

Roll No. of Candidate : \_\_\_\_\_

**PHYSICS**

**Intermediate Part-I, Class 11<sup>th</sup> (1<sup>st</sup> A 323- I)**

**Paper: I Group - II**

**Time: 20 Minutes**

**OBJECTIVE**

**Code : 6472**

**Marks: 17**

**Note:** You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

- 1 - Silicon is obtained from  
(A) space (B) sand (C) moon (D) air
- 2 -  $[ML^{-1}T^{-1}]$  is dimension of  
(A) force (B) viscosity (C) power (D) energy
- 3 - The vector of zero magnitude and arbitrary direction is called  
(A) equal vector (B) null vector (C) unit vector (D) resultant vector
- 4 - 1<sup>st</sup> condition of equilibrium is written as  
(A)  $\vec{F} = 0$  (B)  $\sum \vec{F} = 0$  (C)  $\sum \vec{\tau} = 0$  (D)  $\vec{\tau} = 0$
- 5 - A mass of fuel consumed by a typical rocket to overcome earth's gravity is  
(A) 10000 Kgs<sup>-1</sup> (B) 1000 Kgs<sup>-1</sup> (C) 100 Kgs<sup>-1</sup> (D) 10 Kgs<sup>-1</sup>
- 6 - Projectile motion is a  
(A) three dimensional motion (B) one dimensional motion  
(C) two dimensional motion (D) no dimensional motion
- 7 - The total work done in a closed path in gravitational field is  
(A) maximum (B) positive (C) zero (D) minimum
- 8 - The relation for centripetal acceleration is given by  
(A)  $\frac{v^2}{r}$  (B)  $v\omega$  (C)  $r\omega^2$  (D)  $a = \frac{f}{m}$
- 9 - 1 GHz =  
(A)  $10^{13}$  Hz (B)  $10^6$  Hz (C)  $10^{15}$  Hz (D)  $10^9$  Hz
- 10 - Human blood pressure is measured in  
(A) Nm<sup>-1</sup> (B) Nm<sup>-3</sup> (C) Nm<sup>-2</sup> (D) torr
- 11 - Tuning of radio is an example of resonance  
(A) mechanical (B) physical (C) magnetic (D) electrical
- 12 - Ripples produced in water is an example of  
(A) light waves (B) electromagnetic waves  
(C) electronic waves (D) progressive waves
- 13 - The speed of sound does not depend upon  
(A) compressibility of fluids (B) inertia of fluids  
(C) density of fluids (D) viscosity of fluids
- 14 - In Young's double slit experiment, the position of dark fringe is expressed as  
(A)  $y_m = \left(m + \frac{1}{2}\right) \frac{\lambda L}{d}$  (B)  $y_m = \left(m - \frac{1}{4}\right) \frac{\lambda L}{d}$   
(C)  $y_m = \frac{m\lambda L}{d}$  (D)  $y_m = \frac{m\lambda d}{2L}$
- 15 - Spectrometer consists of  
(A) four parts (B) three parts (C) five parts (D) two parts
- 16 - The sum of all molecular energies of a substance is called  
(A) K.E. (B) P.E. (C) internal energy (D) Chemical energy
- 17 - Heat engine converts thermal energy into  
(A) mechanical work (B) electrical energy (C) hydro energy (D) solar energy

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PHYSICS

Time: 2:40 Hours

Intermediate Part-I, Class 11<sup>th</sup> (1<sup>st</sup> A 323)

SUBJECTIVE

Paper: I Group - II

Marks: 68

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

SECTION - I

(2 x 8 = 16)

2. Write short answers to any EIGHT questions.

- The period of simple pendulum is measured by a stop watch. What type of errors are possible in the time period?
- Does a dimensional analysis give any information on constant of proportionality that may appear in an algebraic expression? Explain.
- How much distance is covered by light in one year?
- Define significant figures and give its example.
- Define the terms (i) unit vector (ii) components of a vector
- Can you add zero to a null vector?
- What is the unit vector in the direction of the vector  $\vec{A} = 3\hat{i} + 2\hat{j}$
- An object is thrown vertically upward. Discuss the sign of acceleration due to gravity, relative to velocity, while the object is in air.
- Explain the circumstances in which the velocity  $\vec{v}$  and acceleration  $\vec{a}$  of a car are  
(i) Antiparallel (ii) Perpendicular to one another
- Define elastic collision and inelastic collision with examples.
- State law of conservation of momentum.
- Explain the term viscosity.

(2 x 8 = 16)

3. Write short answers to any EIGHT questions.

- An object has 1J of P.E. Explain what does it mean?
- Show that  $K.E = \frac{P^2}{2m}$ , where P is momentum.
- How can we get energy from tides?
- Define critical velocity, write its formula.
- Explain what is meant by centripetal force and why it must be furnished to an object if the object is to follow a circular path?
- Why does a diver change his body positions before and after diving in the pool?
- If mass attached to a vibrating spring-mass is increased by four times, what is the effect on its frequency?
- Why the soldiers are advised to break their steps while marching on a bridge of long span?
- Describe some common phenomena in which resonance plays an important role.
- Is it possible for two identical waves travelling in the same direction along a string to give rise to stationary wave?
- Why does sound travel faster in solids than in gases?
- State the principle of super position.

(2 x 6 = 12)

4. Write short answers to any SIX questions.

- Write down two parts of Huygen's principle.
- How is the distance between interference fringes affected by the separation between the slits of Young's experiment?
- How would you distinguish between un-polarized and plane-polarized lights?
- Find the refractive index of the medium if critical angle is  $39^\circ$ .

(Turn Over)

(4)

- 2 -

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- v. What do you understand by linear magnification and angular magnification?
- vi. Define triple point of water and give its value for water.
- vii. Give two postulates of kinetic theory of gases.
- viii. Explain that the average velocity of the molecules in a gas is zero but the average of the square of velocities is not zero.
- ix. Is it possible to convert internal energy into mechanical energy? Explain with an example.

### SECTION - II

**Note: Attempt any THREE (3) questions.**

5. (a) Write down a note on addition of vectors by their rectangular components. (5)  
 (b) How large a force is required to accelerate an electron ( $m = 9.1 \times 10^{-31} \text{ kg}$ ) from rest to a speed of  $2 \times 10^7 \text{ m/s}$ , through a distance of  $5.0 \text{ cm}$ ? (3)
6. (a) Derive the equations for final velocities in one dimensional elastic collision. (5)  
 (b) A  $1000 \text{ Kg}$  car travelling with a speed of  $144 \text{ km/h}$ , round a curve of radius  $100 \text{ m}$ . Find the necessary centripetal force. (3)
7. (a) State and explain Bernoulli's equation. (5)  
 (b)  $336 \text{ J}$  of energy is required to melt  $1 \text{ g}$  of ice at  $0^\circ \text{C}$ . What is the change in entropy of  $30 \text{ g}$  of water at  $0^\circ \text{C}$  as it is changed to ice at  $0^\circ \text{C}$  by a refrigerator? (3)
8. (a) Discuss the motion of horizontal mass spring system and also derive formula for time period, displacement and velocity. (5)  
 (b) A stationary wave is established in a string which is  $120 \text{ cm}$  long and fixed at both ends. The string vibrates in four segments, at a frequency of  $120 \text{ Hz}$ . Determine its wavelength and fundamental frequency. (3)
9. (a) Describe construction and working of compound microscope. Also derive relation for its magnifying power. (5)  
 (b) A light is incident normally on a grating which has  $2500$  lines per centimeter. Compute the wave length of a spectral line for which deviation in second order is  $15.0^\circ$ . (3)

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