

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.

Attempt *all* questions.

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

Question 1

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

[2]

(Do not copy the question, write the correct answers only.)

- (i) The angle which the incident ray makes with the normal during reflection is called:
(a) angle of reflection (b) angle of incidence (c) reflected ray (d) both (a) & (b)
- (ii) The image formed by a plane mirror is:
(a) virtual (b) inverted (c) diminished (d) enlarged
- (iii) Heat energy flows from:
(a) a hot object to cold object (b) a hot object to other hot object
(c) a cold object to hot object (d) a cold object to other cold object
- (iv) Heat in a liquid is transferred by:
(a) conduction (b) convection (c) radiation (d) both (b) & (c)
- (v) Assertion (A): In vacuum, no sound is heard.
Reason (R): Sound cannot travel through vacuum.
(a) Both (A) and (R) are true and (R) is the correct explanation of (A)
(b) Both (A) and (R) are true and (R) is not the correct explanation of (A)
(c) (A) is true but (R) is false
(d) (A) is false but (R) is true
- (vi) The surest test of magnetism is:
(a) attraction (b) repulsion (c) magnetisation (d) either (a) or (b)
- (vii) In a torch, the source of electricity is:
(a) the bulb (b) the switch (c) the cell (d) the mains
- (viii) Which is an example of an object that works on vibration?
(a) guitar string being plucked (b) a spinning top
(c) a coin is tossed (d) marble rolling on a ramp

Question 2

Fill in the blanks:

[2]

- (i) If green and blue lights are projected on a white screen, _____ light is obtained.
- (ii) The speed of light in air is _____ m s^{-1} .
- (iii) The ice point in kelvin scale is marked as _____ K.
- (iv) The black and dull surfaces absorb _____ radiations and reflect _____ radiations.
- (v) The temperature of a normal person is _____.
- (vi) We can hear sounds of frequency in the range of _____.
- (vii) In a _____ circuit, all appliances work independently.
- (viii) Sound persists in human ear for about _____ seconds.

Question 3

Name the following:

[2]

- (i) The first known natural magnet.
- (ii) A type of image that cannot be obtained on the screen.
- (iii) The S.I. unit of frequency.
- (iv) The maximum displacement of a wave on either side of its mean position.

Question 4

Define the following:

[5]

- (i) Magnetic field (ii) Pitch (iii) Conduction (iv) Magnetic poles of the magnet
- (v) Subsonic sound

Question 5

Solve the numericals:

[3]

- (i) A girl on a hill A fires a gun. Another girl on hill B hears the sound after 5 s. If the speed of sound is 320 m s^{-1} , find the distance between the two hills.
- (ii) Convert: (1) 25°C into $^\circ\text{F}$ (2) 40°C to K
- (iii) During a thunderstorm, the thunder is heard 2.5 seconds after the flash of lightning is seen. If the distance at which lightning took place is 825 m, find the speed of sound.

Question 6

Give reason for the following:

[3]

- (i) Ventilators and windows are provided in rooms for proper ventilation.
- (ii) Leaves appear green in white light.
- (iii) During thunderstorm, the sound of a thunder is heard after the lightning is seen.

Question 7

Write true or false:

[1]

- (i) $1 \text{ J} = 4.2 \text{ cal}$.
- (ii) Greater the amplitude of vibrations, louder is the sound produced.
- (iii) An electric circuit is complete if there is an insulator in its path.
- (iv) Like poles attract each other and unlike poles repel each other.

Question 8

Draw the diagrams neatly with necessary labelled parts:

[6]

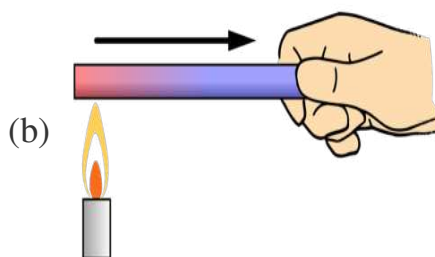
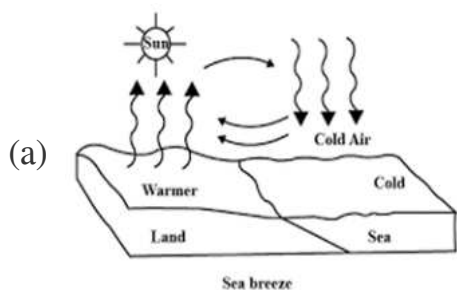
- (i) Circuit diagram using two glowing bulbs connected in parallel, two switches and a cell.
- (ii) Graphical representation of displacement-time graph of a longitudinal wave.
- (iii) Symbolic representation of: (1) Resistor (2) Battery (3) Closed key (4) Bulb
- (iv) Reflection of light ray by a plane mirror.
- (v) Graphical representation of louder and soft sound.
- (vi) Movement of electrons between positively charged conductor and negatively charged conductor.

Question 9

Answer the following:

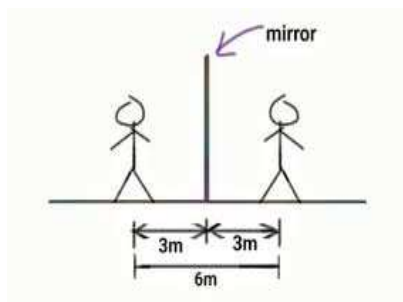
[10]

- (i) Arya found a mixture that contains pieces of paper and some iron pins. She wants to separate the pins from the mixture without hand picking them. Suggest a method to separate the iron pins from pieces of paper.
- (ii) State two precautions that you must take when switching on an electric circuit.
- (iii) State the factors on which the following quantities depend on.
 - (a) Loudness of sound
 - (b) Pitch of a sound
- (iv) Write any two uses of plane mirror.
- (v) Name the mode of transfer of heat for the following diagram:



- (vi) State the laws of reflection of sound.
- (vii) Name two factors on which the strength of magnetic field of an electromagnet depends.
- (viii) Observe the diagram given below and write the characteristics of the image formed by

the plane mirror.



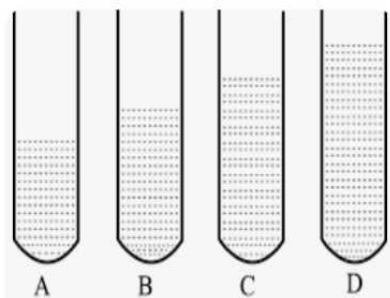
- (ix) How can the pitch of sound produced in a piano be changed?
- (x) State the function of each of the following in an electric circuit.
- (a) Switch (b) Cell

Question 10

Read the passage carefully and answer the questions given below:

[6]

- (i) Raju and Madhav are at two ends of a room. Raju claps softly but Madhav is unable to hear the sound. Raju takes a long metal iron rod and asks Madhav to put the ear on the rod at the other end. Raju taps the metal rod with the same intensity and the sound is heard by Madhav.
- (a) What can be concluded by this observation?
- (b) What is the speed of sound in iron?
- (c) What is the formula to find the speed of sound in a medium?
- (ii) A teacher describes a woollen cloth as a bad conductor of heat. Sunithi tries to test this, trying to wear woollen coat in the summer. She feels very hot and has to take it off.
- (a) What explanation can be offered to Sunithi to explain why wool is a bad conductor of heat?
- (b) Give two more examples of bad conductors of heat.
- (iii) Roshan took four test tubes A, B, C & D and he fills it with different levels of water. He then blows air in the test tube by placing his lip on the mouth of the test tube.



- (a) Identify the test tube which has less vibrating air column.
- (b) Will the sound be shriller in test tube (A)?
- (c) When does the sound become shriller?
