CLASS 8 · SCIENCE

Pressure, Winds, Storms, and Cyclones

Sample paper · 15 questions · 22 marks

10 objective questions × 1 mark. Five written-response questions: 12 marks. Write your working where needed. Suggested time: 45 minutes. Answers and marking guidance follow the questions.

Original Evater practice material aligned with these school topics. Not an official NCERT paper or marking scheme. No automatic grading is implied.

Section A · Objective questions (10 marks)

1. The SI unit of pressure is:

A. Metre per second (m/s)

B. Newton (N)

C. Kilogram (kg)

D. Pascal (Pa), that is newton per square metre

2. School bags are made with broad shoulder straps because:

A. Broad straps look better

B. The same weight over a larger area produces less pressure on the shoulders

C. Narrow straps are costlier

D. Broad straps weigh less

3. A stool weighs 240 N and stands on four legs, each touching the floor over 0.004 m2. The pressure on the floor is:

A. 15000 Pa

B. 6000 Pa

C. 240 Pa

D. 960 Pa

4. The wall of a dam is built much thicker at the bottom than at the top because:

A. Water pressure increases with depth, so the base must bear the greatest push

B. It saves cement

C. Fish push the base

D. It helps boating

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5. Which statement about pressure in liquids and gases is correct?

A. They exert pressure on the walls of the container as well

B. They never exert pressure sideways

C. They exert pressure only at the bottom

D. Only solids exert pressure

6. When you suck air out of a juice carton, the carton crumples. This happens because:

A. The juice becomes heavy

B. Cartons fear suction

C. The pressure inside drops, and the outside atmospheric pressure crushes the carton

D. Gravity increases inside

7. Late at night near the sea, a gentle breeze often blows from the land towards the sea because:

A. Waves push the breeze back

B. Land stays hotter all night

C. Land cools faster, so cooler higher-pressure air over land moves towards the warmer sea

D. The Moon pulls the air

8. Two important requirements for the formation of a thunderstorm are:

A. Dry air and fog

B. Snow and silence

C. Moisture and strong winds

D. Moonlight and dust

9. A lightning conductor protects a tall building because it:

A. Cools the roof

B. Provides a safe path for the electric charge to travel into the ground

C. Stores lightning as power

D. Scares the clouds away

10. On receiving a cyclone warning, people in a coastal area should:

A. Go to the beach to watch

B. Keep an emergency kit ready and move to a designated cyclone shelter if asked

C. Ignore official advisories

D. Open all windows

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Section B · Written responses (12 marks)

Attempt all five. Use a separate sheet if you need more space. The marks for each question are shown.

11. A drawing pin slips into a soft board with gentle thumb pressure, while the blunt end of the same pin does not. Explain using force and area. [2 marks]

12. Explain how we are able to drink juice through a straw, using the idea of atmospheric pressure. [2 marks]

13. Describe, as a chain of three steps, how unequal heating of the Earth's surface produces wind. [2 marks]

14. A storm explanation contains three errors: warm moist air sinks to form clouds; charge separation never occurs; thunder is seen before light. Correct each error using a short scientific statement. [3 marks]

15. During a fictional cyclone drill, one family receives an official evacuation instruction while a neighbour forwards an unverified message claiming the storm has vanished. Give three decisions the family should make, with a safety reason for each. [3 marks]

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Answers & marking guidance

Use these after attempting the paper. Accept equivalent correct reasoning and sensible units. These are Evater model answers, not an official marking scheme.

Section A · 1 mark each

1. D — Pressure is force per unit area, so its SI unit is N/m2, also called the pascal.

2. B — Spreading the force over a larger area lowers the pressure, so the straps do not dig into the shoulders.

3. A — Total area is 4 x 0.004 = 0.016 m2, so pressure = 240 / 0.016 = 15000 Pa.

4. A — Liquid pressure grows with depth, so the deepest part of the dam faces the largest force.

5. A — Fluids push in all directions, including on the walls of their container.

6. C — Removing air lowers the inside pressure, so the greater atmospheric pressure outside pushes the walls in.

7. C — At night the land cools faster than the sea; warm air rises over the sea and cooler air from the land flows in to take its place.

8. C — Warm moist air and strong upward and downward winds drive thunderstorm clouds and charge build-up.

9. B — A properly installed conductor and earthing system provides a low-resistance route to ground, reducing the risk of damage. It does not guarantee protection against every effect of lightning.

10. B — Preparedness and moving to a cyclone shelter when advised are the recommended safety steps.

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Section B · Model answers

11. The thumb applies roughly the same force in both cases. The pointed tip has a very small area, so the pressure at the tip is large and it pierces the board. The blunt end has a larger area, so the same force produces much smaller pressure, which is not enough to push it in.

Marking: 1 mark for same force over different areas; 1 mark for the pressure comparison explaining piercing.

12. When we suck, we remove some air from the straw, lowering the pressure inside it. The atmospheric pressure pressing on the juice surface in the glass is now greater than the pressure inside the straw, so it pushes the juice up into the straw and into the mouth.

Marking: 1 mark for lowered pressure inside the straw; 1 mark for atmospheric pressure pushing the liquid up.

13. The Sun heats some regions more than others. Warm air over the hotter region expands and rises, creating a low-pressure area there. Cooler air from surrounding higher-pressure regions moves in to take its place, and this moving air is wind.

Marking: 1 mark for warm air rising and low pressure; 1 mark for cooler air moving in from higher pressure; both steps in a correct chain.

14. Warm moist air rises and cools; water vapour can condense into cloud droplets. Collisions among cloud particles can separate charge, and a large potential difference can lead to a lightning discharge. Lightning is normally seen before its thunder is heard because light travels much faster than sound.

Marking: 1 mark for rising/cooling/condensation; 1 mark for charge separation and discharge; 1 mark for light reaching the observer before sound.

15. Follow the official evacuation instruction and designated route because local authorities assess the hazard. Check updates through official sources instead of forwarding rumours. Take the prepared emergency kit and move promptly to the shelter without approaching floodwater or fallen power lines. Accept other sound decisions with clear reasons; do not wait for visible danger before following evacuation advice.

Marking: 1 mark for each of three valid decisions with a safety reason.

Topic references

NCERT Class 8 Science, Curiosity, Chapter 6: Pressure, Winds, Storms, and Cyclones.

https://ncert.nic.in/textbook/pdf/hecu106.pdf

Concept reference only. Questions and model answers are original Evater practice material, not an official NCERT paper.

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