

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය , 2023 අගෝස්තු
 කல்විප් பொதுத் தராதரப் பத்திர(உயர் தர)ப் பரீட்சை, 2023 ஓகஸ்தர்
 General Certificate of Education (Adv. Level) Examination, August 2023

භෞතික විද්‍යාව I
 பொளதிகவியல் I
 Physics I

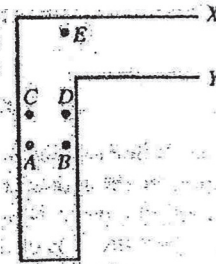
Advanced Level Physics
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PHT6210 2023Th 2021-10-14

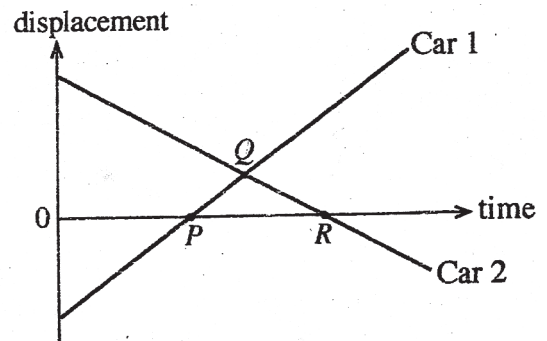
Multiple Choice Questions

1. Which of the following quantities is/are dimensionless?
 (A) Relative velocity
 (B) Relative density
 (C) Relative humidity
- (1) A only. (2) A and B only. (3) B and C only.
 (4) A and C only. (5) All A, B and C.

2. A uniform thin wire is bent into a wire-frame with its two ends X and Y kept opened as shown in the figure. The centre of gravity of the wire-frame is most likely to be at the point,
- (1) A
 (2) B
 (3) C
 (4) D
 (5) E



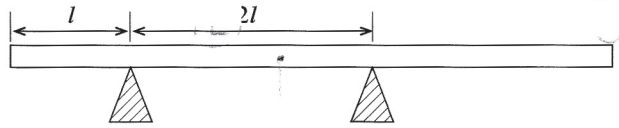
3. The figure shows the displacement-time graphs for the motion of two cars with respect to a lamp post aside the road. Consider the displacement to the right side of the lamp post as positive. A student has made the following statements regarding the motion of cars relevant to the points P, Q, and R marked on the graph.
- (A) Relevant to P: Car 1 coming from left crosses Car 2.
 (B) Relevant to Q: Both cars are moving towards the lamp post and cross each other.
 (C) Relevant to R: Car 2 coming from right passes the lamp post.



Which of the above statements is/are correct?

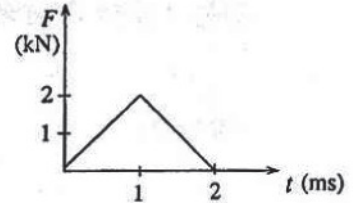
- (1) Only B (2) Only C (3) Only A and B
 (4) Only B and C (5) All A, B, and C
4. A block of mass m , kept on the horizontal truck-bed, is at rest with respect to the truck when it is moving horizontally with a constant acceleration a . The coefficient of static friction between the truck-bed and the mass is μ . The frictional force acting on the mass is given by
- (1) ma (2) μma (3) $\mu m(g + a)$
 (4) $\mu m(g - a)$ (5) mg

5. A uniform straight heavy plank of length $5l$ and mass $5m$ is kept horizontal on two supports separated by a distance $2l$ as shown in the figure. A painter of mass m needs to walk along the entire length of the plank carrying his bucket of paint. What is the maximum mass of the bucket of paint that can be carried by the painter without toppling the plank?



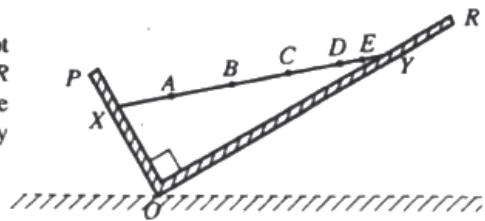
- (1) $\frac{15m}{2}$ (2) $\frac{13m}{2}$ (3) $\frac{5m}{4}$ (4) m (5) $\frac{m}{4}$

6. A ball of mass 0.5 kg which is initially at rest, is struck by a bat. The variation of the force (F) on the ball with time (t) is shown in the figure. The speed of the ball when it leaves the bat is



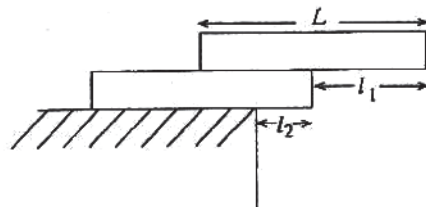
- (1) 10 m s^{-1} (2) 8 m s^{-1} (3) 6 m s^{-1}
 (4) 4 m s^{-1} (5) 2 m s^{-1}

7. A rod XY rests between two smooth boards PQ and QR kept inclined to the horizontal as shown in the figure. Angle PQR is 90° and the surfaces of the boards are normal to the plane of the paper. The centre of gravity of the rod is most likely to be situated at the point



- (1) A (2) B (3) C
 (4) D (5) E

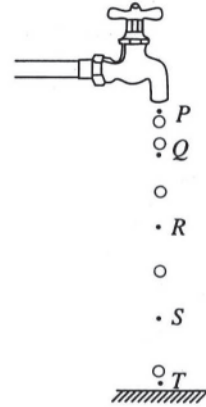
8. Two identical uniform bricks of length L are stacked without being toppled on a table as shown in figure. The respective maximum possible values for l_1 and l_2 are



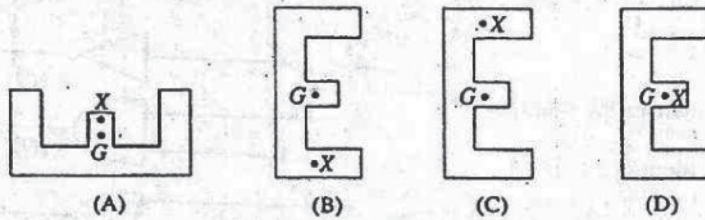
- (1) $\frac{L}{2}, \frac{L}{4}$ (2) $\frac{L}{2}, \frac{L}{6}$
 (3) $\frac{L}{2}, \frac{L}{8}$ (4) $\frac{L}{4}, \frac{L}{4}$
 (5) $\frac{L}{4}, \frac{L}{6}$

9. In the given figure, water drops are falling in a uniform rate. The point which can be considered to act the centre of gravity of the water drop system in the air is,

- (1) P (2) Q (3) R
(4) S (5) T



10. Identical laminae cut into the form of the letter E are pivoted vertically at X . If G is the centre of gravity of the laminae, which of the states shown in the figure are at stable equilibrium positions?



- (1) (A) and (C) only. (2) (A) and (B) only.
(3) (C) and (D) only. (4) (B), (C) and (D) only.
(5) (A), (C) and (D) only.