

Sig. of Supdt.

KT-XI-14(A)  
**PHYSICS - (Part-I)**

Roll No.

Fig. No. ....

Time Allowed : 3 Hrs.

Fig. No. ....

**Note:** There are three sections of this paper, A, B, & C. Carefully read the instructions for each section and attempt accordingly.

Total Marks : 85

Time Allowed : 20 Mins.

**SECTION - A**

Total Marks : 18

**Note:** Use this sheet for this section. No. mark will be awarded for cutting, erasing or over writing.

**Q. 1** Insert the correct option (a, b, c, d) in the empty box opposite to each part. Each part carries one mark. Any kind of Mark Left / Written is strictly prohibited. Mobile Phone is strictly prohibited in Examination Hall.

- i) Which of the following is a smallest value.....?
  - (a)  $1\text{Gm} \times 1\text{Em}$  (b)  $1\text{nm} \times 1\text{m}$  (c)  $1\text{mm} \times 1\text{pm}$  (d)  $1\text{cm} \times 1\text{km}$
- ii) One pico = .....
  - (a)  $10^{-12}$  (b)  $10^{-9}$  (c)  $10^{-18}$  (d)  $10^{-15}$
- iii) The value of acceleration due to gravity "g" is  $9.8\text{ms}^{-2}$  is also equivalent to ..... ft Sec<sup>-2</sup>?
  - (a) 98 (b) 89 (c) 23 (d) 32
- iv) Work is said to be negative, when  $\vec{F}$  and  $\vec{d}$  are .....
  - (a) Anti parallel (b) Perpendicular (c) Parallel (d) None of these
- v) According to Stoke's law drag force depends on .....
  - (a) Instantaneous velocity (b) Terminal velocity
  - (c) Initial velocity (d) Final velocity
- vi) Linear acceleration  $a = r\alpha$  when  $\theta$  is .....
  - (a)  $180^\circ$  (b)  $360^\circ$  (c)  $0^\circ$  (d)  $90^\circ$
- vii) The moment of inertia of a sphere is .....
  - (a)  $\frac{2}{5}MR^2$  (b)  $\frac{1}{2}MR^2$  (c)  $MR^2$  (d)  $\frac{1}{2}MR^2$
- viii) A projectile is thrown so that it travels a maximum range of 1000m. How high will it rise?
  - (a) 250m (b) 400m (c) 500m (d) None
- ix) Maximum KE of a body attached to a spring in vibrating motion.
  - (a)  $\frac{1}{2}kx_0^2$  (b)  $\frac{1}{2}kx$  (c)  $\frac{1}{2}mv^2$  (d)  $\frac{1}{2}kx^2$
- x) Which one of the following property is not exhibited by the longitudinal wave.....
  - (a) Diffraction (b) Polarization (c) Reflection (d) Interference
- xi) What does not change when force is applied on a body?
  - (a) Position (b) Acceleration (c) Mass (d) Velocity
- xii) If momentum is increased by 20%. Then KE increases by .....
  - (a) 66% (b) 77% (c) 44% (d) 55%
- xiii) With the increase of temperature viscosity of fluid.....
  - (a) Remains Constant (b) Becomes double (c) Increases (d) Decreases
- xiv) The cooking of food by microwave oven is an example of .....
  - (a) Damped Oscillation (b) Free Oscillation (c) SHM (d) Resonance
- xv) When sound waves travel from air to water, which of these remains constant.....
  - (a) Frequency (b) Wave length (c) Velocity (d) All of these
- xvi) Tuning of a radio set is an example of .....
  - (a) Electrical resonance (b) Free vibrations
  - (c) Mechanical resonance (d) Musical resonance
- xvii) Two bodies are said to be in thermal equilibrium if they have the same .....
  - (a) Specify heat (b) Thermal capacities (c) Temperature (d) Amount of heat
- xviii) The polarization angle for glass of refractive index 1.55 is .....
  - (a)  $57^\circ$  (b)  $58^\circ$  (c)  $55^\circ$  (d)  $56^\circ$



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**PHYSICS - (Part-I)**

Time Allowed : 2:40 Hrs.

**Section – B**

Total Marks : 67

Marks : 40

Note: - Mobile Phone is strictly banned in Examination Hall.

**Q. 2** Attempt any ten of the following. All carry equal marks.

- (i) Why is a rifle barrel rifled?
- (ii) Does a hydrogen filled balloon possess any PE? Explain?
- (iii) What is the angle for which the maximum height reached and corresponding range are equal?
- (iv) Explain, why do heavy trucks have large steering wheels?
- (v) Why energy savers are used instead of normal bulbs?
- (vi) A body will be weightless, when the elevator falls down just like a free falling body. Explain?
- (vii) If you hold a sheet of paper and blow across the top surface the paper rises. Explain?
- (viii) Why does the speed of sound wave in a gas changes with temperature?
- (ix) How would you justify that light waves are transverse?
- (x) Why does a sound wave travel faster in solid than in gases?
- (xi) What happens to the time period of a simple pendulum if its length is doubled?
- (xii) Why is the earth not in thermal equilibriums with the sun?
- (xiii) Entropy has often called as "time arrow" explains?

**Section – C**

Marks : 27

**NOTE: -** Attempt any three of the following questions. All questions carry equal marks.

- Q. 3**
- a) Define and explain vector product of two vectors?
  - b) The magnitude of dot and cross product of two vectors are  $6\sqrt{3}$  and 6 respectively. Find the angle between the vectors?
- Q. 4**
- a) Define power and show that power is the dot product of force and velocity. What are different units of power used?
  - b) A body of mass 2.0kg is dropped from rest position 5m above the ground. What is its velocity at a height of 3.0m above the ground?
- Q. 5**
- a) What is the equation of continuity? Show that how it is based on law of conservation of mass. Also give examples from daily life?
  - b) Velocity of water in 6 inch diameter pipe is 5fts<sup>-1</sup>. Find the velocity in 3 inch diameter pipe, which connects with it, both pipes flow full?
- Q. 6**
- Write short notes on any two of the following.
- i. Work Done in Gravitational field.
  - ii. Simple Pendulum.
  - iii. Carnot Heat Engine.