RAM (RECALL ALL MEMORY) **08**

**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**

**භෞතික විද්‍යාව I**
**பௌதிகவியல் I**
**Physics I**

**A**dvanced **L**evel Physics
**A**mith Pussella

PHT**5854** 2023Th 2021-07-24

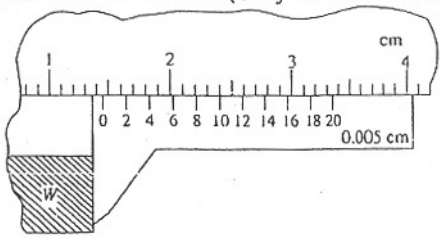
## Multiple Choice Questions

**1.** **In the expression $x = at + bt^2$, if x is measured by meters (m) and y by hours (h), units of b would be,**

**(1) m** **(2) $mh^{-1}$** **(3) $mh^{-2}$**

**(4) $m^2h$** **(5) $mh^2$**

**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.** Dimensions of a certain physical quantity when multiplied by $[L]^3$ yield the dimensions of work. The physical quantity would be

(1) force. (2) momentum. (3) pressure. (4) mass. (5) velocity.

**4.** If $(n-1)$ number of main scale divisions of a certain measuring instrument is divided into $n$ vernier scale divisions, then the least count of the instrument in main scale divisions is

(1) 1 (2) $\frac{1}{n}$ (3) $\frac{n}{n-1}$ (4) $\frac{n-1}{n}$ (5) $\frac{1}{n-1}$

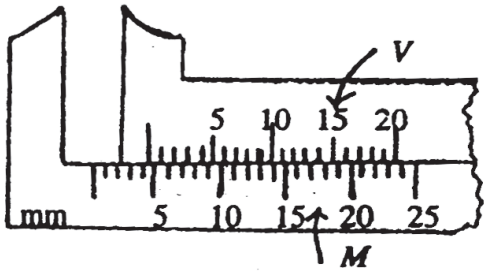
**5.** **$F$, $a$, $v$ and $t$ in the following equation represent a force, an acceleration, a velocity and a time respectively.**

$F = c_1 a + c_2 \frac{v}{t}$

The ratio $\frac{c_1}{c_2}$

(1) has the dimensions of acceleration.
(2) has the dimensions of mass.
(3) has the dimensions of work.
(4) has the dimensions of velocity.
(5) is dimensionless.

6. Figure shows the main scale, M, and the vernier scale, V, of a measuring instrument. The least count of the instrument is




(1) 0.05 mm (2) 0.10 mm (3) 0.15 mm
(4) 0.20 mm (5) 0.25 mm

7. **Extended Vernier scale of a Vernier caliper is made by dividing 39 main scale millimeter divisions into 20 Vernier divisions. Least count of this instrument is,**

**(1) 0.01 mm** **(2) 0.02 mm** **(3) 0.05 mm**
**(4) 0.1 mm** **(5) 0.5 mm**

8. Which of the following pairs of physical quantities have the same dimensions ?

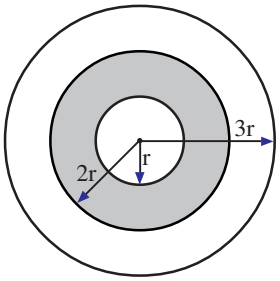
(1) Work and power.
(2) Stress and strain.
(3) Young's modulus and pressure.
(4) Coefficient of viscosity and surface tension.
(5) Force and momentum.

9. **The vernier scale of a measuring instrument consists of 50 divisions. If those 50 divisions coincide with 49 1/2 mm divisions of the main scale, least count of the measuring instrument would be,**

(1) 0.01 mm (2) 0.001 mm (3) 0.02 mm
(4) 0.002 mm (5) 0.025 mm.

10. **The total radius of a circular disc is 3r. The internal radius of the coloured portion is r while its external radius is 2r.**

$$\frac{\text{Area of the coloured portion}}{\text{Total area of the disc}}$$ **equals to,**




(1) $\frac{1}{3}$ (2) $\frac{1}{9}$ (3) $\frac{1}{6}$
(4) $\frac{2}{9}$ (5) $\frac{4}{9}$