ARJUNA (NEET)

Motion in Plane

DPP-02

1. A body is projected at an angle of 45° to horizontal. Its kinetic energy of projection is K. At the highest point, the kinetic energy will be
(A) K (B) $2K$
(C) $K/2$ (D) K^2

2. The horizontal range is four times the maximum height reached by a projectile. The angle of projection is
(A) 90° (B) 75°
(C) 60° (D) 45°

3. For angle of projection 20°, range of a projectile is R. For the same range, another angle of projection should be
(A) 40° (B) 50°
(C) 60° (D) 70°

4. A stream of bullets is shot with speed v in all directions. The maximum area covered under firing is
(A) $\pi v^2/g$
(B) $\pi v^4/g^2$
(C) $\pi v^2/g^2$
(D) $\pi v/g$

5. In a projectile motion, the height y and distance x are given by $y = 4t - 5t^2$ and $x = 3t$. The acceleration due to gravity is given by
(A) 3 units (B) 10 units
(C) 4 units (D) 5 units

6. In a projectile motion, the height $y = \sqrt{3}\, t - 5t^2 + t^3$ are horizontal distance $x = t + 2t - t^2$. The angle of projection is given by
(A) 30° (B) 60°
(C) 45° (D) 75°

7. A projectile is fired at angle θ with horizontal. When the particle makes an angle β with the horizontal, its speed becomes v. v is given by
(A) $v = u \cos\theta \,.\, \sec\beta$
(B) $v = u \cos\theta \,.\, \sin\beta$
(C) $v = u \cos\theta \,.\, \cos\beta$
(D) $v = u \cos\theta \,.\, \csc\beta$

8. 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) $\sqrt{\dfrac{2}{3}}$ (B) $\dfrac{2}{\sqrt{3}}$
(C) $\sqrt{\dfrac{3}{2}}$ (D) $\dfrac{\sqrt{3}}{2}$

9. An arrow is shot into the air. Its range is 200 metres and its time of flight is 5 s. If the value of g is assumed to be 10 ms^{-2}, then the horizontal component of the velocity of arrow is :
(A) 25 m/s
(B) 40 m/s
(C) 31.25 m/s
(D) 12.5 m/s

10. If R is the maximum horizontal range of a particle, then the greatest height attained by it is :
(A) R
(B) R
(C) $R/2$
(D) $R/4$

11. When a body is thrown with a velocity u making an angle θ with the horizontal plane, the maximum distance covered by it in horizontal direction is :

(A) $\dfrac{u^2 \sin \theta}{g}$ (B) $\dfrac{u^2 \sin 2\theta}{2g}$

(C) $\dfrac{u^2 \sin 2\theta}{g}$ (D) $\dfrac{u^2 \cos 2\theta}{g}$

12. If a projectile is fired at an angle θ with the vertical with velocity u, then maximum height attained is given by :

(A) $\dfrac{u^2 \cos \theta}{2g}$ (B) $\dfrac{u^2 \sin^2 \theta}{2g}$

(C) $\dfrac{u^2 \sin^2 \theta}{g}$ (D) $\dfrac{u^2 \cos^2 \theta}{2g}$

13. The equation of projectile is $y = 16x - \dfrac{x^2}{4}$ the horizontal range is :

(A) 16 m   (B) 8 m
(C) 64 m   (D) 12.8 m

ANSWERS KEY

1. (C)
2. (D)
3. (D)
4. (B)
5. (B)
6. (A)
7. (A)
8. (C)
9. (B)
10. (D)
11. (C)
12. (D)
13. (C)

Note – If you have any query/issue

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