Physicsaholics

DPP – 5 (Kinematics)

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Q 1. A projectile fired with initial velocity u at some angle θ has a range R. If the initial velocity be doubled at the same angle of projection, then the range will be:
(a) 2R
(b) R/2
(c) R
(d) 4R

Q 2. A ball is thrown with an initial velocity of 100m/s at an angle of 30^0 above the horizontal. How far from the throwing point will the ball attain its original level? ($g = 10 \, m/s^2$)
(a) $50\sqrt{3}$ m
(b) 486 m
(c) 866 m
(d) 746 m

Q 3. The greatest height to which a man can throw a stone is h. The greatest distance to which he can throw it, will be?
(a) h/2
(b) h
(c) 2h
(d) 3h

Q 4. The range of a projectile for a given initial velocity is maximum when the angle of projection is 45^0. The range will be minimum, if the angle of projection is:
(a) 90^0
(b) 180^0
(c) 60^0
(d) 75^0

Q 5. A stone is projected from the ground with velocity 25 m/s. Two seconds later, it just clears a wall 5 m high. The angle of projection of the stone is: ($g = 10 \, m/s^2$)
(a) 30^0
(b) 45^0
(c) 50.2^0
(d) 60^0

Q 6. Galileo writes that for angles of projection of a projectile at angles $(45^0 + \theta)$ and $(45^0 - \theta)$, the horizontal ranges described by the projectile are in the ratio of: $(\theta < 45^0)$
(a) 2:1
(b) 1:2
(c) 1:1
(d) 2:3

Q 7. The equation of trajectory of a projectile is $y = 10x - \left(\frac{5}{9}\right)x^2$ If we assume g = $10 \, m/s^2$, the range of projectile (in meters) is:
(a) 36
(b) 18

(c) 24   (d) 9

Q 8. A projectile can have the same range R for, two angles of projection at a given speed. If T_1 and T_2 be the times of flight in two cases, then find out relation between T_1, T_2 and R:

(a) $R = T_1 T_2 \frac{g}{2}$ (b) $R = T_1 T_2 \frac{2}{g}$

(c) $T_1 T_2 = \frac{R}{g}$ (d) $R = \frac{T_1 T_2}{g}$

Q 9. A body is projected with initial velocity of $(8\hat{\imath} + 6\hat{\jmath})\, m/s$. The horizontal range is? $(g = 9.8\, m/s^2)$

(a) $9.6\, m$ (b) $14\, m$

(c) $50\, m$ (d) $19.2\, m$

Q 10. If time of flight of a projectile is 10 seconds. Range is 500 m. The maximum height attained by it will be:

(a) $50\, m$ (b) $100\, m$

(c) $125\, m$ (d) $150\, m$

Q 11. An aeroplane is flying horizontally with a velocity of 600 km/h at a height of 1960 m. When it is vertically above of a point A on the ground, a bomb is released from it. The bomb strikes the ground at point B. The distance AB is:

(a) $1200\, m$ (b) $0.33\, km$

(c) $3.33\, km$ (d) $33\, km$

Answer Key

Q.1) d	Q.2) c	Q.3) c	Q.4) a	Q.5) a
Q.6) c	Q.7) b	Q.8) a	Q.9) a	Q.10) c
Q.11) c				