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NEET MOTION IN A STRAIGHT LINE — MOTION UNDER GRAVITY (FREE FALL) — PYQS

Max. Marks: 56 **Questions:** 14

Section A (MCQ) — 14 questions

Q.1 When a ruler falls vertically, 5 different persons catch it with different reaction times.
($g = 9.8\ ms^{-2}$)
What is the correct order of the distance travelled by the ruler for each person ?
A. Person A has reaction time of 0.20 s
B. Person B has reaction time of 0.22 s
C. Person C has reaction time of 0.18 s
D. Person D has reaction time of 0.19 s
E. Person E has reaction time of 0.21 s
[NEET (UG) 2026]
(1) B > E > A > C > D (2) C > D > A > E > B
(3) C > D > A > B > E (4) B > E > A > D > C

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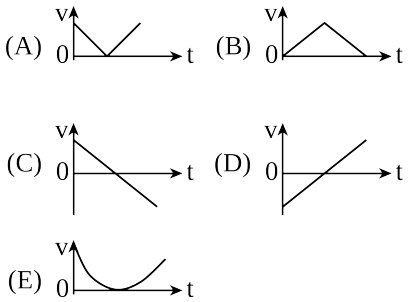
Q.2 The following plots show variation of velocity (v) with time (t), of a ball thrown vertically upward, and falling back. Which of the following plots is/are correct? [NEET (UG) 2026]



(1) B only (2) A and E only
(3) C only (4) D only

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Q.3 A horizontal bridge is built across a river. A student standing on the bridge throws a small ball vertically upwards with a velocity $4\ m\ s^{-1}$. The ball strikes the water surface after 4 s. The height of bridge above water surface is (Take $g = 10\ m\ s^{-2}$)
[NEET (UG) 2023]
(1) 60 m (2) 64 m (3) 68 m (4) 56 m

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Q.4 The ratio of the distances travelled by a freely falling body in the 1st, 2nd, 3rd and 4th second
[NEET (UG) 2022]
(1) 1:2:3:4 (2) 1:4:9:16
(3) 1:3:5:7 (4) 1:1:1:1

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Q.5 A ball is thrown vertically downward with a velocity of 20 m/s from the top of a tower. It hits the ground after some time with a velocity of 80 m/s. The height of the tower is : ($g = 10\ m/s^2$)
[NEET (UG) 2020]
(1) 340 m (2) 320 m (3) 300 m (4) 360 m

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Q.6 A stone falls freely under gravity. It covers distances h_1, h_2 and h_3 in the first 5 seconds, the next 5 seconds and the next 5 seconds respectively. The relation between h_1, h_2 and h_3 is [NEET 2013]
(1) $h_2 = 3h_1$ and $h_3 = 3h_2$
(2) $h_1 = h_2 = h_3$
(3) $h_1 = 2h_2 = 3h_3$
(4) $h_1 = \frac{h_2}{3} = \frac{h_3}{5}$

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Q.7 A stone is dropped from a height h. It hits the ground with a certain momentum P. If the same stone is dropped from a height 100% more than the previous height, the momentum when it hits the ground will change by [AIPMT 2012 (Mains)]
(1) 68% (2) 41% (3) 200% (4) 100%

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Q.8 A boy standing at the top of a tower of 20 m height drops a stone. Assuming $g = 10\ m\ s^{-2}$, the velocity with which it hits the ground is
[AIPMT 2011 (Prelims)]
(1) 10.0 m/s (2) 20.0 m/s
(3) 40.0 m/s (4) 5.0 m/s

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Q.9 A ball is dropped from a high rise platform at t = 0 starting from rest. After 6 seconds another ball is thrown downwards from the same platform with a speed v. The two balls meet at t = 18 s. What is the value of v?
(Take g = 10 m/s^2) [AIPMT 2010 (Prelims)]
(1) 75 m/s (2) 55 m/s (3) 40 m/s (4) 60 m/s

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Q.10 Two bodies A (of mass 1 kg) and B (of mass 3 kg) are dropped from heights of 16 m and 25 m, respectively. The ratio of the time taken by them to reach the ground is [AIPMT 2006]
(1) 4/5 (2) 5/4 (3) 12/5 (4) 5/12

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Q.11 A ball is thrown vertically upward. It has a speed of 10 m/s when it has reached one half of its maximum height. How high does the ball rise?
(Take g = 10 m/s^2.) [AIPMT 2005]
(1) 10 m (2) 5 m (3) 15 m (4) 20 m

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Q.12 A man throws balls with the same speed vertically upwards one after the other at an interval of 2 seconds. What should be the speed of the throw so that more than two balls are in the sky at any time ?
(Given g = 9.8 m/s^2) [AIPMT 2003]
(1) more than 19.6 m/s
(2) at least 9.8 m/s
(3) any speed less than 19.6 m/s
(4) only with speed 19.6 m/s.

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Q.13 If a ball is thrown vertically upwards with speed u, the distance covered during the last t seconds of its ascent is [AIPMT 2003]
(1) ut (2) $\frac{1}{2}gt^2$
(3) $ut - \frac{1}{2}gt^2$ (4) (u + gt)t.

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Q.14 A particle is thrown vertically upward. Its velocity at half of the height is 10 m/s, then the maximum height attained by it is (g = 10 m/s^2) [AIPMT 2001]
(1) 8 m (2) 20 m (3) 10 m (4) 16 m

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	**4**	**3**	**2**	**3**	**3**	**4**	**2**	**2**	**1**	**1**	**1**
Ques.	12	13	14								
Ans.	**1**	**2**	**3**								