RAM (RECALL ALL MEMORY) **07**

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

Advanced **L**evel Physics
Amith Pussella

PHT**5838** 2023Th 2021-07-10

Multiple Choice Questions

1. **C (Coulomb) is the unit used to measure electric charge. The charge of a certain charged object is 18 nC (nano Coulombs). When expressing this in Coulombs, it would be equal to,**

(1) 18×10^{9} C **(2)** 18×10^{-6} C **(3)** 9×10^{-9} C

(4) 18×10^{-9} C **(5)** 18×10^{-12} C

3. **The mass of a wire of volume 4 cm^3 is 12 g. When expressing mass of a portion of volume 1 cm^3 , using the material of this wire in kg it would be equal to,**

(1) 3 kg **(2)** 3×10^{3} kg **(3)** 3×10^{-3} kg

(4) $\frac{1}{3} \times 10^{3}$ kg **(5)** 3×10^{6} kg

3. **The approximate radius of earth is 6500 km. How many times is the diameter of earth than the diameter equals to 1.330 m of a small glass ball ?**
(1) 10^{3} **(2)** 2×10^{6} **(3)** 2×10^{9} **(4)** 10^{9} **(5)** 10^{12}

4. Consider the following quantities used in physics.

(A) Electric charge (B) Mass (C) Temperature

Which of the above is/are base quantity/quantities of the International System of Units (SI) ?

(1) B only (2) A and B only (3) A and C only

(4) B and C only (5) all A, B and C

5. 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.

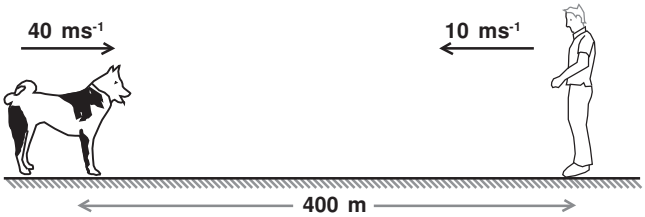
6. A tube of cross - sectional area $2cm^2$ emits water with a rate of $20cms^{-1}$. The volume of water getting emitted per second in terms of m^3 would be,

(1) 4×10^{-4} (2) 4×10^{-5} (3) 2×10^{-5}
(4) 8×10^{-5} (5) 1×10^{-4}

7. When the pressure of a liquid of density ρ with a height of h is P, We get P=hρg. If $P = 10^5\ Nm^{-2}$, $\rho = 4 \times 10^3\ kgm^{-3}$, $g = 10\ ms^{-2}$,the value of h in cm would be,

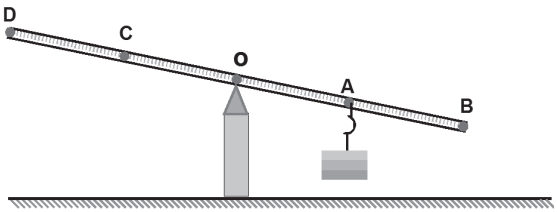
(1) 25 cm (2) 2.5 cm (3) 125 cm (4) 250 cm (5) 500 cm

8. A child and his pet dog are intially 400 m apart from each other. The child starts to move towards the dog with velocity $10\ ms^{-1}$ and at that moment the dog starts to move towards the child with velocity $40\ ms^{-1}$. As the dog meets the child, it runs back to its initial position and again run towards the child and it continues this motion again and again. The total distance the dog has moved when the child reaches the initial position of the dog is,



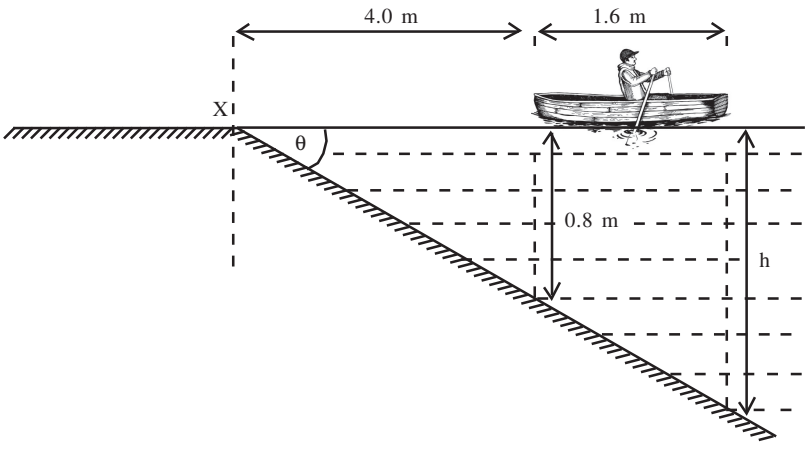
(1) 100 m (2) 200 m (3) 400 m
(4) 800 m (5) 1600 m

9. The figure represents an equillibrium position of a ruler balanced at point O on the edge of a knife, in which a certain mass is hung at A. The ruler could be balanced on the knife edge horizontally,



(1) by slightly increasing the mass of the load hung at A.
(2) by hanging an additional mass at B.
(3) by taking the mass hung at A to a place between AB.
(4) by taking the edge of the knife to a place between O and A.
(5) by applying a small force upwards on C.

10. The distance from X on the shore to the rear end of the boat is 4.0 m and the length of the boat is 1.6 m. Then, if the depth of water at back of the boat is 0.8 m, depth of water at the front end of the boat would be,



(1) 0.9 m (2) 1.0 m
(3) 1.12 m (4) 1.1 m
(5) 1.2 m