RAM (RECALL ALL MEMORY) **15**

2023 THEORY

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கல்விப் பொதுத் தராதரப் பத்திர(உயர் தர)ப் பரீட்சை, 2023 ஓகஸ்ற்
General Certificate of Education (Adv. Level) Examination, August 2023

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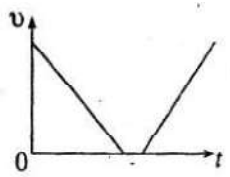
பௌதிகவியல் I
Physics I

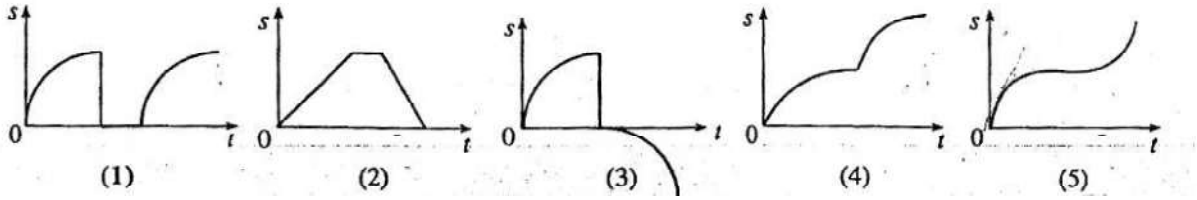
Multiple Choice Questions

1. The most suitable measuring instrument to measure the external diameter of a soft rubber tube having its value of the order of 1 cm is

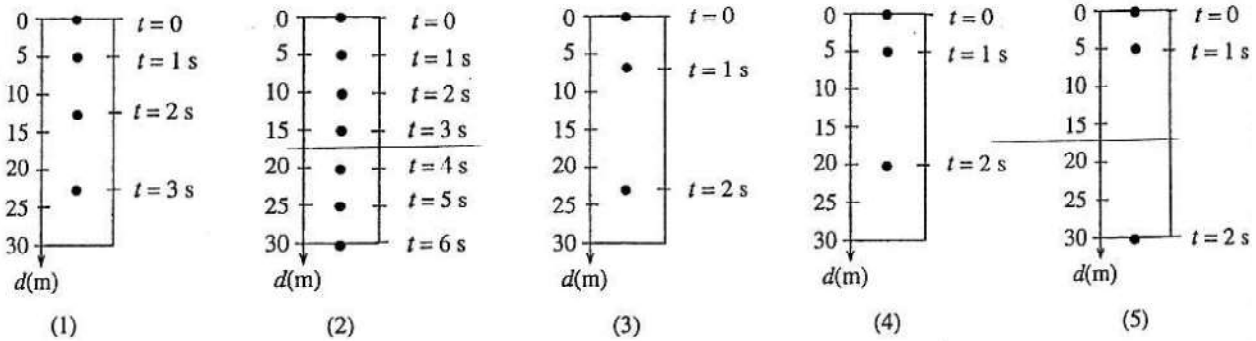
(1) meter ruler. (2) vernier callipers. (3) spherometer.
(4) micrometer screw gauge. (5) travelling microscope.

2. Velocity (v) - time (t) curve for the motion of a particle is shown in the figure. The corresponding displacement(s)-time (t) curve would be

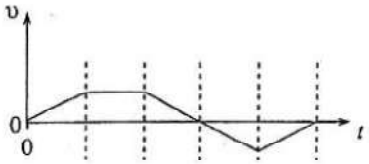


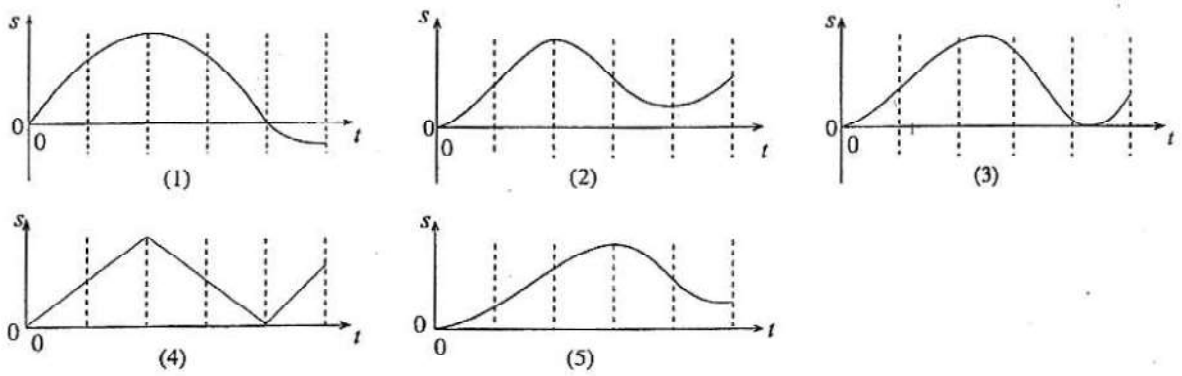


3. Photographs of an object that starts falling freely from rest at $t = 0$ are taken by a camera, first at $t = 0$, and thereafter at the end of each second. Which of the following diagrams correctly indicates the location of the object at the end of each second? The vertical axes of the diagrams represent the distance (d) travelled by the object.

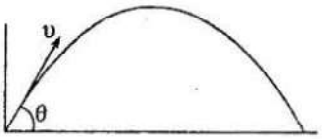


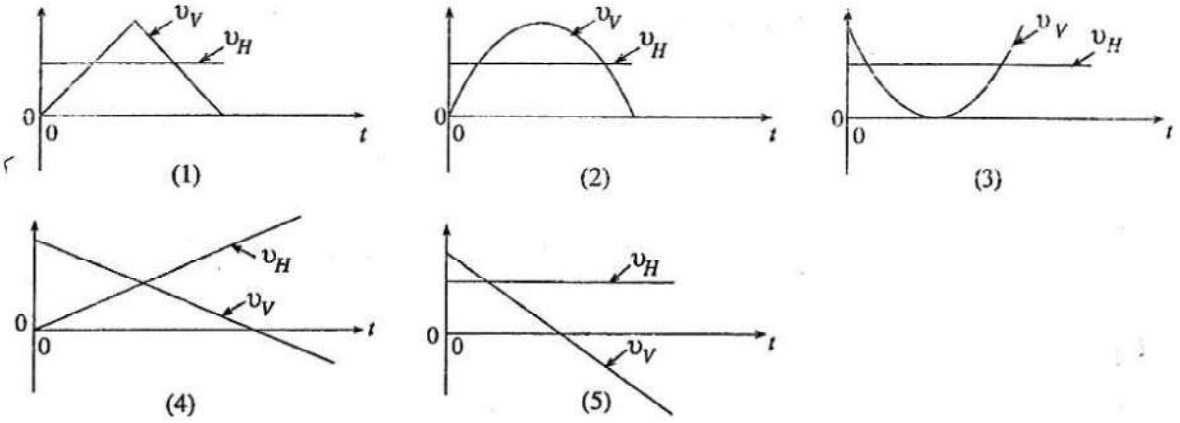
4. The variation of the velocity (v) with time (t) of a particle is shown in the figure. The corresponding displacement (s) - time (t) curve is best represented by





5. An object is projected under gravity with velocity v, in a direction which makes an angle θ with the horizontal as shown in the figure. Which of the following graphs correctly indicates the variation of the horizontal (v_H) and vertical (v_V) components of the velocity of the object with time (t)?





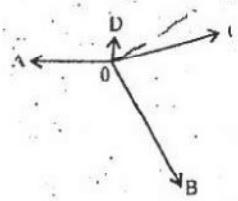
6. As far as the units are concerned, which of the following quantities differs from the rest?

(1) Rotational kinetic energy (2) Mechanical potential energy (3) Internal energy
(4) Work (5) Power

7. When two objects A and B move with uniform speeds toward each other along a straight line, they get 5 m closer to each other every second. If they move in the same direction along a straight line with the original speeds they get 1 m closer to each other every second. The speeds of A and B are respectively

(1) 5 ms^{-1} and 4 ms^{-1}.
(2) 5 ms^{-1} and 10 ms^{-1}.
(3) 3 ms^{-1} and 2 ms^{-1}.
(4) 3 ms^{-1} and 1 ms^{-1}.
(5) 2 ms^{-1} and 1 ms^{-1}.

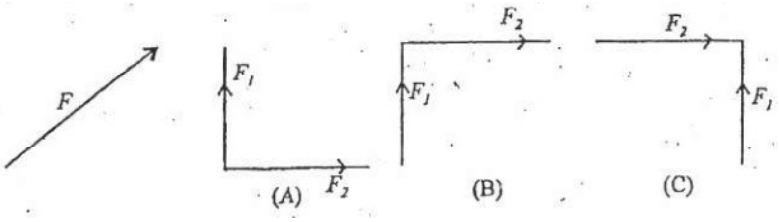
8. Figure shows four coplanar forces A,B C and D (drawn to the scale) acting on a point object O. The resultant force R acting on O will most likely to be along the direction



(1) ↖ R (2) ↗ R (3) → R (4) ↘ R (5) ↙ R.

9. The force F shows in the figure can be obtained by adding the forces F_1 and F_2 in

(1) A only (2) B only
(3) C only (4) A and B only
(3) all A, B and C



10. The two straight lines shown in the displacement (d) – time (t) graph represent the motions of two objects A and B started from rest at time $t = 0$ and moving along the positive x-direction. Which of the following statements made about the motions of the objects is true?

(1) The object A has travelled for a longer time than B.
(2) When $t = t_0$ object B has made a displacement greater than A.
(3) Object A has a greater velocity than B.
(4) Object A has a greater acceleration than B.
(5) Both objects have the same velocity at the point where the two straight lines cross each other.