1. Three particles A, B and C are thrown from the top of a tower with the same speed. A is thrown straight up, B is thrown straight down and C is thrown horizontally.
They hit the ground with speeds Au, Bu and Cu respectively, then

(a) $v_A=v_B=v_C$ (b) $v_A>v_B>v_C$
(d) $v_A>v_B=v_C$ (c) $v_A=v_B>v_C$

Advance level

2. Four marbles are dropped from the top of a tower one after the other with an interval of one second. The first one reaches the ground after 4 seconds. When the first one reaches the ground the distances between the first and second, the second and third and the third and forth will be respectively

(a) 35, 25 and 15 m (b) 30, 20 and 10 m
© 20, 10 and 5 m (d) 40, 30 and 20 m

3 .A ball is dropped from the top of the tower of height h. It covers a distance of h/2 in the last second of its motion. How long does the ball remain in air (Take g=10ms^{-2})

(a) $\sqrt{2}\,s$ (b) $(2+\sqrt{2})s$
(c) $2s$ (d) None of the above

4. A body is dropped form height h. If t_1 and t_2 be the times in covering first half and next half distances respectively, then the correct relation is

(a) $t_1=t_2$ (b) $t_1=2t_2$
(c) $t_1=\frac{t_2}{\sqrt{2}-1}$ (d) $t_1=4t_2$

5. A balloon rises from rest with a constant acceleration 8/g. A stone is released from it when it has risen to height h. The time taken by the stone to reach the ground is

(a) $4\sqrt{\frac{h}{g}}$ (b) $2\sqrt{\frac{h}{g}}$
(c) $\sqrt{\frac{2h}{g}}$ (d) $\sqrt{\frac{g}{h}}$

6.A ball is projected upwards from a height h above the surface of the earth with velocity v. The time at which the ball strikes the ground is

(a) $\frac{v}{g}+\frac{2hg}{\sqrt{2}}$ (b) $\frac{v}{g}1-\sqrt{1+\frac{2h}{g}}$
(c) $\frac{v}{g}1+\sqrt{1+\frac{2gh}{v^2}}$ (d) $\frac{v}{g}1+\sqrt{v^2+\frac{2g}{h}}$

7.Two bodies are thrown simultaneously from a tower with same initial velocity :0_2.one vertically upwards, the other vertically downwards. The distance between the two bodies after time t is

(a) $2v_0t+\frac{1}{2}gt^2$ (b) $2v_0t$
(c) $v_0t+\frac{1}{2}gt^2$ (d) v_0t

8.A body falls freely from the top of a tower. It covers 36% of the total height in the last second before striking the ground level. The height of the tower is

(a)50 m (b)75 m
(c)100 m (d)125 m

9.A particle is projected upwards. The times corresponding to height h while ascending and while descending are t_1 and $t_2$respectively. The velocity of projection will be

(a) gt_1 (b) gt_2
(c) $g(t_1+t_2)$ (d) $\frac{g(t_1+t_2)}{2}$

10.A projectile is fired vertically upwards with an initial velocity u. After an interval of T seconds a second projectile is fired vertically upwards, also with initial velocity u.

(a) They meet at time $t=\frac{u}{g}$ and at a height $\frac{u^2}{2g}+\frac{gT^2}{8}$
(b) They meet at time $t=\frac{u}{g}+\frac{T}{2}$ and at a height $\frac{u^2}{2g}+\frac{gT^2}{8}$
(c) They meet at time $t=\frac{u}{g}+\frac{T}{2}$ and at a height $\frac{u^2}{2g}-\frac{gT^2}{8}$
(d) They never meet

Answer

01.	02.	03.	04.	05.	06.	07.	08.	09.	10.
c	a	b	c	b	c	b	d	d	c

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