

Physics-1
CLASS X

Time 1½

Max. Marks-80

Section I (40 Marks)
Compulsory (Attempt All Question From This Question)

Question-1

- A.
- a. How is the force related to the momentum of a body?
 - b. What are the two forms of mechanical energy?
- B.
- a. Define the term velocity ratio. State its unit.
 - b. A dam has broader walls at the bottom than at the top. Explain.
- C.
- a. Why is a force needed to keep a block of cork inside water?
 - b. State the principle of flotation.
- D.
- a. Name two factors on which the refractive index of a medium depends?
 - b. The surface of an empty test tube kept in a beaker of water shines like a mirror. Give reason.
- E.
- a. An object appears green when viewed in white light. Explain this observation.
 - b. State two differences between light and sound waves.
- F.
- a. Name two characteristics of a musical sound.
 - b. A ship on the surface of sea sends a signal and receives it back from a submarine inside the water after 45s. Calculate the distance of the submarine from the ship. (Speed of sound in water is 1450ms⁻¹).
- G.
- a. State the factors on which the internal resistance of a cell depends.
 - b. Distinguish between kilowatt and kilowatt-hour.
- H.
- a. Define the term heat capacity and state its unit.
 - b. An iron ball requires 5000J heat to raise its temperature by 10°C. Calculate the heat capacity of the iron ball.
- I.
- a. Why do you farmers fill their fields with water on a cool winter night?
 - b. Explain how does the volume change when ice at 0°C is heated to 10°C.
- J.
- a. State two factors on which electrons from heated surface depends.
 - b. Complete the following reaction:
$${}_{92}^{238}\text{U} + {}_0^1\text{n} \longrightarrow {}_{56}^{148}\text{Ba} + {}_{36}^{90}\text{Kr} + {}_0^1\text{n}$$

Section I (40 Marks)
Compulsory (Attempt All Question From This Question)

Question-1

K.

- c. How is the force related to the momentum of a body?
- d. What are the two forms of mechanical energy?

L.

- c. Define the term velocity ratio. State its unit.
- d. A dam has broader walls at the bottom than at the top. Explain.

M.

- c. Why is a force needed to keep a block of cork inside water?
- d. State the principle of flotation.

N.

- c. Name two factors on which the refractive index of a medium depends?
- d. The surface of an empty test tube kept in a beaker of water shines like a mirror. Give reason.

O.

- c. An object appears green when viewed in white light. Explain this observation.
- d. State two differences between light and sound waves.

P.

- c. Name two characteristics of a musical sound.
- d. A ship on the surface of sea sends a signal and receives it back from a submarine inside the water after 45s. Calculate the distance of the submarine from the ship. (Speed of sound in water is 1450ms⁻¹).

Q.

- c. State the factors on which the internal resistance of a cell depends.
- d. Distinguish between kilowatt and kilowatt-hour.

R.

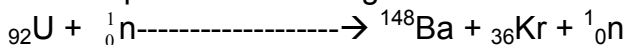
- c. Define the term heat capacity and state its unit
- d. An iron ball requires 5000J heat to raise its temperature by 10°C. Calculate the heat capacity of the iron ball.

S.

- c. Why do you freeze their fields with water on a cool winter night?
- d. Explain how does the volume change when ice at 0°C is heated to 10°C.

T.

- c. State two factors on which electrons from heated surface depends.
- d. Complete the following reaction:



Section II (40 Marks)
Answer Any Four Question From This Section

Question-2

- A. Draw a diagram of block and tackle system of pulleys having a velocity ratio of 5. In your diagram indicate clearly the points of application and the direction of the tension in each strand.
(6)
- B. If the power of a motor is 40kw, At what speed can it raise a load of 20,000n?
(2)
- C. A man weight 600n on the earth. What would be his approximate height on the moon?
Why?
(2)

Question-3

- A. Why does an iron nail float in mercury and sink water?
(3)
- B. Define up thrust and describe an experiment to show its existence.
(4)
- C. Deduce an expression for the pressure at a depth inside a liquid.
(3)

Question-4

- A. Prove that

$$\text{Refractive index} = \frac{\text{Real depth}}{\text{Apparent depth}}$$

- B. Distinguish between a real and a virtual image.
(3)
- C. A convex lens had focal length equal to 25cm. An object is placed at a distance 12.5cm from the lens. Draw a diagram to find the position of the image.
(4)

Question-5

- A. What are pigments? Which of those are the most permanent? What is spectrum? Draw a labeled ray diagram to show the formation of spectrum of white light.
(4)
- B. How does the wave form of loud note differ from a soft note? Draw diagram.
(3)

Question-6

- A. State ohm's law. Describe an experiment with a neat labelled circuit diagram to verify ohm's law.
(3)
- B. What do you mean by the term earthing? Explain how is it done.
(3)

C. Describe a method to determine the specific heat capacity of a solid, like a piece of copper. (4)

A. **Question-7** Name three constituents of an atom and their masses and charges. (2)

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B. Draw a simplified labelled diagram of a hot cathode ray tube and briefly explain its Working.

(4)

What is the nature of α , β and γ radiations? State four properties of each.

(4)