



Oblique Projectile Motion

41. A ball thrown by one player reaches the other in 2 sec. the maximum height attained by the ball above the point of projection will be about
 (a) 10 m (b) 7.5 m
 (c) 5 m (d) 2.5 m
42. In a projectile motion, velocity at maximum height is
 (a) $\frac{u \cos \theta}{2}$ (b) $u \cos \theta$
 (c) $\frac{u \sin \theta}{2}$ (d) None of these
43. If two bodies are projected at 30° and 60° respectively, with the same velocity, then
 (a) Their ranges are same
 (b) Their heights are same
 (c) Their times of flight are same
 (d) All of these
44. A body is thrown with a velocity of 9.8 m/s making an angle of 30° with the horizontal. It will hit the ground after a time
 (a) 1.5 s (b) 1 s
 (c) 3 s (d) 2 s
45. The equation of motion of a projectile are given by $x = 36 t$ metre and $2y = 96 t - 9.8 t^2$ metre. The angle of projection is
 (a) $\sin^{-1} \left(\frac{4}{5} \right)$ (b) $\sin^{-1} \left(\frac{3}{5} \right)$
 (c) $\sin^{-1} \left(\frac{4}{3} \right)$ (d) $\sin^{-1} \left(\frac{3}{4} \right)$
46. For a given velocity, a projectile has the same range R for two angles of projection if t_1 and t_2 are the times of flight in the two cases then
 (a) $t_1 t_2 \propto R^2$ (b) $t_1 t_2 \propto R$
 (c) $t_1 t_2 \propto \frac{1}{R}$ (d) $t_1 t_2 \propto \frac{1}{R^2}$
47. A body of mass m is thrown upwards at an angle θ with the horizontal with velocity v . While rising up the velocity of the mass after t seconds will be
 (a) $\sqrt{(v \cos \theta)^2 + (v \sin \theta)^2}$
 (b) $\sqrt{(v \cos \theta - v \sin \theta)^2 - gt}$
 (c) $\sqrt{v^2 + g^2 t^2 - (2v \sin \theta)gt}$
 (d) $\sqrt{v^2 + g^2 t^2 - (2v \cos \theta)gt}$



48. A cricketer can throw a ball to a maximum horizontal distance of 100 m. With the same effort, he throws the ball vertically upwards. The maximum height attained by the ball is
- (a) 100 m (b) 80 m
(c) 60 m (d) 50 m
49. A cricketer can throw a ball to a maximum horizontal distance of 100 m. The speed with which he throws the ball is (to the nearest integer)
- (a) 30 ms^{-1} (b) 42 ms^{-1}
(c) 32 ms^{-1} (d) 35 ms^{-1}
50. A ball is projected with velocity V_0 at an angle of elevation 30° . Mark the correct statement
- (a) Kinetic energy will be zero at the highest point of the trajectory
(b) Vertical component of momentum will be conserved
(c) Horizontal component of momentum will be conserved
(d) Gravitational potential energy will be minimum at the highest point of the trajectory
51. Neglecting the air resistance, the time of flight of a projectile is determined by
- (a) U_{vertical}
(b) $U_{\text{horizontal}}$
(c) $U = U_{\text{vertical}}^2 + U_{\text{horizontal}}^2$
(d) $U = U(U_{\text{vertical}}^2 + U_{\text{horizontal}}^2)^{1/2}$
52. A ball is thrown from a point with a speed v_0 at an angle of projection θ . From the same point and at the same instant a person starts running with a constant speed $v_0/2$ to catch the ball. Will the person be able to catch the ball? If yes, what should be the angle of projection
- (a) Yes, 60° (b) Yes, 30°
(c) No (d) Yes, 45°
53. A stone is thrown at an angle θ to the horizontal reaches a maximum height H . Then the time of flight of stone will be
- (a) $\sqrt{\frac{2H}{g}}$ (b) $2\sqrt{\frac{2H}{g}}$
(c) $\frac{2\sqrt{2H \sin \theta}}{g}$ (d) $\frac{\sqrt{2H \sin \theta}}{g}$





54. The horizontal range of a projectile is $4\sqrt{3}$ times its maximum height. Its angle of projection will be
(a) 45° (b) 60°
(c) 90° (d) 30°
55. A ball is projected upwards from the top of tower with a velocity 50ms^{-1} making an angle 30° with the horizontal. The height of tower is 70 m . After how many seconds from the instant of throwing will the ball reach the ground
(a) 2 s (b) 5 s
(c) 7 s (d) 9 s
56. Two bodies are thrown up at angles of 45° and 60° , respectively, with the horizontal. If both bodies attain same vertical height, then the ratio of velocities with which these are thrown is
(a) $\sqrt{\frac{2}{3}}$ (b) $\frac{2}{\sqrt{3}}$
(c) $\sqrt{\frac{3}{2}}$ (d) $\frac{\sqrt{3}}{2}$
57. At what point of a projectile motion acceleration and velocity are perpendicular to each other
(a) At the point of projection
(b) At the point of drop
(c) At the topmost point
(d) Any where in between the point of projection and topmost point
58. An object is projected at an angle of 45° with the horizontal. The horizontal range and the maximum height reached will be in the ratio.
(a) 1 : 2 (b) 2 : 1
(c) 1 : 4 (d) 4 : 1
59. The maximum horizontal range of a projectile is 400 m . The maximum value of height attained by it will be
(a) 100 m (b) 200 m
(c) 400 m (d) 800 m

