

2023
THEORY

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය , 2023 අගෝස්තු
 කல்විට් පොතුත් තරාතරප් පත්තිර(உயர் தர)ப் பரீட்சை, 2023 ඉසුර්
 General Certificate of Education (Adv. Level) Examination, August 2023

භෞතික විද්‍යාව I
 பௌதிகவியல் I
 Physics I

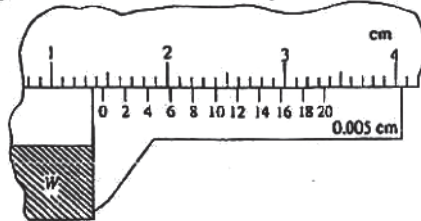
Advanced Level Physics
 Amith Pussella

PHT6210 2023Th 2021-10-14

Multiple Choice Questions

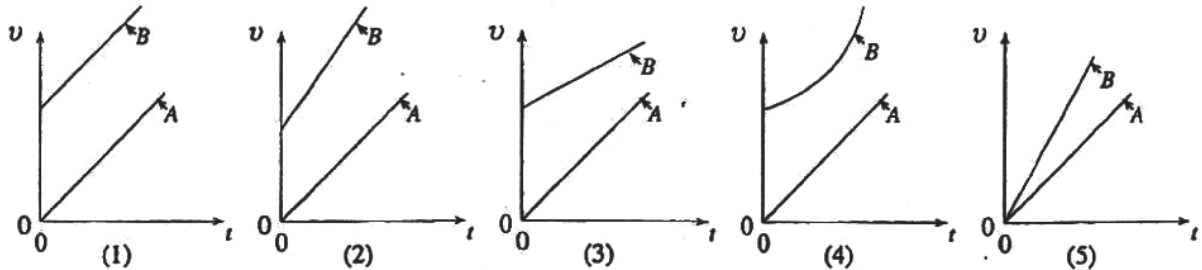
1. SI unit of the quantity of heat is
 (1) cal (2) W (3) K (4) J (5) cd

2. The length of a rectangular wooden block (W) is measured using vernier callipers. The figure shows the relevant sections of the vernier callipers and the block. (Only relevant divisions in the vernier scale are shown.)

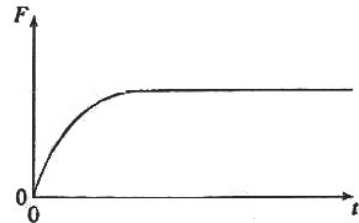


- If there is no zero error in the vernier callipers, then the length of the wooden block is
 (1) 1.30 cm (2) 1.35 cm (3) 1.45 cm (4) 1.50 cm (5) 1.55 cm

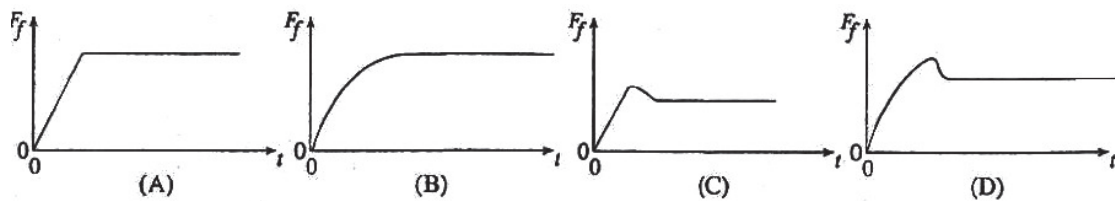
3. A person simultaneously drops an object, and throws another object vertically downwards from a certain height. Which of the following graphs best represents the velocity (v) - time (t) curves for the two objects? (Curve A represents the dropped object and curve B represents the thrown object.)



4. A box is placed on a horizontal surface and a horizontal force F is applied on the box. Variation of the magnitude of F with time is shown in the graph.

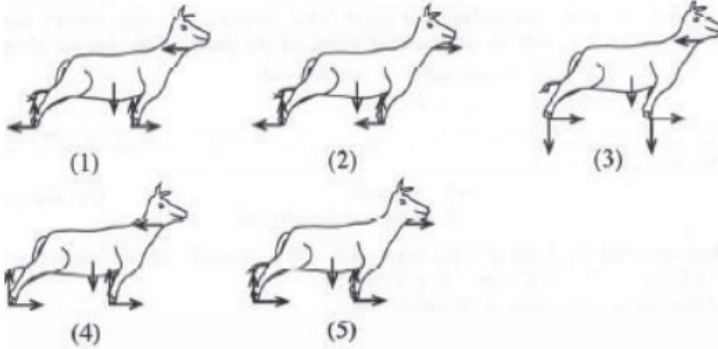
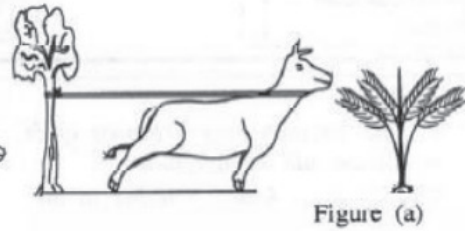


Which of the following graphs show/s the possible variations of the magnitude of the frictional force F_f acting on the box with time?

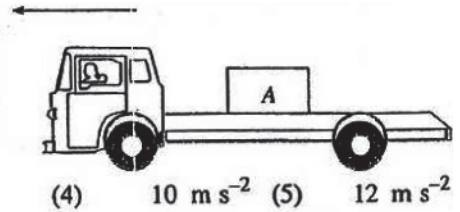


- (1) (A) only (2) (B) only (3) (D) only
 (4) (B) and (D) only (5) (A) and (C) only

5. A bull fastened to a strong tree with a rope attempting to eat a nearby coconut plant is shown in figure (a). The free-body diagram for the bull is correctly represented by



6. A box (A) of mass 50 kg is placed on the horizontal floor-bed of a lorry as shown in the figure. The coefficient of static friction between the box and the floor-bed is 0.8 and the lorry accelerates along a straight horizontal road. The maximum acceleration the lorry can have so that the box will not slide over the floor-bed is

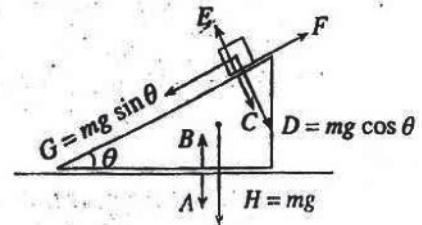


- (1) 2 m s^{-2} (2) 4 m s^{-2} (3) 8 m s^{-2}

- (4) 10 m s^{-2} (5) 12 m s^{-2}

7. A block of mass m is placed on a wedge of mass M which is placed on a horizontal plane. The free body diagram of the system is shown in figure. Out of the forces marked on the diagram what could be considered as action - reaction pairs?

- (1) E and C , F and G (2) E and D , B and A
 (3) E and D , B and H (4) E and C , B and A
 (5) E and C , B and H



8. Consider the following statements made about the the information that can be obtained from dimensional analysis.
- (A) Numerical values of constants of proportionality that may appear in a physical equation can be determined by dimensional analysis.
 - (B) Numerical signs of constants of proportionality that may appear in a physical equation can be determined by dimensional analysis.
 - (C) The units of constants of proportionality that may appear in a physical equation can be determined by dimensional analysis.
- Of the above statements
- (1) only (A) is true.
 - (2) only (B) is true.
 - (3) only (C) is true.
 - (4) only (B) and (C) are true.
 - (5) all (A), (B) and (C) are true.

9.



A heavy roller of mass 500 kg, moving on a horizontal surface at a constant velocity of 1 m s^{-1} as shown in figure is stopped in 0.5 s on hitting a smooth vertical wall. The horizontal force exerted by the roller on the wall is

- (1) 5 000 N
- (2) 3 000 N
- (3) 2 000 N
- (4) 1 000 N
- (5) 500 N

10. The following measurements A , B and C have been taken using correctly selected measuring instruments.
- $A = 3.1 \text{ cm}$ $B = 4.23 \text{ cm}$ $C = 0.354 \text{ cm}$
- Instruments used for the measurements A , B and C are

	A	B	C
(1)	Vernier calliper	Vernier calliper	Micrometer screw gauge
(2)	Metre ruler	Meire ruler	Vernier calliper
(3)	Metre ruler	Micrometer screw gauge	Travelling microscope
(4)	Metre ruler	Vernier calliper	Micrometer screw gauge
(5)	Vernier calliper	Metre ruler	Travelling microscope