

Section - A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

# PHYSICS HSSC-I

## SECTION - A (Marks 17)

Time allowed: 25 Minutes

ہر سوال کے سامنے دیے گئے درست دائرہ کو چن کر کریں۔

Fill the relevant bubble against each question:

- Which of the following pairs has same dimension? ☐ Pressure, Density ☐ Impulse, Momentum ☐ Stress, Strain ☐ Momentum, Inertia
- The number of significant figures in 0.000125010 are: ☐ 3 ☐ 4 ☐ 5 ☐ 6
- Two forces of magnitudes  $F_1$  and  $F_2$  acting at right angle to each other have the resultant of the magnitude: ☐  $\frac{F_1 + F_2}{2}$  ☐  $F_1^2 + F_2^2$  ☐  $\sqrt{F_1^2 + F_2^2}$  ☐  $\frac{F_1^2 + F_2^2}{2}$
- The distance covered by a body in time  $t$ , starting from rest is: ☐  $at^2$  ☐  $2at^2$  ☐  $a^2t$  ☐  $\frac{1}{2}at^2$
- The horizontal range of projectile is same for the angles: ☐  $30^\circ$  and  $40^\circ$  ☐  $40^\circ$  and  $50^\circ$  ☐  $60^\circ$  and  $70^\circ$  ☐  $80^\circ$  and  $90^\circ$
- A ball of mass 100g is thrown vertically upward at a speed of  $25ms^{-1}$ . If no energy is lost, determine the height it would reach. (Loss in K.E = Gain in P.E) ☐ 31.9m ☐ 1.28m ☐ 63.78m ☐ 321.5m
- The mass of a body is  $m$ , its speed is  $v$  and K.E is  $E$ . When mass is doubled and its speed is reduced to half, then K.E will be: ☐  $2E$  ☐  $\frac{E}{2}$  ☐  $4E$  ☐  $8E$
- The angular displacement of one radian is: ☐  $47.3^\circ$  ☐  $57.3^\circ$  ☐  $67.3^\circ$  ☐  $77.3^\circ$
- The ratio of the linear velocities of the points at distances  $r$  and  $\frac{r}{4}$  from the axis of rotation of a rigid body is: ☐ 0.25 ☐ 0.5 ☐ 2 ☐ 4
- Two rain drops have radii in the ratio 2:3. The ratio between their terminal velocities will be: ☐ 2:3 ☐ 3:2 ☐ 4:9 ☐ 9:4

- The length of a second pendulum is: ☐ 70cm ☐ 80cm ☐ 90cm ☐ 100cm
- When amplitude of a wave becomes double, its energy becomes: ☐ 2 times ☐  $\frac{1}{2}$  times ☐ 4 times ☐  $\frac{1}{4}$  times
- According to Laplace correction, sound travels in air under the condition of: ☐ Isothermal process ☐ Adiabatic process ☐ Isochoric process ☐ Isobaric process
- The velocity of sound in air would become double to its velocity at  $0^\circ C$  at temperature: ☐  $313^\circ C$  ☐  $586^\circ C$  ☐  $819^\circ C$  ☐  $1172^\circ C$
- Fringe spacing = ☐  $L \frac{\lambda}{D}$  ☐  $D \frac{\lambda}{L}$  ☐  $\frac{\lambda}{DL}$  ☐  $\frac{L}{\lambda D}$
- According to first law of thermodynamics, Which one is correct? ☐  $C_p + C_v = R$  ☐  $C_p = 1 + \frac{R}{C_v}$  ☐  $R = \frac{C_v}{C_p}$  ☐  $C_p = R + C_v$
- A Carnot engine works between ice point and steam point. Its efficiency will be: ☐ 26.81% ☐ 53.36% ☐ 62.46% ☐ 71.23%

### Important formulae:

- $P = \frac{F}{A}$
- $Density = \frac{M}{V}$
- $\vec{P} = m\vec{v}$
- $\delta = \frac{F}{A}$
- $\epsilon = \frac{\Delta L}{L}$
- $\vec{J} = \vec{F} \times \Delta t$
- $v_t = v_o + (0.61)t$
- $T = 2\pi \sqrt{\frac{l}{g}}$
- $P.E = mgh$
- $\frac{v_t}{v_o} = \sqrt{\frac{T}{T_o}}$
- $g = 9.8ms^{-2}$
- $R = \frac{v_i^2 \sin(2\theta)}{g}$
- $\% Efficiency = \left( \frac{T_1 - T_2}{T_1} \right) 100\%$
- $S = r\theta$
- $\omega = \frac{\theta}{t}$
- $K.E = \frac{1}{2}mv^2$
- $v_o = 332ms^{-1}$  at  $0^\circ C$
- $S = v_it + \frac{1}{2}at^2$
- $2\pi \text{ radians} = 360^\circ$
- $V_{terminal} = \frac{2\rho gr^2}{9\eta}$