

1. A 10 N object is suspended from a spring balance. A second person pulls the object upward while it remains stationary. The spring-balance reading falls to 6 N. What upward force is being exerted by the second person?

- A. 4 N**
- B. 6 N**
- C. 10 N**
- D. 16 N**

2. During a hot afternoon, a coastal village experiences wind blowing from the sea towards the land. The most appropriate reason is:

- A. Sea gets heated faster than land**
- B. Land gets heated faster, causing warm air to rise**
- C. Air over the sea rises rapidly**
- D. Atmospheric pressure is always higher over land**

3. During a cyclone, a family notices that some loose objects outside their house are being blown away. The main reason is:

- A. Fast-moving air can exert a large force on objects**
- B. Objects lose their mass during cyclones**
- C. Atmospheric pressure becomes zero everywhere**
- D. Gravity stops acting during a cyclone**

4. A block on a smooth table is pulled towards the left with 7 N and towards the right with 11 N. The net force is:

- A. 4 N towards left**
- B. 4 N towards right**
- C. 18 N towards right**
- D. 0 N**

5. Which statement best describes the eye of a tropical cyclone?

- A. It always has the strongest winds**
- B. It is generally a relatively calm region**
- C. It receives the heaviest rainfall throughout the cyclone**
- D. It is the region where the cyclone first forms**

6. Which of the following correctly represents two uses of a spring balance?

- A. Measuring temperature and measuring volume**
- B. Measuring weight/force and measuring the force required to pull an object**
- C. Measuring length and measuring temperature**
- D. Measuring density and measuring time**

7. A student pushes a table but it remains stationary. Which statement is correct?

- A. No force is applied**
- B. The applied force is balanced by friction**
- C. The table has no weight**
- D. Friction acts in the same direction as the applied force**

8. A person is standing near a tall tree when lightning strikes the tree. Even without direct contact with the tree, the person may be injured because:

- A. Lightning always travels only through air**
- B. Electrical current can spread through the ground around the strike point**
- C. Trees release poisonous gases during lightning**
- D. The tree becomes magnetic permanently**

9. Why is an isolated tall tree in an open field particularly unsafe during a thunderstorm?

- A. It is more exposed and provides a prominent elevated point**
- B. It produces more heat than nearby objects**
- C. It prevents lightning from reaching the ground**
- D. It attracts rain clouds towards itself**

10. Which sequence best represents the beginning of cyclone formation?

- (a) Cold ocean → sinking air → high pressure → cyclone**
- (b) Warm ocean → evaporation → warm moist air rises → low pressure**
- (c) Cold air → high pressure → warm ocean → cyclone**
- (d) Rainfall → cooling → high pressure → cyclone**

11. Which pair contains one acellular and one cellular entity?

- (a) Virus and bacteria**
- (b) Amoeba and Paramecium**

- (c) Bacteria and bread mould
- (d) Paramecium and Amoeba

12. Which of the following shows the correct order of frictional forces from least to greatest?

- (a) Static < Sliding < Rolling
- (b) Rolling < Sliding < Static
- (c) Sliding < Rolling < Static
- (d) Rolling < Static < Sliding

13. A student presses a rubber sucker against a wall and removes his hand. The sucker stays attached. Which pressure condition is mainly responsible?

- (a) Pressure inside > pressure outside
- (b) Pressure outside > pressure inside
- (c) Pressure inside = pressure outside
- (d) Both pressures are zero

14. Which four forces act on a flying aeroplane?

- (a) Lift, weight, thrust and drag
- (b) Friction, magnetic force, lift and thrust
- (c) Weight, friction, magnetism and drag
- (d) Only lift and thrust

15. A body has a mass of 50 kg. Its weight is measured on Earth where $g=10 \text{ m/s}^2$ and on another planet where $g=6 \text{ m/s}^2$. What is the difference between its two weights?

- (a) 100 N
- (b) 150 N
- (c) 200 N
- (d) 300 N

16. Assertion (A): It is generally safer to remain inside a closed car during a thunderstorm than to stand under a tall tree.

Reason (R): The metal body of a closed car can provide a conducting path for electrical charge around the outside of the vehicle, helping protect occupants inside.

17. Assertion (A): If the wind speed above a roof increases significantly, the roof may experience an increased upward force.

Reason (R): An increase in wind speed can reduce the pressure above the roof, increasing the pressure difference between the inside and outside.

18. Assertion (A): The inverted glass experiment is less reliable if air bubbles are trapped between the water and cardboard.

Reason (R): Trapped air can alter the pressure conditions required to keep the cardboard in place.

19. Assertion (A): In the inverted glass experiment, atmospheric pressure helps support the cardboard.

Reason (R): Air exerts pressure in all directions, including upward.

20. Assertion (A): A yeast-and-sugar mixture produces carbon dioxide during fermentation.

Reason (R): Yeast obtains energy by breaking down sugar in the absence of sufficient oxygen.