



Class: X

MODEL PAPER EXAMINATION 2025

Time Allowed: 35 minutes

SUBJECT: PHYSICS

Q1:

(SECTION "A")

Marks: 12

Note: Attempt **ALL** questions from section 'A'. Each question carries **ONE** mark.

1. The human eye functions similarly to:

A. Camera	B. Projector	C. Telescope	D. Microscope
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2. Electromagnetic waves carry:

A. Wavelength	B. Frequency	C. Charge	D. Energy
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3. In a concave mirror, the image size depends upon:

A. Size of the object	B. Position of the object	C. Area covered by the object	D. The shape of the object
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4. The result obtained after processing input data on a computer is known as:

A. Data	B. Information	C. Computer	D. Mouse
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5. Ohms law does not apply to:

A. Semi-conductors	B. D.C. circuit	C. Small resistors	D. High current
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6. The capacitance of capacitors increases when they are connected in:

A. Parallel	B. Series	C. Both	D. None of them
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7. A type of disturbance that moves through a medium due to the periodic motion of particle motion of particles around their mean positions is called:

A. Time period	B. Resonance	C. Frequency	D. Wave motion
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8. Ultrasound has multiple applications in medicine and industry. Which of the following uses ultrasound?

A. Absorption	B. Prenatal scanning	C. Dispersion	D. Measuring humidity of air
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9. If the area of the plates in a parallel plate capacitor is doubled, the capacitance will:

A. Remain unchanged	B. Half	C. Double	D. Increased two times
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10. A shunt converts a galvanometer into:

A. A voltmeter	B. An ammeter	C. A wattmeter	D. A calorimeter
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11. The purpose of connecting a battery in an electric circuit is:

A. To maintain resistance across the conductor	B. To vary resistance across the conductor	C. To maintain a constant potential difference across the conductor	D. To maintain a varying potential difference across the conductor
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12. Optical fibers are a practical application for:

A. Polarization	B. Refraction	C. Interference	D. Total internal reflection
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(Practical Based Assessment)

Marks: 15

Q2: Attempt **ALL** questions.

1. A student is studying sound waves produced by a tuning fork. The time period of the fork is measured as 0.005 seconds, and the speed of sound in air is known to be 340 m/s.
 - a. Calculate the **frequency** of the wave using $f = \frac{1}{T}$. (1 mark)
 - b. Use the frequency to calculate the **wavelength** of the sound wave using $v = f\lambda$. (2 marks)
 - c. State what happens to wavelength if the frequency increases while the speed stays constant. (2 marks)
2. Maria sees a rainbow after it rains and wonders how it's formed. Her teacher explains that sunlight interacts with water droplets in the air.
 - a. Describe how light behaves when it enters, reflects within, and exits a water droplet. (3 marks)
 - b. What two processes are responsible for the separation of white light into different colors? (2 marks)
3. Rayan uses a gold-leaf electroscope to test how different charged objects affect the leaves. He charges a rod and brings it close to the electroscope.
 - a. What happens to the leaves when a positively charged rod is brought near a positively charged electroscope? (1 mark)
 - b. What happens when a negatively charged object is brought near it? (1 mark)
 - c. Based on these observations, explain the principle: "Like charges repel, unlike charges attract." (3 marks)

END OF SECTION A



Class: X

Time: 2 hours 55 minutes

MODEL PAPER EXAMINATION 2025

SUBJECT: PHYSICS (SECTION "B" AND SECTION "C")
SECTION "B" (SHORT ANSWER QUESTIONS)Total Marks 48
24 Marks**Note:** Attempt any **EIGHT** questions from this section.

- Q3. Compare and contrast musical sound and noise in terms of their characteristics and examples.
- Q4. Explain why a potential difference is necessary for the flow of electric current in a circuit.
- Q5. Identify various electrical devices that use capacitors and describe the role of capacitors in these devices.
- Q6. List different types of information storage devices and elaborate on their specific uses.
- Q7. Discuss the function of a transformer in an alternating current (AC) circuit and its practical significance.
- Q8. Describe the effect of a magnetic field on a current-carrying coil.
- Q9. A convex lens has a focal length of 18 cm. An object 5 cm tall is placed 12 cm away from the lens. Calculate the position, nature, and height of the image.
- Q10. A specimen forms an image 11.5 cm behind a concave mirror with a focal length of 13.5 cm. Determine the distance of the specimen from the mirror.
- Q11. The potential difference between two points is 100 V, and moving an unknown charge between them requires 500 J of work. Calculate the charge.
- Q12. The half-life of radium is 1600 years. If the initial mass is 60 g, determine the remaining mass after 4800 years.
- Q13. When the current in a pocket calculator is 0.0002 A, determine the total charge that flows through the circuit in one minute.

SECTION "C" (DETAILED ANSWER QUESTIONS)**24 Marks****Note:** Attempt any **FOUR** questions from this section.

- Q14. Define simple harmonic motion and explain the conditions required for a body to exhibit it.
- Q15. Explain the concept of "logic" in digital electronics with an example. Also, identify the components that implement logic in digital circuits.
- Q16. Why are sound waves classified as mechanical waves? Provide a detailed explanation.
- Q17. State Ohm's Law and discuss its limitations in practical applications.
- Q18. What are damped oscillations? Explain how damping causes a gradual reduction in the amplitude of oscillations.
- Q19. What are nuclear reactions? Explain the different types of nuclear reactions with examples and equations.

END OF PAPER