

DPP – 4 (Kinematics)

Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/52>

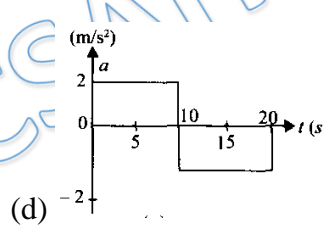
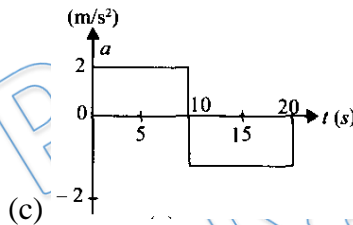
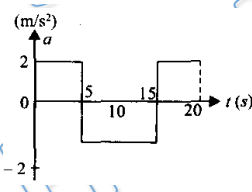
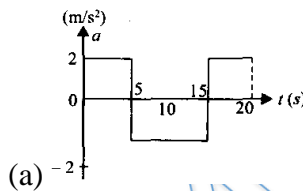
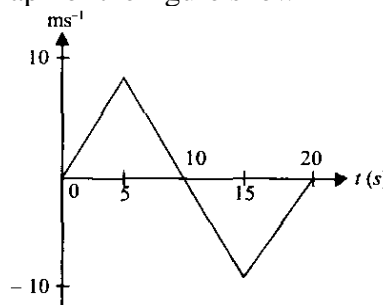
Video Solution on YouTube:-

<https://youtu.be/azVLzDZbRbU>

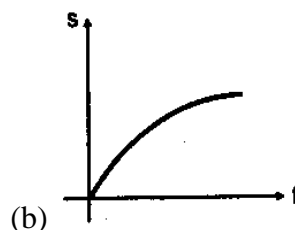
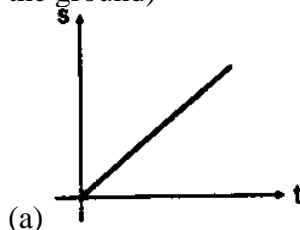
Written Solution on Website:-

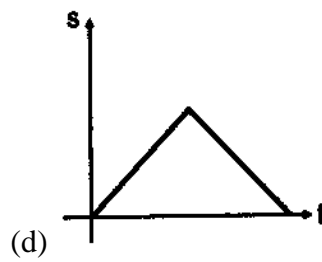
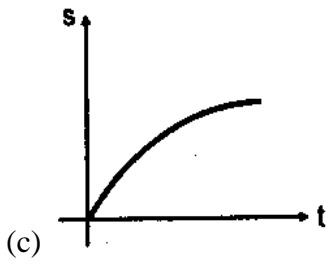
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Q 1. Plot acceleration time graph of the figure shown

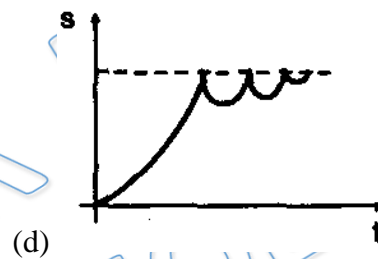
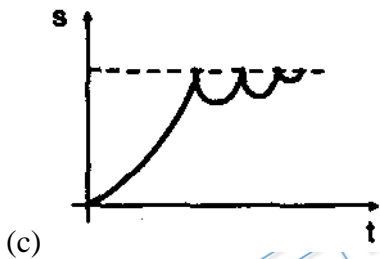
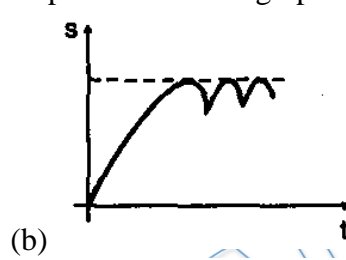
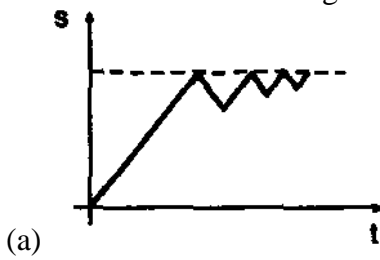


Q 2. One stone is dropped from a tower from rest and simultaneously another stone is projected vertically upwards from the tower with some initial velocity. The graph of the distance (s) between the two stones varies with time (t) as: (before either stone hits the ground)

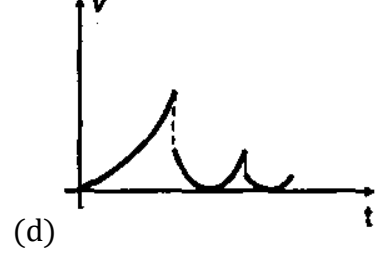
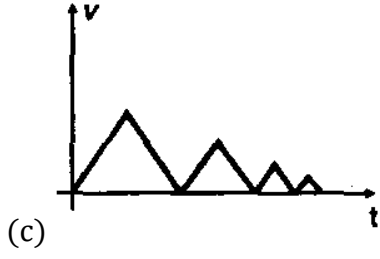
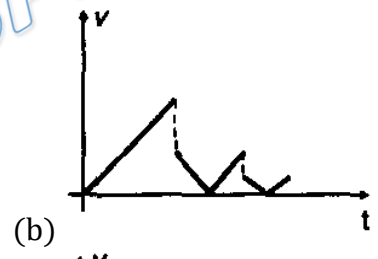
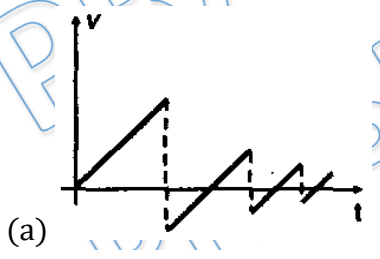




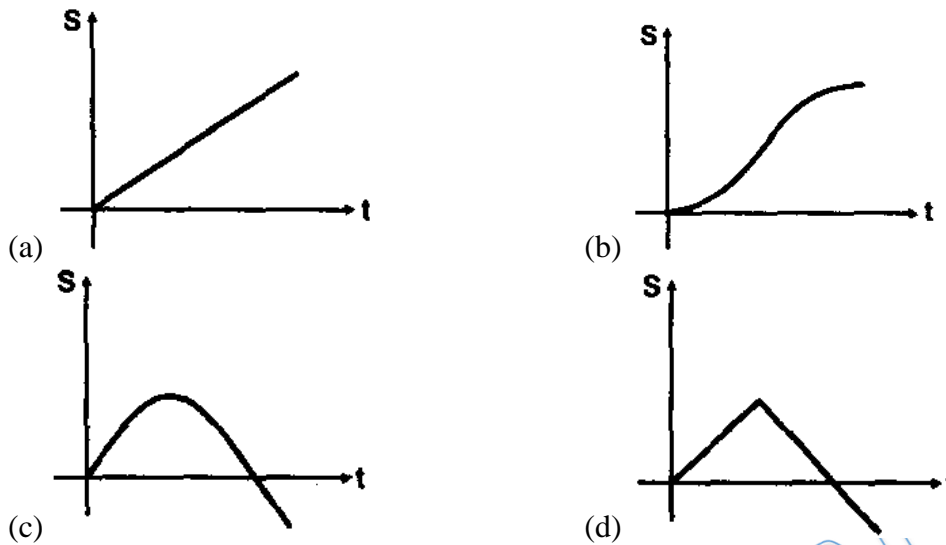
Q 3. A ball is dropped from a certain height on a horizontal floor. If speed reduced to half after each collision with ground. The displacement-time graph of the ball will be:



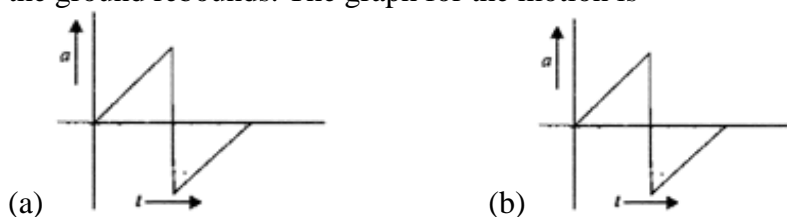
Q 4. A ball is dropped from a certain height on a horizontal floor. If speed reduced to half after each collision with ground. The speed-time graph of the ball in the above situation is:

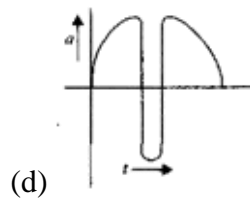
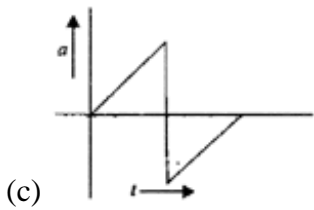


Q 5. A particle is moving in x-y plane with $y = \frac{x}{2}$ and $v_x = 4 - 2t$. The displacement versus time graph of the particle would be :

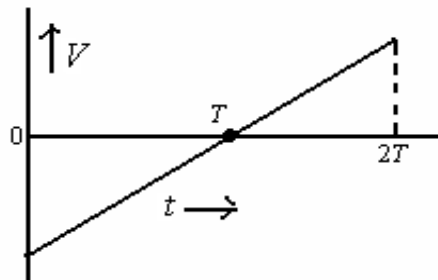


- Q 6. Velocity-time equation of a particle moving in a straight line is $v = 2t - 4$ for $t \leq 2$ s and $v = 4 - 2t$ for $t > 2$ s. The distance travelled by the particle in the time interval from $t = 0$ to $t = 4$ s is (Here, t is in second and v in m/s):
- (a) 12 m (b) 16 m (c) 4 m (d) 8 m
- Q 7. A car starts from rest, moves with an acceleration a and then decelerates at b for sometime to come to rest. If the total time taken is t , the maximum velocity is
- (a) $abt/(a + b)$ (b) $a^2t/(a + b)$
 (c) $at/(a + b)$ (d) $b^2t/(a + b)$
- Q 8. A car starts moving rectilinearly from rest with 5ms^{-2} for sometime, then uniformly and finally decelerates at 5ms^{-2} and come to a stop. The total time of motion equal 25 s. How long does the car move uniformly? Given $V_{av} = 72\text{ km/h}$ during motion.
- (a) 5s (b) 10 s (c) 15 s (d) 20 s
- Q 9. A bird flies for 4 s with a velocity of $|t - 2|$ m/s in a straight line, where $t =$ time in seconds. It covers a distance of
- (a) 2 m (b) 4 m
 (c) 6 m (d) none of these
- Q 10. A football dropped from a height onto an elastic net, stretched horizontally much above the ground rebounds. The graph for the motion is



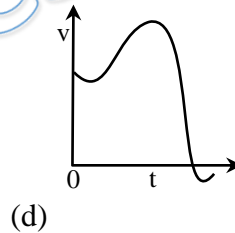
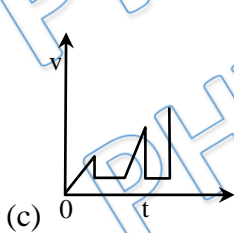
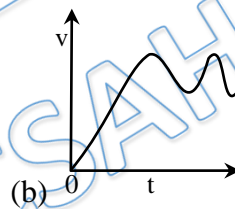
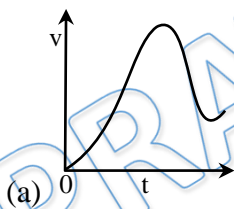


Q 11. The figure shows the velocity (v) of a particle plotted against time (t). Particle is retarding in time interval

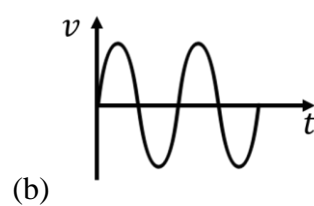
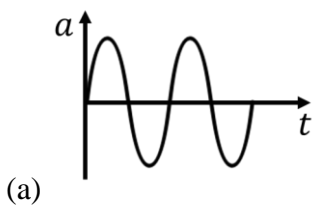


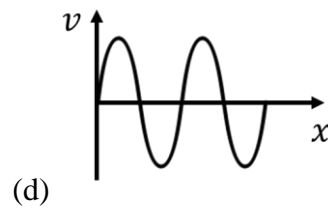
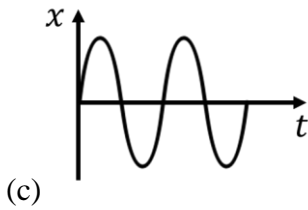
- (a) 0 to T
 (b) 0 to $2T$
 (c) T to $2T$
 (d) Never

Q 12. The following figures show some velocity v versus time t curves. Which of the following cannot be realized in practice



Q 13. In the following figures shown, Which of the following cannot be realized in practice





Q 14. A car starting from rest accelerates at the rate f through a distance s , then continues at constant speed for time t and then decelerates at rate $f/2$ to come to rest. If the total distance covered is $15s$, then

- (a) $s = ft^2/72$ (b) $s = ft^2/4$
(c) $s = ft^2/6$ (d) $s = ft^2/2$

Answer Key

Q.1 a	Q.2 a	Q.3 c	Q.4 b	Q.5 c
Q.6 d	Q.7 a	Q.8 c	Q.9 d	Q.10 c
Q.11 a	Q.12 c	Q.13 d	Q.14 a	