

ICSE Board
Class IX Physics
Paper – 5

Time: 2 hrs

Total Marks: 80

General Instructions:

1. Answers to this paper must be written on the paper provided separately.
 2. You will **not** be allowed to write during the first **15** minutes.
This time is to be spent in reading the question paper.
 3. The time given at the head of the paper is the time allotted for writing the answers.
 4. Attempt **all** questions from **Section I** and **any four** questions from **Section II**.
 5. The intended marks of questions or parts of questions are given in brackets [].
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SECTION I (40 Marks)

Attempt all Questions from this Section

Question 1

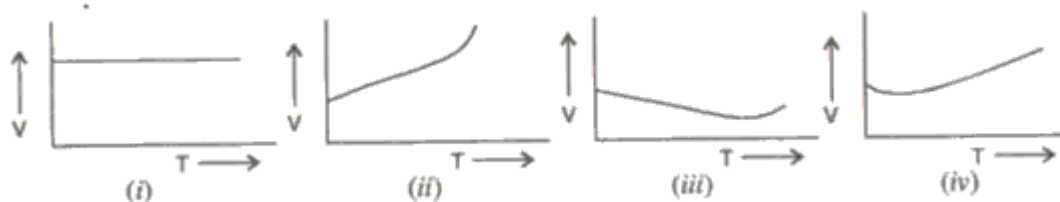
- (a) Will the weight of 1 kg of iron and 1 kg of cotton be the same in air? Explain. [2]
- (b) A body, whose volume is 100 cm^3 , weighs 1 kg in the air. Find its weight in water.
(Density of water = 10^3 kg m^3 , $g = 10 \text{ m/s}^2$) [2]
- (c) Give the order of magnitude of the following [2]
 - i. Height of Mount Everest = $9 \times 10^3 \text{ m}$
 - ii. Mass of a virus = $1 \times 10^{-15} \text{ kg}$
 - iii. Life expectancy of a man = $2 \times 10^9 \text{ s}$
 - iv. A speck of dust = $7 \times 10^{-10} \text{ kg}$.
- (d) Two bodies of masses m_1 and m_2 are released from heights h_1 and h_2 , respectively.
Obtain the ratio of the time taken by both the bodies to reach the earth. [2]
- (e) Explain why deep sea divers need special protective wear. [2]

Question 2

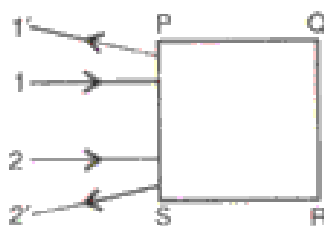
- (a) A thick mirror is such that a man standing near it finds his head looks small and his hips large. How is this mirror made? [2]
- (b) What do you mean by normal reaction? [2]
- (c) If you jump to the shore from a stationary boat, the boat moves in the opposite direction. Does it demonstrate any Newton's law of motion? If yes, which law? [2]
- (d) In summer, why do dogs hang their tongue while lying under trees? [2]
- (e) Why is a pitch filled in between the cement blocks of the pavement? [2]

Question 3

- (a) From the following graphs, which one will represent the variation of the volume of a given mass of water with temperature from 273 K to 373 K? [2]

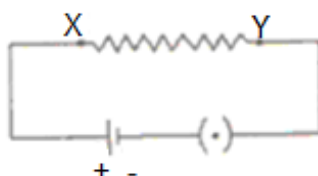


- (b) The temperatures recorded by an accurate Celsius thermometer and a Fahrenheit thermometer are 60° and 141° . What is the mistake in the measurement of Fahrenheit scale? [2]
- (c) Define non-renewable sources with an example. [2]
- (d) If Rani stands 5 feet away, in front of a plane mirror, how far from her will her image be located? [2]
- (e) In the given diagram, 1 and 2 are the incident rays while 1' and 2' are the rays emerging from the region PQRS. Complete the diagram showing the optical object inside the region PQRS producing this effect. [2]



Question 4

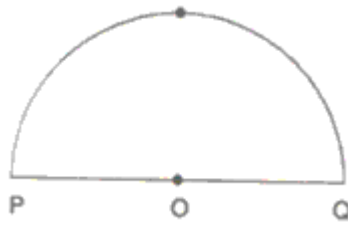
- (a) Which mirror is used by a dentist to examine a cavity? [2]
- (b) Can we hear the ringing of a mobile phone placed in a vacuum chamber? [2]
- (c) Amplitude of a transverse wave is 1.5 m and wavelength is 5 m. If the velocity of wave is 300 m/s, find the frequency of the wave. [2]
- (d) Is the direction of conventional current and that of electronic current the same? [2]
- (e) In the given circuit diagram, you are asked to measure the current in the resistance wire XY and potential difference across it. Name the instruments that you would use. [2]



SECTION II (40 Marks)
Attempt *any four* Questions from this Section

Question 5

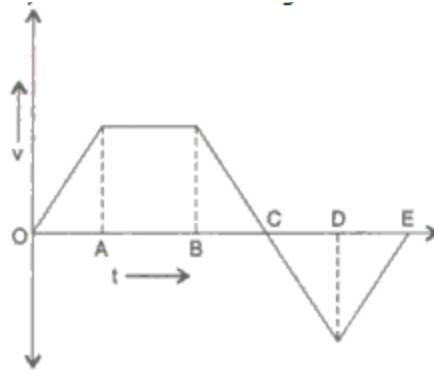
- (a) Focal length of a convex lens obtained by six students are 38.3 cm, 37.8 cm, 38.0 cm, 37.9 cm, 38.1 cm, 37.2 cm. Express mean focal length of the convex lens up to one place of the decimal. [3]
- (b) A particle moves from P to Q. Find the ratio of the distance to the displacement of the particle. [3]



- (c) What do you mean by order of magnitude? A person takes 15 breaths per minute. Find the order of magnitude of number of breaths taken by him in his life, if the person survives for 70 years. [4]

Question 6

- (a) Velocity - time graph of a body is shown in the figure. [4]



- Locate the time intervals during which the body moves with
- Acceleration
 - Retardation
 - Uniform velocity
 - Positive velocity
 - Negative velocity.
- (b) What do you mean by acceleration due to gravity? What is its value in SI and CGS units? [3]
- (c) From the top of a building, a ball is dropped, while another is thrown horizontally, at the same time. Which ball will hit the ground first? [3]

Question 7

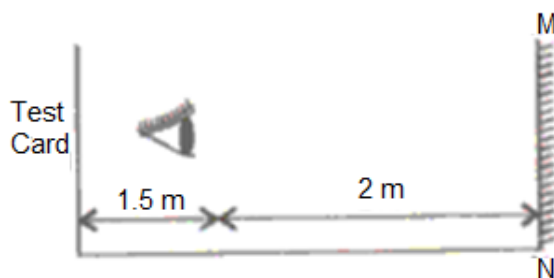
- (a) Show that the rate of change of momentum is equal to the product of mass and acceleration. [3]
- (b) By drawing a ray diagram, show why shaving mirrors are concave while rear view mirrors are convex. [3]
- (c) Why are forests considered as one of the most important carbon dioxide sinks? [4]

Question 8

- (a) A piece of brass (an alloy of copper and zinc) weighs 12.9 g in air. When completely immersed in water, it weighs 11.3 g. What is the volume of copper contained in the alloy? Density of copper = 8.9 g/cm^3 , Density of zinc = 7.1 g/cm^3 . [4]
- (b) Why are mud houses with thatched roofs more comfortable than concrete houses? [3]
- (c) Complete the following: [3]
 - (i) $l_t = l_o (\dots\dots)$ (ii) $\alpha = \dots\dots\beta$ (iii) $\gamma = \dots\dots\alpha$

Question 9

- (a) Why does the interior of a car become too hot when parked in the sun as compared to the temperature outside? [3]
- (b) Define the terms: [3]
 - i. Mechanical waves
 - ii. Electromagnetic waves
 - iii. Sound waves.
- (c) [4]
 - i. A test card of an optician is situated 1.5 m behind the eyes of a patient who is looking through a plane mirror 2 m away from him. What is the distance between him and the image of the test card?



- ii. Define the terms: (1) Principal axis (2) Focus.

Question 10

- (a) Two metal spheres A and B are suspended from two silk threads and a positively charged glass rod is held near A. [3]
- Describe what you will observe.
 - What charges are obtained on A and B?
 - Explain the appearance of charges on the basis of electron movement.
- (b) [3]
- What does the voltage of a battery cell tell us about the electric charge on the terminals of the battery?
 - From which terminal do electrons leave, to flow through the wire?
 - In what direction, does the conventional current flow through the wire?
- (c) Give a short account of the earth's magnetic field. [4]