INDIAN SCHOOL AL WADI AL KABIR

CLASS: VIII	DEPARTMENT: SCIENCE-2026-27	DATE: 24/08/2026
TEXTBOOK- Q &A WITH ANSWERS	TOPIC: PRESSURE, WINDS, STORMS AND CYCLONES	NOTE: A4 FILE FORMAT
CLASS & SECTION:	NAME OF THE STUDENT:	ROLL NO.

1. Choose the correct statement.

(i) Look at Fig. 6.21 carefully. Vessel R is filled with water. When pouring of water is stopped, the level of water will be _____.

Fig. 6.21

(a) the highest in vessel P
(b) the highest in vessel Q
(c) the highest in vessel R
(d) equal in all three vessels

Ans: (d) equal in all three vessels

(ii) A rubber sucker (M) is pressed on a flat smooth surface, and an identical sucker (N) is pressed on a rough surface:
(a) Both M and N will stick to their surfaces.
(b) Both M and N will not stick to their surfaces.
(c) M will stick, but N will not stick.
(d) M will not stick, but N will stick.

Ans: (c) M will stick, but N will not stick

(iii) A water tank is placed on the roof of a building at a height 'H'. To get water with more pressure on the ground floor, one has to
(a) increase the height 'H' at which the tank is placed.
(b) decrease the height 'H' at which the tank is placed.
(c) replace the tank with another tank of the same height that can hold more water.
(d) replace the tank with another tank of the same height that can hold less water.

Ans: (a) Increase the height H

(iv) Two vessels, A and B, contain water up to the same level as shown in Fig. 6.22. P_A and P_B are the pressures at the bottom of the vessels. F_A and F_B are the forces exerted by the water at the bottom of the vessels A and B.

(a) $P_A = P_B$, $F_A = F_B$
(b) $P_A = P_B$, $F_A < F$
(c) $P_A < P_B$, $F_A = F_B$
(d) $P_A > P_B$, $F_A > F_B$

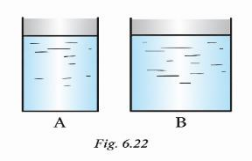

Fig. 6.22

B

Ans: (b) $P_A = P_B$, $F_A < F_B$

2. State whether the following statements are True [T] or False [F].

(i) Air flows from a region of higher pressure to a region of lower pressure. [T]

(ii) Liquids exert pressure only at the bottom of a container. [F]

(iii) Weather is stormy at the eye of a cyclone. [F]

(iv) During a thunderstorm, it is safer to be in a car. [T]

3. Fig. 6.23(a) shows a boy lying horizontally, and Fig. 6.23(b) shows the boy standing vertically on a loose sand bed. In which case does the boy sink more in sand? Give reasons.


Fig. 6.23 (a)


Fig. 6.23 (b)

Ans: The boy's weight (force) is the same in both cases, but:

- **When lying horizontally, a larger area of his body touches the sand. So, with less pressure, he sinks less.**
- **When standing vertically, only the small area of his feet touches the sand. So, with more pressure, he sinks more.**

Therefore, the boy sinks more while standing vertically because pressure increases when the area of contact decreases.

4. An elephant stands on four feet. If the area covered by one foot is 0.25 m^2, calculate the pressure exerted by the elephant on the ground if its weight is 20000 N.

Ans: Given: Weight of elephant (Force), F = 20000 N
Area of one foot = 0.25 m^2
Number of feet = 4
Total area in contact with the ground:

$$A = 4 \times 0.25 = 1\ m^2$$

$$P = \frac{F}{A}$$

$$P = \frac{20000}{1}$$

$$P = 20000\ N/m^2$$

The pressure exerted by the elephant on the ground is 20,000 Pa (pascal).

5. There are two boats, A and B. Boat A has a base area of 7 m^2, and 5 persons are seated in it. Boat B has a base area of 3.5 m^2, and 3 persons are seated in it. If each person has a weight of 700 N, find out which boat will experience more pressure on its base and by how much?

Ans: Calculate Force for Boat A
First, we find the total downward force (weight) acting on Boat A's base.
Total Force for Boat A = {Number of persons} x {Weight per person}
Total Force for Boat A = 5 x 700N = 3500N

Calculate Pressure for Boat A
Next, we divide this force by Boat A's base area.
Pressure = Force/Area
Pressure for Boat A = 3500 N /7 m^2 = 500 Pa

Calculate Force for Boat B
Now, we find the total downward force acting on Boat B's base.
Total Force for Boat B = 3 x 700 N = 2100 N

Calculate Pressure for Boat B
Next, we divide this force by Boat B's base area.
Pressure for Boat B = 2100 N / 3.5 m^2 = 600 Pa

Compare Both Pressures
Finally, we compare the two values to see which one is higher.
600 Pa > 500 Pa
Boat B will experience more pressure because it exerts 600 Pa of pressure on its base, whereas Boat A only exerts 500 Pa.

6. Would lightning occur if air and clouds were good conductors of electricity? Give reasons for your answer.

Ans: No, lightning would not occur if air and clouds were good conductors of electricity. Reason: Lightning occurs because air is a poor conductor of electricity. When a large amount of electric charge builds up in clouds, a sudden electric discharge takes place through the air, producing lightning. If air and clouds were good conductors, the charges would flow away easily and would not build up. Therefore, no lightning would occur.

7. What will happen to the two identical balloons A and B as shown in Fig. 6.24 when water is filled into the bottle up to a certain height? Will both the balloons bulge? If yes, will they bulge equally? Explain your answer.

Fig. 6.24

Ans: Yes. If balloons A and B are connected to the bottle at the same height, they will bulge equally.
Reason: The pressure exerted by a liquid depends on its depth below the surface. Since both balloons are at the same depth, the water exerts equal pressure on both.
Therefore, both balloons will bulge equally.

8. Explain how a storm becomes a cyclone.

Ans: A cyclone forms when a storm develops over warm ocean water.

- **The warm water heats the air above it.**
- **The warm, moist air rises, creating a low-pressure area.**
- **More air rushes towards this low-pressure area.**
- **As the air rises and moves in a circular pattern, the storm becomes stronger and starts rotating.**
- **With a continuous supply of warm, moist air, the storm grows into a cyclone.**

9. Fig. 6.25 shows trees along the sea coast on a summer afternoon. Identify which side is land — A or B. Explain your answer.

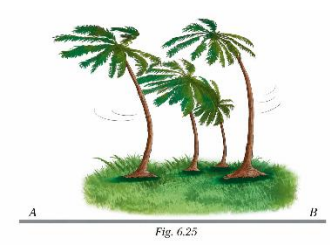

Fig. 6.25

Ans: Side A is the land side.
During a summer afternoon, the land heats up faster than the sea. The hot air over the land rises, creating a low-pressure area. Cooler air from the sea moves towards the land. This is called a sea breeze.
The trees in the figure are bending from side B towards side A, showing that the wind is blowing from the sea towards the land.
Therefore, A = Land and B = Sea.

10. Describe an activity to show that air flows from a region of high pressure to a region of low pressure.

Ans: Materials needed: Two balloons and a straw/tube.
Procedure:
Take two similar balloons.
Insert one end of the straw/tube into one balloon(uninflated) and secure it.
Inflate the second balloon and tie it at the free end of the straw/tube.
Observe what happens.
Observation:
Air flows from the inflated balloon (high-pressure region) to the uninflated balloon (low-pressure region).
Conclusion:
Therefore, air always flows from a region of high pressure to a region of low pressure.

11. What is a thunderstorm? Explain the process of its formation.

Ans: A thunderstorm is a storm that is accompanied by lightning, thunder, strong winds, and heavy rain.

Formation of a Thunderstorm:

- **On a hot day, the air near the Earth's surface gets heated and becomes warm and moist.**
- **The warm air rises rapidly into the atmosphere.**
- **As it rises, the water vapour in the air cools and condenses to form clouds.**
- **Strong upward and downward movements of air occur inside the cloud.**
- **Electric charges build up in the cloud, which can cause lightning.**
- **The sudden heating of air due to lightning causes it to expand rapidly, producing thunder.**

12. Explain the process that causes lightning.

Ans: Lightning is caused by the build-up of electric charges in clouds.

- **During a thunderstorm, air currents move upwards, and water droplets and ice particles move inside the cloud.**
- **These particles collide with each other, causing electric charges to separate.**
- **The upper part of the cloud becomes positively charged, while the lower part becomes negatively charged.**
- **The negative charge at the bottom of the cloud induces a positive charge on the ground below it.**
- **When the amount of charge becomes very large, the air can no longer prevent the charges from moving.**
- **A sudden flow of electric charges takes place between the cloud and the ground, or between different parts of clouds. This produces a bright flash called lightning.**

13. Explain why holes are made in banners and hoardings.

Ans: During strong winds, air pushes against the banner. The holes allow some air to pass through, which reduces the pressure and force on the banner.

Therefore, the holes prevent the banner or hoarding from tearing or being blown away.

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