ARJUNA (NEET)

Motion in Plane

DPP-03

1. A bullet is dropped from the same height when another bullet is fired horizontally. They will hit the ground
(A) One after the other
(B) Simultaneously
(C) Depends on the observer
(D) None of the above

2. A body is thrown horizontal from the top of a tower of height 5 m. It touches the ground at a distance of 10 m from the foot of the tower. The initial velocity of the body is (g = 10 ms)
(A) 2.5 ms (B) 5 ms
(C) 10 ms (D) 20 ms

3. A bomber plane moves horizontally with a speed of 500 m/s and a bomb released from it, strikes the ground in 10 sec. Angle at which it strikes the ground will be (g = 10 m/s^2)
(A) $\tan^{-1}\left(\frac{1}{5}\right)$ (B) $\tan\left(\frac{1}{5}\right)$
(C) $\tan^{-1}(1)$ (D) $\tan^{-1}(5)$

4. If four balls A, B, C and D are projected with same speed angles of 15°, 30°, 45° and 60° with the horizontal respectively, the two balls which will fall at the same place will be-
(A) A and B
(B) A and D
(C) B and D
(D) A and C

5. A body is projected horizontally from the top of a tower with initial velocity 18 ms^{-1}. It hits the ground at angle 45°. What is the vertical component of velocity when it strikes the ground?
(A) $18\sqrt{2}$ ms^{-1} (B) 18 ms^{-1}
(C) $9\sqrt{2}$ ms^{-1} (D) 9 ms^{-1}

6. An aeroplane in flying at a height of 1960 m in horizontal direction with a velocity of 360 km/hr. When it is vertically above the point. A on the ground, it drop a bomb. The bomb strike a point B on the ground, then the time taken by the bomb to reach the ground is –
(A) $20\sqrt{2}$ sec (B) 20 sec
(C) $10\sqrt{2}$ sec (D) 10 sec

7. A particle is projected from the ground with velocity u at angle θ with horizontal. The horizontal range, maximum height and time of flight are R, H and T respectively. They are given by,

$$R = \frac{u^2 \sin 2\theta}{g},\ H = \frac{u^2 \sin^2 \theta}{2g} \text{ and}$$

$$T = \frac{2u \sin \theta}{g}$$

Now keeping u as fixed, θ is varied from 30° to 60°. Then,
(A) R will first increase then decreases, H will increase and T will decrease
(B) R will first increase then decreases while H and T both will increase
(C) R will decrease while H and T will increase
(D) R will increase while H and T will increase

8. The horizontal range is four times the maximum height attained by a projectile. The angle of projection is
(A) 90° (B) 60°
(C) 45° (D) 30°

9. At the top of the trajectory of a projectile, the acceleration is
(A) Maximum (B) Minimum
(C) Zero (D) g

10. A bullet is fired horizontally from a rifle at a distant target. Ignoring the effect of air resistance, which of the following is correct? Horizontal Acceleration, Vertical Acceleration :

(A) $10\ ms^{-2}$ $10\ ms^{-2}$ (B) $10\ ms^{-2}$ $0\ ms^{-2}$

(C) $0\ ms^{-2}$ $10\ ms^{-2}$ (D) $0\ ms^{-2}$ $0\ ms^{-2}$

ANSWERS KEY

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

Note - If you have any query/issue

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