13. Explain formation of thunderstorms in your words?

Sol: Due to unequal heating of earth surface, air gets heated up soon due to which the following sequence of events takes place:

- Air pressure decreases.
- Hot moist air rises up.
- Condensation occurs and clouds are formed.
- More heat is released as a result clouds rise up.
- Water droplets become heavy and fall on earth as rain.
- Hot air also gets cool and comes down speedily and warm air rises.

This is accompanied by thunder and lightning.

Q 14. How can a person save himself from tornado?

Sol: Following measures could be taken:

- a. They should move to basement.
- b. If caught outdoors, one should get out of vehicles and lie in a ditch.

Q 15. In which area high air pressure is likely to develop?

Sol: When temperature is low then due to less heating of air, high air pressure is likely to develop.

Q 16. Why tornadoes are also known waterspouts?

Sol: When tornadoes develop over sea, it sucks up a huge column of water and is known as waterspouts.

Q 17. How birds fly?

Sol: When birds fly, air blows speedily over their wings in comparison to lower surface. So, an up thrust acts on them and they rise in air.

Q 18. Suggest two methods to find wind direction at a given place.

Sol: 

1. Use anemometer or wind vane.
2. Take few small pieces of paper on your palm. The pieces will flow in the direction of wind is blowing.

Q 19. Why both polar winds and westerlies blow towards 60 degree N and 60 degree S latitude?

Sol: Polar winds blow from high pressure on poles to temperate region as there is low air pressure. Westerlies are the hot winds which rise from equator and get cooled and come down and then blow towards temperate region. So, both polar winds and westerlies blow towards 60 degree N and 60 degree S latitude.

Q 20. How will you help your neighbours in case cyclone approaches your village/town?

Sol: We can help our neighbors in following way :

We should not ignore the warnings issued by the meteorological department through TV, radio, or newspapers.

We should — make necessary arrangements to shift the essential household goods, domestic animals and vehicles, etc. to safer places;

Avoid driving on roads through standing water, as floods may have damaged the roads; and keep ready the phone numbers of all emergency services like police, fire brigade, and medical centres.

If you are staying in a cyclone hit area —

1. Do not drink water that could be contaminated. Always store drinking water for emergencies.
2. Do not touch wet switches and fallen power lines.
3. Do not go out just for the sake of fun.
4. Do not pressurize the rescue force by making undue demands.

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