ICSE Board
Class IX Physics
Paper – 1

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 [ ].

SECTION I (40 Marks)
Attempt *all* Questions from this Section

Question 1

(a) The wavelength of yellow light is 589 nm. What is its order of magnitude in meter? [2]

(b)

   i. State one use of a screw gauge.

   ii. Name the instrument which has the least count

      (a) 0.1 mm

      (b) 1 mm

      (c) 0.01 mm   [2]

(c) What is meant by order of magnitude of a physical quantity?

   Give two examples.   [2]

(d) Name three units used to express small measurements of length.   [2]

(e) Name three units of length which are bigger than a meter. How are they related to a
   meter?   [2]

Question 2

(a) Define acceleration. State its SI unit.   [2]

(b) A body starts from rest and acquires a velocity of 10 ms^{-1} in 2 s. Find its acceleration.
                                                                              [2]

(c) State Newton's third law of motion. Do action and reaction act on the same body?   [2]

(d) Name and define the SI unit of linear momentum.   [2]

(e)   [2]

   i. Define weight. What is its unit?

   ii. Define gravitational constant.

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Question 3

  (a) State Newton's law of gravitation. What is the unit of gravitational force?   [2]

  (b)

      i. Define up thrust.

      ii. State SI unit of measuring up thrust.   [2]

  (c)

      i. How does the density of water change with temperature?

      ii. The density of iron is 7.8×10^3 kg m^{-3}. What is its relative density?   [2]

  (d) Distinguish between heat and temperature. (write 2 points of difference)   [2]

  (e) Why are liquid or gas containers heated from the bottom for rise in temperature? [2]

Question 4

  (a)   [2]

      i. Define potential difference between two charged bodies.

      ii. Define one ohm.

  (b)   [2]

      i. Is it possible to isolate the poles of a magnet?

      ii. Define lines of force in a magnetic field.

  (c) Name the instruments used for detecting the electrical charge on a body.   [2]

  (d)   [2]

      i. What is ultrasound?

      ii. State the approximate speed of ultrasound in the air.

  (e) In case of a convex mirror, if the object is moved closer to the surface of the mirror, how does the size of the image change?   [2]

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

Question 5

(a) What force is required to produce an acceleration of 2 ms^{-2} in a body of mass 0.8 kg? [2]

(b) What is the acceleration due to gravity? Is it a constant? Explain. [5]

(c) Two objects 'X' and 'Y' of masses 'M' and 'm' respectively, are separated by a distance 'd'. If the mass of the object 'X' is tripled, then calculate the force of gravitation between them. [3]

Question 6

(a) What is the difference between thrust and pressure? Write their SI units. [3]

(b) A cube of side 5 cm is placed inside a liquid. The pressure at the centre of one face of cube is 10 Pa. Calculate the thrust exerted by the liquid on this face. [3]

(c) [4]
  i. What do you mean by diving suit? Give the two categories in which modern diving suits are divided.
  ii. Why is blood pressure in humans greater at the feet than at the brain?

Question 7

(a) State the effect of temperature on density of a substance. [2]

(b) What do you mean by anomalous expansion of water? Draw a graph to show the variation of density of water with temperature in the range from 0°C to 10°C. [4]

(c) [4]
  i. How much will a bar of aluminium, 100 cm long, expand when heated from 20°C to 100°C? (Coefficient of linear expansion of aluminium is 0.000025^{o}C^{-1}).
  ii. What is the SI unit of heat?

Question 8

(a) What do you mean by a spherical mirror? Explain with a suitable diagram, the converging of a parallel beam of light rays by a concave mirror. [3]

(b) State the laws of reflection. [2]

(c) Describe an experiment to verify the laws of reflection. [5]

Question 9

(a) State three characteristics of the medium required for the propagation of sound. [3]

(b) How does the speed of sound in gas vary with temperature, pressure and humidity? [3]

(c) Answer the following:
  i. Why is a distant lightning flash seen before the thunder is heard?
  ii. If you place your ear close to an iron railing which is tapped some distance away, you hear the sound twice. Explain, why? [4]

Question 10

  (a) Suggest some steps to reduce energy consumption. [3]

  (b) Name the instrument used to regulate current in the circuit. [1]

  (c) Write the SI unit of potential difference. [1]

  (d) A bar of soft iron is placed near a magnet. [2]

     i. State the magnetic properties it acquires.

    ii. The magnet is now removed. What happens to the magnetic property acquired?

  (e)

     i. In the absence of any other magnet, draw and show field lines of the Earth at a place.

    ii. A bar magnet is placed north-pointing north. Draw and show magnetic field in the region around the bar magnet. Mark the "neutral point". [3]