

Motion in a Straight Line

NEET previous year questions · Physics

4 questions from the official papers: NEET 2026 (2), Re-NEET 2026 (1), NEET 2020 (1). Each is followed by its answer and a worked solution written by BrainIt. Generated on 23 October 2026.



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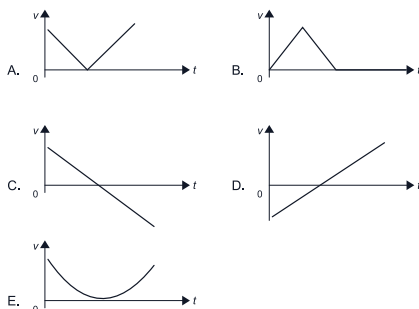
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1. NEET 2026 · Q15

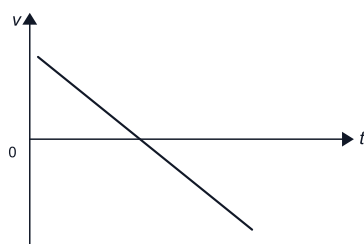
The following plots show variation of velocity (v) with time (t) of a ball thrown vertically upward, and falling back. Which of the following plots is/are correct?



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

Answer (1)

Sol. Throughout the flight the only acceleration is g directed downward, so dv/dt stays a constant negative value. The velocity therefore decreases linearly, reaches zero at the highest point and turns negative on the way down, tracing a single straight line of constant negative slope, which is plot C. Hence option (1). Plots with a change of slope, a V-shape, or a positive slope contradict the constant downward acceleration.



2. NEET 2026 · Q26

When a ruler falls vertically, 5 different persons catch it with different reaction times ($g = 9.8 \text{ m s}^{-2}$). Person A has a reaction time of 0.20 s, Person B has 0.22 s, Person C has 0.18 s, Person D has 0.19 s, and Person E has 0.21 s. What is the correct order of the distance travelled by the ruler for each person?

- (1) $B > E > A > C > D$ (2) $C > D > A > B > E$
(3) $B > E > A > D > C$ (4) $C > D > A > E > B$

Answer (3)

Sol. The ruler falls freely, so distance $s = \frac{1}{2}gt^2$ increases monotonically with reaction time. Ranking the reaction times from largest to smallest gives $B(0.22) > E(0.21) > A(0.20) > D(0.19) > C(0.18)$, which is the same order as the distances. Option (4) is the exact reverse (smallest first). Option (2) is also smallest first and swaps persons B and E as well. Option (1) swaps persons D and C.

3. Re-NEET 2026 · Q6

Consider a particle moving along a straight line, whose position as a function of time is given by $s(t) = \alpha t^2 - \beta t + \gamma$, where $\alpha = 1 \text{ ms}^{-2}$, $\beta = 6 \text{ ms}^{-1}$ and $\gamma = 5 \text{ m}$. The average speed of the particle, in ms^{-1} from $t = 0$ to $t = 6 \text{ s}$ is:

- (1) 12 (2) 6 (3) 3 (4) 0

Answer (3)

Sol. Average speed uses total PATH LENGTH, not displacement, so the turning point must be located first. Here $v = \frac{ds}{dt} = 2t - 6$, which vanishes at $t = 3 \text{ s}$. Positions are $s(0) = 5 \text{ m}$, $s(3) = -4 \text{ m}$, $s(6) = 5 \text{ m}$, giving 9 m travelled in each leg and 18 m in total. Hence average speed $= 18/6 = 3 \text{ ms}^{-1}$.
NCERT Class 11, Motion in a Straight Line.

4. NEET 2020 · Q149

A ball is thrown vertically downward with a velocity of 20 m s^{-1} from the top of a tower. It hits the ground after some time with a velocity of 80 m s^{-1} . The height of the tower is ($g = 10 \text{ m s}^{-2}$)

- (1) 340 m (2) 320 m (3) 300 m (4) 360 m

Answer (3)

Sol. Using $v^2 = u^2 + 2gh$ gives $h = (80^2 - 20^2)/(2 \times 10) = 300 \text{ m}$. Chapter: Motion in a Straight Line.

Questions: official NEET papers set by NTA. Solutions: BrainIt. BrainIt is independent and not affiliated with NTA. Online, with every chapter: brainit.pro/neet/physics/motion-in-a-straight-line/pyq/

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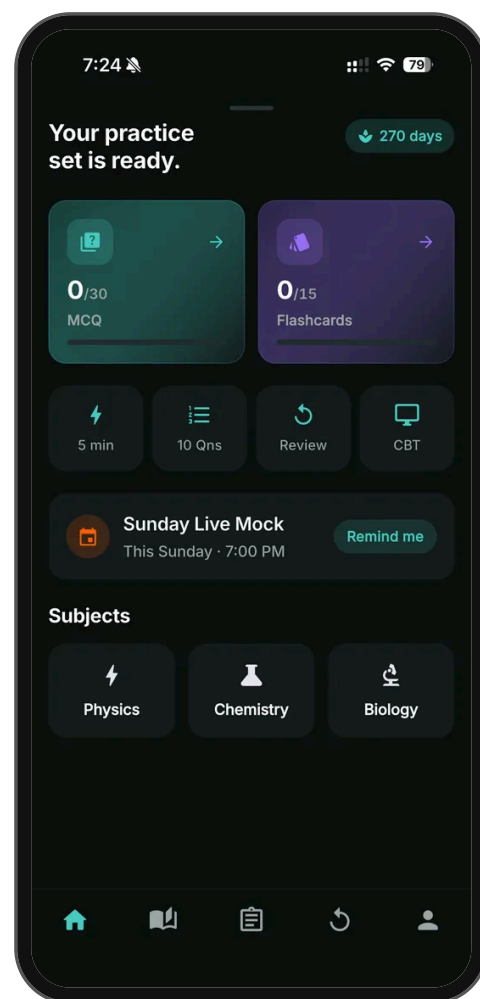
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