



Estd. 1861

BOYS' HIGH SCHOOL AND COLLEGE

SECOND TERM EXAMINATION (2023-24)

PHYSICS

CLASS – IX

Maximum Marks: 80

Time allowed: Two hours

Answer 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 the questions or parts of questions are given in brackets [].

SECTION A

(Attempt all questions.)

Question 1: Choose the correct answer to the questions from the given options: [15]

1. In a _____ mirror the reflection takes place from inner hollow surface.

a. Concave	b. Convex	c. Plane	d. None of the above.
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2. Name the geometric centre of spherical mirror

a. Aperture	b. Focus	c. Pole	d. Principle Axis
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3. In a convex mirror, the image formed is always _____.

a. Erect	b. Inverted	c. Magnified	d. At infinity
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4. A longitudinal wave has consecutive _____ and _____ movements.

a. Compression and Rarefaction	b. Crest and Trough	c. Left and Right	d. Back and Forth
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5. The SI unit of amplitude is:

a. Meter	b. Centimetre	c. Hertz	d. Decibel
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6. The number of oscillations done in one second by the vibrating body is known as:

a. Time period	b. Wavelength	c. Frequency	d. Wave velocity
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7. Sound energy travels in the form of _____ waves:

a. Nuclear	b. Mechanical	c. Electromagnetic	d. Radio
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8. The energy which flows from a hot body to a cold body is known as:

a. Sound energy	b. Light energy	c. Heat energy	d. Magnetic energy
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9. The SI unit of Heat is :

a. Kelvin	b. Calorie	c. Joule	d. Erg
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10. The main constituent of biogas is:

a. Oxygen	b. Carbon Dioxide	c. Nitrogen	d. Methane
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11. The main green house gas is:

a. Nitrogen	b. Hydrogen	c. Chlorine	d. Carbon Dioxide
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12. In a magnet, like poles _____ each other while unlike poles _____ each other.

a. Attract, Repel	b. Repel, Attract	c. Repel, Repel	d. Attract, Attract
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13. When suspended freely a magnet will always point in the _____ direction:

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a. North – South	b. South – North	c. East – West	d. West – East
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14. An electromagnet uses _____ to make a strong and temporary magnet.

a. Bronze	b. Steel	c. Soft Iron	d. Hard Iron
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15. The speed of sound in air is not affected by change in:

a. Temperature	b. Moisture	c. Pressure	d. Density
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Question 2:

1. [3]
 - a. Define wave velocity.
 - b. State the SI unit of wave velocity.
 - c. Give the relationship between wave velocity, wavelength and frequency.
2. Write the properties of ultrasound. [2]
3. The time interval between a lightning flash and the first sound of thunder is 8s. If the speed of sound in air is 340 ms^{-1} , find the distance between the flash and observer. [2]
4. Write all the properties of the image formed by the concave mirror when the object is at the centre of curvature. [2]
5. If the image is a distance of 6 cm and the object is at 12 cm in the front of the concave mirror, calculate the magnification formed. [2]
6. [2+2]
 - a. What do you understand by anomalous expansion of water?
 - b. What is the variation in volume and density due to the anomalous expansion of water?

Question 3:

1. Write two differences each between concave mirror and convex mirror. [2]
2. Write in short about any two impacts of global warming on life on earth. [2]
3. Give reason why induced magnetism is temporary in nature? [2]
4. Can any two magnetic field lines intersect each other? Give reason for your answer. [2]
5. Write any two ways to increase the strength of an electromagnet. [2]

SECTION B

(Attempt any four questions from this section.)

Question 4:

1. Write any three properties of magnetic field lines. [3]
2. State the requisites of the medium for the propagation of sound. [3]
3. [4]
 - a. What is linear magnification?
 - b. State its relation with the size of object and image and the distance of object and image.

Question 5:

1. What do you understand by energy degradation? Support your answer with an example. [3]
2. What is thermal expansion? Explain any two types of thermal expansions. [3]
3. Write any two advantages and any two disadvantages of using solar panels. [4]

Question 6:

1. Name and explain any three factors which affect the speed of sound in a gas. [3]
2. Define the following terms: [3]
 - a. Infrasonic sound
 - b. Ultrasonic sound
 - c. Amplitude
3. Solve the following numerical: [4]
 - a. Assuming the speed of sound in air equal to 350 ms^{-1} and in water to be 1400 ms^{-1} find the time taken to travel a distance of 2100 m by the sound both in
 - i. Air

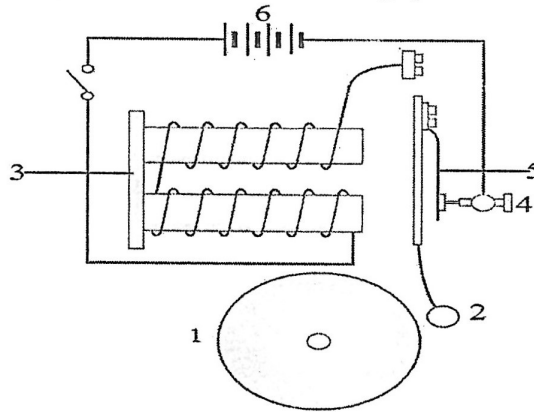
- ii. Water
- b. A transverse wave travels at a speed of 2.4 ms^{-1} and the frequency of the wave is 30 Hz. Find the separation between the two consecutive crests.

Question 7:

1. Define the following terms with respect to curved mirrors: [3]
 - a. Radius of curvature
 - b. Aperture
 - c. Principle axis
2. The focal length of a convex mirror is 30 cm. A point source of light is kept at a distance of 60 cm from the mirror. Find the distance of image from the mirror. [3]
3. Draw a ray diagram to show the formation of image in a concave mirror when the object is between the centre of curvature C and the focus f. Also write all the properties of the image. [4]

Question 8:

1. Write three advantages of using an electromagnet over a permanent magnet. [3]
2. With respect to the given figure answer the following questions:



- a. Label the parts numbered from 1 to 6. [3]
- b. State working of parts labelled as 3 and 4. [2]
- c. Will the working of the device shown be affected if an AC source is used? Explain. [2]

Question 9:

1. State the first and the second law thermodynamics. [3]
2. Write any three differences between an electromagnet and a permanent magnet. [3]
3. [4]
 - a. What is global warming?
 - b. State any two causes of global warming.

