

Class-XI

Sample Questions

1. A person dropped a stone from the top of a tower of height H which strikes on an inclined plane at a height h above the ground. Due to this impact, the velocity of the stone becomes horizontal. The stone will take the maximum time to reach the ground if:

(a) $h = \frac{H}{3\sqrt{2}}$

(b) $h = \frac{H}{\sqrt{2}}$

(c) $h = \frac{H}{4}$

(d) $h = \frac{H}{2}$

2. A body weighs W Newton on the surface of the earth. What will be its weight at the height equal to half the radius of the earth?

(a) $\frac{2W}{3}$

(b) $\frac{4W}{9}$

(c) $\frac{4W}{3}$

(d) $\frac{W}{3}$

3. A gas does 4.5 J of external work during adiabatic expansion. What will be its internal energy, if its temperature falls by 2K?

(A) decrease by 4.5 J

(B) decrease by 3.5 J

(C) increase by 4.5 J

(D) increase by 3.5 J

4. Which one of the following is correct for a body that is moving in a circular path with constant speed?

(A) Constant velocity

(B) Constant acceleration

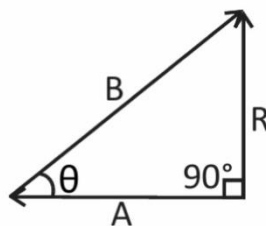
(C) Constant displacement

(D) Constant kinetic energy

5. In vector diagram, shown in the given figure, R is the resultant of vectors A and B. If $R = \frac{8}{\sqrt{2}}$, find the

of value of angle θ .

- (a) 15°
- (b) 45°
- (c) 60°
- (d) 75°



6. If pressure of an ideal gas in a closed container is increased by 2%, the temperature of the gas is increased by 5°C . Find the initial temperature of the gas.

- (a) 150 K
- (b) 225 K
- (c) 250 K
- (d) 300 K

7. An object A is projected vertically upwards. Another object B of the same mass is projected at an angle of 60° with the horizontal. If both attain the same maximum height, the ratio of the initial kinetic energy of A to that of B is:

- (a) $\frac{3}{4}$
- (b) $\frac{\sqrt{2}}{3}$
- (c) $\frac{1}{\sqrt{3}}$
- (d) $\frac{1}{2}$

8. A ball is released from a height equal to the radius (R) of the earth. What will be the velocity of the ball when it strikes the surface of the earth?

- (a) \sqrt{gR}
- (b) $\sqrt{3gR}$
- (c) $3\sqrt{2gR}$
- (d) $2\sqrt{gR}$

9. In which one of the following orbital diagrams aufbau principle is violated?

- (a) $\begin{array}{c} 2s \\ \uparrow\downarrow \end{array} \quad \begin{array}{c} 2p \\ \uparrow\downarrow \quad \uparrow \quad \square \end{array}$
- (b) $\begin{array}{c} 2s \\ \uparrow \end{array} \quad \begin{array}{c} 2p \\ \uparrow\downarrow \quad \uparrow \quad \uparrow \end{array}$
- (c) $\begin{array}{c} 2s \\ \uparrow\downarrow \end{array} \quad \begin{array}{c} 2p \\ \uparrow \quad \uparrow \quad \uparrow \end{array}$
- (d) $\begin{array}{c} 2s \\ \uparrow\downarrow \end{array} \quad \begin{array}{c} 2p \\ \uparrow\downarrow \quad \uparrow\downarrow \quad \uparrow \end{array}$



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10. The root mean square speeds of gaseous molecules changes with change in the:

(A) Pressure of the gas

(B) Temperature of the gas

(C) Volume of the gas

(D) Density of the gas



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