

Questions from Projectile Motions

UEE QUESTIONS

- When the elevation angle of a projectile increases above 40° then
 - Both range and maximum height decreases
 - Both range and maximum height increases
 - Range increases and maximum height decreases
 - Range decreases and maximum height increases
- A bullet of 200g mass fired from a 30m high building horizontally. At the same time a bullet of the same mass fired vertically down from the same height. What can be concluded about the motion of the two bullets?
 - Both bullets move with the same horizontal velocity
 - A bullet fired vertically takes more time to strike the ground
 - A bullet fired horizontally takes more time to strike the ground
 - Both bullets strike the ground at the same time.
- A boy throws a ball vertically upward with an initial speed of 20m/s. neglecting air resistance, which of the following is true about the motion of the ball?
 - Its velocity after 3s is 50m/s, downward.
 - The time taken to reach the maximum height is 4s
 - Its velocity after 1s is 30m/s, upward
 - Its maximum height is 20m
- A bullet is fired at an angle of 30° above the horizontal. If air resistance is neglected, what should be the bullet's horizontal acceleration ($\vec{a}_x$) and vertical acceleration ($\vec{a}_y$) when it reaches its maximum height?
 - Both a_x and a_y are zero
 - a_x is $10^m/s^2$ downward, and a_y is zero
 - Both a_x and a_y are $10^m/s^2$, downward
 - a_x is zero and a_y is $10^m/s^2$, downward
- The range of cannon ball fired horizontally from a laboratory table is equal to $\frac{8}{3}$ times the height of the table. What is the direction of the velocity of the projectile as it strikes the ground?
 - 45° from the horizontal
 - 53° from the horizontal
 - 60° from the horizontal
 - 37° from the horizontal
- A cricketer throws a ball vertically upwards with initial speed of 20m/s. How long is it in the air before it returns to the cricketer's hands?
 - 2s
 - 10s
 - 1.5s
 - 4s

REASONING QUESTIONS

7. Imagine you throw two balls simultaneously, one straight up and one at an angle. Which ball will reach the ground first?
 - A. Both balls reach the ground at the same time.
 - B. The ball thrown straight up will reach the ground first.
 - C. The ball thrown at an angle will reach the ground first.
 - D. It depends on how hard you throw each ball.
8. If you throw a ball straight up in the air, when is its speed the greatest?
 - A. At the very moment it leaves your hand.
 - B. When it reaches the highest point in its flight.
 - C. Halfway up its flight, just before it starts to fall.
 - D. It has the same speed throughout its flight.
9. Why does a projectile launched at a high angle travel further than one launched at a low angle, even if they have the same initial speed?
 - A. The high angle launch gives it a longer “head start” in the horizontal direction.
 - B. The Earth’s rotation helps propel it further at a high angle.
 - C. Air resistance is weaker at higher angles.
 - D. It’s just a coincidence, they should travel the same distance.
10. If you drop a ball from a certain height and then throw another ball down with the same initial speed, will they hit the ground at the same time?
 - A. Yes, gravity pulls them both down at the same rate.
 - B. No, the thrown ball will hit the ground first because it has a head start.
 - C. No, the dropped ball will hit the ground first because it has less air resistance.
 - D. It depends on the weight of the balls.
11. Imagine a cannon firing a cannonball on a level surface. What factors determine how far the cannonball will travel?
 - A. The angle of the cannon, the size of the cannonball, and the strength of the gunpowder.
 - B. The weather conditions, the color of the cannonball, and the moon’s phase.
 - C. The cannonball’s favorite music genre and its mood on that day.
 - D. All of the above.
12. If you throw a ball upwards while standing on a moving train, will the ball’s trajectory be different than if you threw it while standing still?
 - A. Yes, the ball will travel further because it has the train’s momentum.
 - B. Yes, the ball will curve in the direction the train is moving.
 - C. No, the ball’s trajectory will be the same regardless of the train.
 - D. It depends on how fast the train is moving and how hard you throw the ball.
13. Why does air resistance affect the motion of a projectile differently depending on its shape and size?
 - A. Bigger and smoother objects experience less air resistance.
 - B. Smaller and rougher objects experience more air resistance.
 - C. The air likes playing with certain shapes more than others.
 - D. Air resistance is just a myth and doesn’t actually exist.

14. Imagine a ball bouncing off a wall. How does the angle of the bounce relate to the angle it hit with?
- A. The bounce angle will always be the same as the hit angle.
 - B. The bounce angle will always be the opposite of the hit angle.
 - C. The bounce angle depends on the material of the ball and the wall.
 - D. It's impossible to predict the bounce angle, it's complete randomness.
15. In a real-world scenario, like throwing a frisbee or kicking a football, what additional factors beyond basic projectile motion come into play?
- A. The spin of the object, wind conditions, and the skill of the thrower or kicker.
 - B. The temperature of the air, the type of grass, and the color of the shoes.
 - C. The emotions of the players and the luck of the game.
 - D. The presence of aliens and their influence on gravity.
16. How can understanding projectile motion be useful in everyday life?
- A. It helps you aim better when throwing things like frisbees or basketballs.
 - B. It helps you understand how fireworks work and make them more spectacular.
 - C. It helps you calculate the best angle to launch yourself into space.
 - D. It helps you predict the future and win at gambling.
17. Example of projectile is
- A. Walking
 - B. Butterfly flying
 - C. A baseball batted or thrown
 - D. Fish in pond
18. In projectile motion, the simultaneous independent rectilinear motions are
- A. Along the x-axis
 - B. Along y-axis
 - C. A and B
 - D. None
19. Path taken by a projectile is known as
- A. Particle motion
 - B. Parabolic motion
 - C. Projectile motion
 - D. None
20. The path followed by a projectile is known as
- A. Parabola
 - B. Hyperbola
 - C. Tangent
 - D. Trajectory
21. The velocity in the vertical direction begins to _____ as the object rises.
- A. Decrease
 - B. Increase
 - C. Stay the same
 - D. None

22. Projectile motion is an example for
- A. Non-accelerated motion
 - B. Uniformly accelerated motion
 - C. Non-uniformly accelerated motion
 - D. None



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