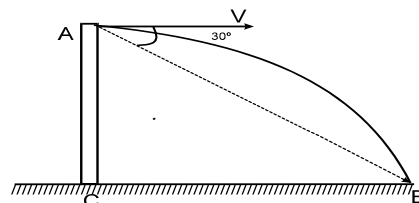


PHYSICS: PROJECTILE MOTION

DPP No. : 1

- At the top of the trajectory of a projectile, the directions of its velocity and acceleration are'
 - Perpendicular to each other
 - Parallel to each other
 - Inclined to each other at an angle of 45°
 - Antiparallel to each other
- A particle A is projected with speed V_A from a point making an angle 60° with the horizontal. At the same instant, a second particle B is thrown vertically upwards from a point directly below the maximum height point of parabolic path of A, with velocity V_B . If the two particles collide then the ratio of V_A/V_B should be;
 - 1
 - $2/\sqrt{3}$
 - $\sqrt{3}/2$
 - $\sqrt{3}$
- An object is thrown from a point 'A' horizontally from a tower and hits the ground 3s later at B. The line from 'A' to 'B' makes an angle of 30° with the horizontal. The initial velocity of the object is : (take $g = 10 \text{ m/s}^2$)



- $15\sqrt{3} \text{ m/s}$
 - 15 m/s
 - $10\sqrt{3} \text{ m/s}$
 - $25/\sqrt{3} \text{ m/s}$
- A particle is projected up the inclined such that its component of velocity along the incline is 10 m/s. Time of flight is 2 sec and maximum height above the incline is 5 m. Then velocity of projection will be: एक
 - 10 m/s
 - $10\sqrt{2} \text{ m/s}$
 - $5\sqrt{5} \text{ m/s}$
 - none of these
 - A stone projected at angle ' θ ' with horizontal from the roof of a tall building falls on the ground after three second. Two second after the projection it was again at the level of projection. Then the height of the building is -
 - 5 m
 - 25 m
 - 20 m
 - 15 m

6. A stone projected at angle 53° attains maximum height 25 m during its motion in air. Then its distance from the point of projection where it will fall is -
- (1) 75 m (2) $\frac{400}{3}$ m (3) 50 m (4) 60 m
7. A particle is projected with speed 10 m/s at angle 60° with the horizontal. Then the time after which its speed becomes half of initial -
- (1) $\frac{1}{2}$ sec. (2) 1 sec. (3) $\sqrt{3/2}$ sec. (4) $\sqrt{3}/2$ sec.
8. A projectile can have the same range R for two angles of projection. If T_1 and T_2 be the time of flights in the two cases, then the product of the two times of flights is directly proportional to :
- (1) $1/R^2$ (2) $1/R$ (3) R (4) R^2
9. A ball is thrown from a point with a speed v_0 at 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? If yes, what should be the angle of projection?
- (1) Yes, 60° (2) Yes, 30° (3) No (4) Yes, 45°
10. It was calculated that a shell when fired from a gun with a certain velocity and at an angle of elevation $\frac{5\pi}{36}$ rad should strike a given target in the same horizontal plane. In actual practice, it was found that a hill just prevented the trajectory. At what angle of elevation should the gun be fired to hit the target.
- (1) $\frac{5\pi}{36}$ rad (2) $\frac{11\pi}{36}$ rad (3) $\frac{7\pi}{36}$ rad (4) $\frac{13\pi}{36}$ rad.