Annual Examination [2024-2025]

CLASS: IX **TIME: 2 HOURS**

SUBJECT: PHYSICS (PAPER 1) **MM: 80**

General instructions –

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

***Section A** is **compulsory**. Attempt **any four** questions from **section B**.*

The intended marks for questions or parts of questions are given in brackets [ ].

SECTION A–40 MARKS

(Attempt all questions from this section)

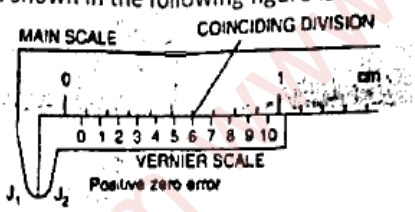
Question 1 [1×15 = 15]

Choose the correct answers to the questions from the given options:

i. 1 fermi = _____ m

(a) 10^{-15} (b) 10^{-19} (c) 10^{15} (d) 10^{19}

ii. The zero error of the vernier callipers shown in the following figure is



(a) + 0.06 cm (b) - 0.06 cm (c) + 0.06 mm (d) - 0.06 mm

iii. Density of water is maximum at

(a) 4 °C (b) 1 °C (c) 0 °C (d) 1.5 °C

iv. The value of solar constant is

(a) 1.34 kW m^2 (b) 1.34 kW m^{-2} (c) 1.34 kW km^2 (d) none of these

v. For a ray incident normally on a plane mirror, the angle of reflection is

(a) 90° (b) 45° (c) 30° (d) 0°

vi. **The number of images formed for two mirrors kept perpendicular to each other is**

(a) 2 (b) 3 (c) 1 (d) 5

vii. The image formed by a convex mirror is

(a) erect and diminished (b) inverted and diminished (c) erect and enlarged **(d) inverted and enlarged**

viii. What does the following symbol mean?

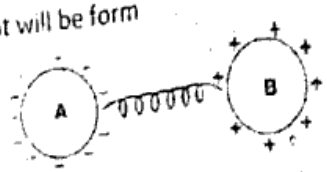
(a) cell (b) battery (c) ammeter (d) a.c. source

ix. If *n* electrons pass through the cross-section of a conductor in time *t*, the current in the conductor is

(a) *net* (b) *et/n* (c) *ne/t* (d) *nt/e*

x. An electromagnet is a temporary strong magnet made from
(a) steel (b) aluminium (c) copper (d) none of these

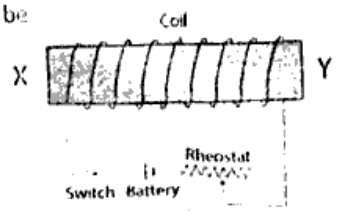
xi. In the given figure, the flow of current will be form



(a) B to A (b) A to B (c) both A to B and B to A (d) none of these

xii. **Assertion:** A piece of ice floats in water, the level of water remains unchanged when the ice melts completely.
Reason: According to Archimedes' principle, the loss in weight of the body in the liquid is equal to the weight of the liquid displaced by the immersed part of the body.
(a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
(b) Both Assertion and Reason are correct but Reason is not the correct explanation for Assertion.
(c) Assertion is true but Reason is false.
(d) Assertion is false but Reason is true.

xiii. In the following figure the end X will be



(a) north pole (b) south pole (c) can't say (d) none of these

xiv. The force required to produce an acceleration of 2 m/s² in a body of mass 0.8 kg is
(a) 1.6 N (b) 1.6 dyne (c) 0.4 N (d) none of these

xv. Which of the following quantities is constant in case of uniform circular motion?
(a) velocity (b) speed (c) acceleration (d) none of these

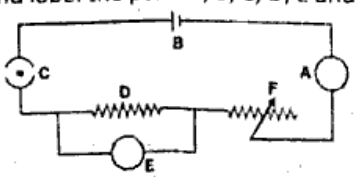
Question 2: **[15]**

i. A cricket ball of mass 100 g moving at a speed of 30 m/s is brought to rest by a player in 0.03 s. Find the average force applied by the player. [3]

ii. What do you mean by the term contact forces? Explain with an example. [1+1=2]

iii. What do you mean by the term electrical resistance? What its unit? [1+1=2]

iv. Draw the following electric circuit and label the parts A, B, C, D, E and F. [2]



v. **A bat can hear sound of frequencies upto 120 kHz. Determine the minimum wavelength of sound which it can hear. (Speed of sound in air= 330 ms⁻¹)** [2]

vi. Find the length of a seconds' pendulum at a place where g= 10 m/ s². [2]

vii. Write the spherical mirror's formula and explain the meanings of each symbol used in it. [2]

Question 3: **[10]**

i. A cube of each side 5 cm is placed inside a liquid. The pressure at the centre of one face of the cube is 10 Pa. Calculate the thrust exerted by the liquid on this face. [2]

ii. Mention any two points of differences between a.c. and d.c. [2]

iii. Relative density of silver is 10.5. What is the density of silver in S.I. unit? What assumption do you make in your calculations? [2]

iv Mention any two points of difference between heat and temperature. [2]

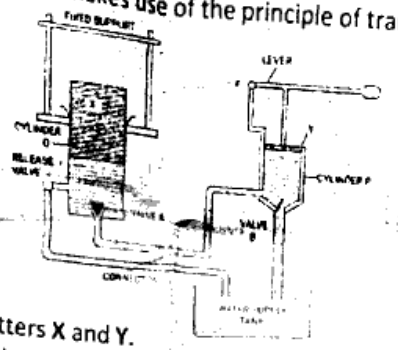
v Define non-renewable sources of energy? Give an example. [2]

SECTION B – 40 MARKS
(Attempt any four questions)

Question 4:

i. Mention any three points of differences between mass and weight. [3]

ii. The diagram below shows a device which makes use of the principle of transmission of pressure. [10]



(a) Name the parts labelled by the letters **X** and **Y**.
(b) Describe what happens to the valves **A** and **B** and to the quantity of water in the two cylinders when the lever arm is moved down.
(c) Give reasons for what happens to the valves **A** and **B** in part (b). [1+1+2=4]

iii. Mention any three points of differences between an electromagnet and a permanent magnet. [3]

Question 5:

i. (a) State Archimedes' principle.
(b) With required diagram prove that upthrust is equal to the weight of the displaced liquid. [10]

ii. Describe any three ways to control global warming. [1+3=4]

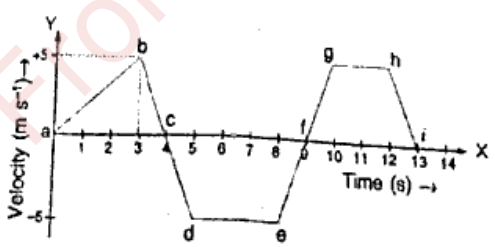
iii. Explain how anomalous expansion of water helps in preserving aquatic life during very cold weather. [3]

Question 6:

i. A train takes 2 h to reach station B from station A and then 3 h to return from station B to station A. The distance between the two stations is 200 km. Find: (a) the average speed and (b) the average velocity of the train. [10]

ii. Mention any three points of differences between distance and displacement. [2+1=3]

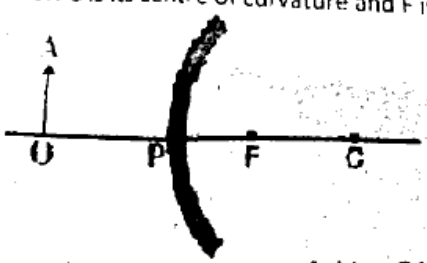
iii. The following figure shows the velocity-time graph of a particle. Using this determine the displacement of that particle. [3]



[4]

Question 7:

i. The diagram below shows a convex mirror. C is its centre of curvature and F is its focus. [10]



(a) Draw two rays from A and hence locate the position of image of object OA and label the image as IB.
(b) State any one characteristic of the image. [3+1=4]

ii. For a sound wave derive the relationship $V=f\lambda$. [where the symbols have their usual meaning] [3]

iii. An observer A fires a gun and another observer B at a distance 1650 m away from A hears its sound. If the speed of sound is 330 ms^{-1}, find the time when B will hear the sound after firing by A. [3]

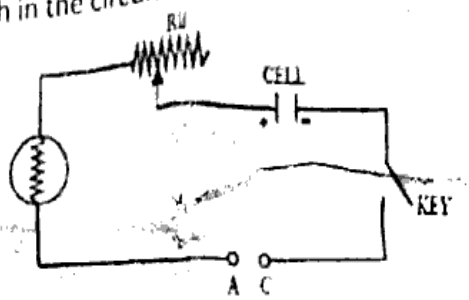
[10]

Question 8:

i. What is electric current? Which kind of physical quantity is it? What is its unit? [1+1+1=3]

ii. Mention any four points of differences between primary and secondary cells. [4]

iii. (a) Complete the circuit given in the following figure by inserting an ammeter between the terminals A and C.
(b) In the diagram mark the polarity at the terminals of ammeter and indicate clearly the direction of flow of current in the circuit, when the circuit is complete.
(c) Name and state the purpose of Rh in the circuit. [1+1+1=3]



[10]

Question 9:

i. Explain the following :
(a) When two pins are hung by their heads from the same pole of a magnet, their pointed ends fly apart.
(b) Several soft irons pins can be hung one below the other from the pole of a magnet, but they soon fall off when the magnet is removed. [2+2=4]

ii. A current of 1.5 A flows through a conductor for 2.0 s. What amount of charge passes through the conductor? [3]

iii. What are magnetic field lines? Explain why magnetic field lines never intersect each other. [1+2=3]

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