RAM

2023 THEORY

RAM RECALL ALL MEMORY **(RECALL ALL MEMORY)** **06**

අධ්‍යයන පොදු සහතික පතු (උසස් පෙළ) විභාගය , 2023 අගෝස්තු
கல்விப் பொதுத் தராதரப் பத்திர(உயர் தர)ப் பரீட்சை, 2023 ஒகஸ்ற்
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භෞතික විද්‍යාව   I
பௌதிகவியல்   I
Physics   I

Advanced **L**evel Physics
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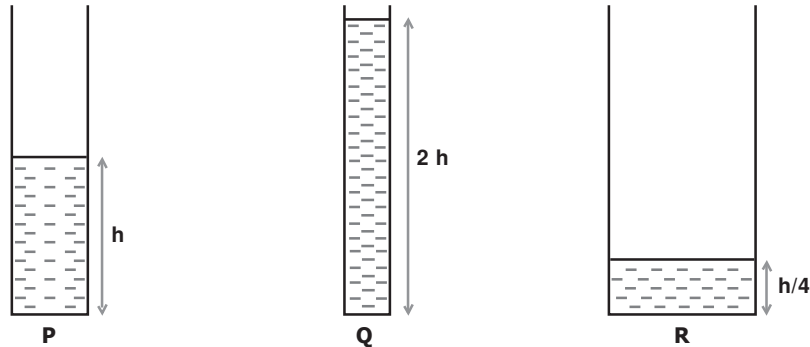PHT**5816** 2023Th *2020-07-10*

Multiple Choice Questions

1. Which one of the following combinations of quantities does not a give a result with dimensions equal to that of velocity?
(a = Acceleration , S = Displacement , P = Pressure , ρ = Density , t = Time , T = Tension force , m = Mass, l = Length , F = Force)

(1) $\sqrt{2\ as}$ (2) $\sqrt{\dfrac{P}{\rho}}$ (3) $\dfrac{S}{t}$ (4) $\sqrt{\dfrac{T \times l}{m}}$ (5) $\dfrac{F}{m}$

2. In the expression $V = \dfrac{a^2\ (A - B)\ g}{N}$, If a-radius , V - velocity , g - gravitational acceleration & N is a quantity with dimensions $[ML^{-1}\ T^{-1}]$, the dimensions of A equals to,

(1) LT^{-2} (2) ML^{-3} (3) MLT^{-2} (4) ML^{-1} (5) L

3. When a same volume of water is inserted into 3 vessels A , B and C the occurence of water columns was as shown below.

(A) The cross sectional diameter of P is twice of that of Q.
(B) The cross sectional diameter of R is twice of that of P.
(C) When inserting half of the water volume of Q into R, the total level of water in the vessel becomes 3/8 h.
True of the above,

(1) Only (A)   (2) Only (B)   (3) Only (A) and (C)   (4) Only (B) and (C)   (5) Only (C)

4. In the expression $F = kA\rho V^x$, F - Force, A - Cross sectional Area , ρ - density , V - velocity and k is a dimensionless quantity. Then the value of x would be,
(1) 0   (2) 1   (3) 2   (4) - 1   (5) - 2

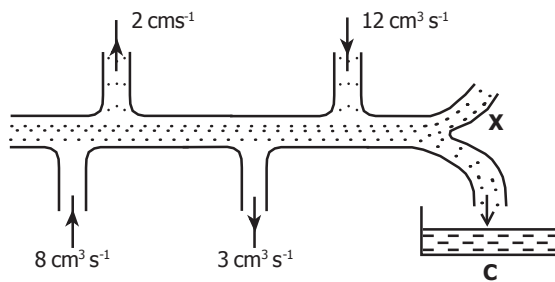**5.** Which of the following quantities is/are dimensionless?
  (A) Relative velocity
  (B) Relative density
  (C) Relative humidity

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

6. Which of the following **does not** represent a fundamental unit in the SI system?
(1) m   (2) N   (3) kg   (4) s   (5) K

7. The rates of water entering and leaving exiting a pipe system from various places are represented in the figure ,in $cm^3 s^{-1}$. If water falls to the container C with a rate of 10 $cm^3 s^{-1}$ then, from the tube X,

(1) water enters with a rate of 5 $cm^3 s^{-1}$ (2) water leaves exits with a rate of 5 $cm^3 s^{-1}$

(3) water enters with a rate of 4 $cm^3 s^{-1}$ (4) water leaves exits with a rate of 4 $cm^3 s^{-1}$

(5) neither water enters nor exits.

8. In the expression F - mg = ma , F and g are constant quantities. When gradually decreasing the magnitude of m , the value a ,

(1) will decrease   (2) will increase

(3) will not change   (4) will increase up to a certain value and then become constant.

(5) will decrease up to a certain value and then become constant.

9. In the expression $\omega = k . f$,f is frequency and k is a dimensionless constant. Units of ω would be,

(1) s   (2) rads   (3) $rads^{-2}$

(4) rad   (5) s^{-1}

10. The area of the circular plate A of diameter D is 10 cm^2 . The area of the plate B with the given measurements equals to,

(1) 20 cm^2 (2) 40 cm^2 (3) 80 cm^2

(4) 30 cm^2 (5) 50 cm^2