ICSE Board
Class VII Physics
Sample Paper – 4

Time: 2 hrs **Total Marks: 75**

General Instructions:

1. **All** questions are **compulsory**.
2. Questions 1 to 15 carry one mark each.
3. Questions in 2A and 2B carry one mark each.
4. Questions in 3A and 3B carry one mark each.
5. Question in 4A and 4B carries one mark each.
6. Questions in 5A carry one mark each and 5B carry five marks.
7. Questions in 6 carry two marks each.
8. Question 7A and 7B carry ten marks in total.

Question 1

Choose the correct answer out of the four available choices given under each question. [15]

1. The pendulum of a clock has:
(a) Periodic motion
(b) Circular Motion
(c) Rectilinear Motion
(d) All of the above

2. 1 tonne is equal to
(a) 100 quintal
(b) 1000 quintal
(c) 10 quintal
(d) 100000 quintal

3. Plastic covering on electric wires provides
(a) Good looks
(b) Insulation
(c) Good connection
(d) Colour distinction

4. Which waves are employed in SONAR?
(a) X-rays
(b) Infrasonic Wave
(c) Ultrasonic Wave
(d) SONAR wave

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5. How does the alphabet M look in a pinhole camera?
(a) W
(b) M
(c) Both possible
(d) None

6. The device used to measure temperature is called
(a) Scale
(b) Pressure gauge
(c) Thermometer
(d) Barometer

7. A ray of light travelling parallel to the principle axis after reflection from a concave mirror passes through the
(a) Focus
(b) Center of curvature
(c) Pole
(d) None of these

8. Rate of distance travelled with time is termed as
(a) Displacement
(b) Acceleration
(c) Velocity
(d) Speed

9. Sound is produced by _____objects.
(a) vibrating
(b) fast moving
(c) stationary
(d) rotating

10. Air is a _____ conductor of electricity while water is a _____ conductor of electricity
(a) good, bad
(b) bad, good
(c) good, very good
(d) bad, very bad

11. In which of the following, is the transfer of heat by convection currents impossible.
(a) Oil
(b) Milk
(c) Water
(d) Metal

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12. What kind of image is formed by a plane mirror?

(a) Real and inverted
(b) Real and erect
(c) Virtual and erect
(d) Virtual and inverted

13. Why does ice float on water?

(a) Because density of ice is higher than that of water.
(b) Because density of ice is less than that of water.
(c) Because density of ice and water is the same but ice is a solid.
(d) Ice does not float on water.

14. When is a body said to be in motion?

(a) When it moves in a straight line
(b) When it moves in a circular path
(c) When it move in a swinging motion
(d) All of the above

15. A switch is said to be OFF if it _____ the path of current flow.

(a) makes
(b) breaks
(c) completes
(d) none of the above

Question 2

(A) Answer the following questions in one word or one sentence. [5]

1. Name the unit in which frequency of an oscillating body is measured.
2. Give the relation between acceleration, change in velocity and time.
3. Name the cell which can be recharged.
4. What are the ways by which heat transfer occurs from one place to other?
5. Name two types of spherical mirrors.

(B) Fill up the blanks and rewrite the sentences: [5]

1. S.I. unit of weight is _____.
2. Metals are _____ conductors of electricity.
3. The straight line passing through the centre of curvature and pole of a spherical mirror is called its _____.
4. Pitch of the sound depends on _____.
5. A stone tied to a string has _____ motion when it is whirled around.

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Question 3

(A) Match the items in column A with the appropriate items in column B. [5]

Column A	Column B
Sonar	Opaque
Wood	Conductor
graphite	Current
ampere	Density
Kg/m^3	Echo

(B) Define the following: [5]

1. Rest
2. Convection
3. Timbre or quality
4. Reflected ray
5. Mass

Question 4

(A) Identify and classify the following types of motions as rotatory, vibratory, oscillatory, rectilinear, curvilinear, or random motion: [5]

A car moving on a straight road	
A train moving along a curved track	
A child on a swing	
A freely falling stone	
Motion of a ceiling fan	

(B) Give one word for the following [5]

1. The emission of light from living organisms like plants and animals.
2. The force with which the Earth attracts a body towards its centre.
3. A device used to either break the electric circuit or to complete it.
4. The time taken by a freely oscillating pendulum to complete one oscillation.
5. The shadow cast by heavenly bodies on each other.

Question 5

(A) State whether the following statements are True or False [5]

1. Fuses should be connected to the neutral wire
2. The S.I. unit of relative density is kg/m^3.
3. Heat always flows from a hotter object to a colder object.
4. Sound propagates faster through solids than through liquids.
5. A pinhole camera forms only black and white images.

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(B)

1. State three ways of conserving electric energy at home. [2]
2. What are transparent objects, translucent objects and opaque objects? Give examples. [3]

Question 6

Answer the following questions in short:

1. What do you mean by sublimation?
   Give examples of substances that sublime. [2]
2. A cork floats in water, while an iron nail sinks. Give reason. [2]
3. If an object is placed at a distance of 10 cm in front of a plane mirror, how far would the object be from its image? [2]
4. Why are copper and aluminium used for making wires? [2]
5. What are the three main properties of sound waves? [2]

Question 7

(A)

1. How is the density of an irregularly shaped solid such as a stone determined? [4]
2. A body moving with a velocity 5m/s achieves a velocity of 20 m/s in 30 s. Calculate the acceleration of the body? [3]

(B)

1. State the characteristics of an image formed by a concave mirror when the object is placed at the focus. Explain with a ray diagram [3]

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Solution

Question 1

1. **(a)** Periodic motion
   The pendulum of a clock has periodic motion.

2. **(c)** 10 quintal
   1 tonne is equal to 10 quintal.

3. **(b)** Insulation
   Plastic covering on electric wires provides insulation to prevent shocks.

4. **(c)** Ultrasonic Wave
   Ultrasonic Waves are employed in SONAR.

5. **(a)** W
   The alphabet M when looked through a pinhole camera is seen as W.

6. **(c)** Thermometer
   The device used to measure temperature is called thermometer.

7. **(a)** Focus
   A ray of light travelling parallel to the principle axis after reflection from a concave mirror passes through the focus.

8. **(d)** Speed
   Rate of distance travelled with time is termed as speed.

9. **(a)** Vibrating
   Sound is produced by vibrating objects.

10. **(c)** good, very good
    Air is a good conductor of electricity while water is a very good conductor of electricity.

11. **(d)** Metal
    In metal (solids) the transfer of heat by convection currents is impossible.

12. **(c)** Virtual and erect
    Image formed by a plane mirror is virtual and erect.

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13. (b) Because density of ice is less than that of water.

Ice floats on water because the density of ice is less than that of water.

14. (d) All of the above

A body is said to be in motion when it changes its position. So when it moves in a straight line or circular path or with a swinging motion, it undergoes motion.

15. (b) Breaks

A switch is said to be OFF if it breaks the path of current flow.

Question 2

(A)

1. Frequency of an oscillating body is measured in Hertz (Hz).
2. v = u + at, where 'u' is the initial velocity of the body, 'v' the final velocity of the body, 'a' is the acceleration of the body and 't' is the time taken.
3. Secondary cell
4. The three modes of heat transfer are conduction, convection and radiation.
5. Spherical mirrors are of two types: Concave mirror and Convex mirror

(B)

1. S.I. unit of weight is Newton.
2. Metals are good conductors of electricity.
3. The straight line passing through the centre of curvature and pole of a spherical mirror is called its principal axis.
4. Pitch of the sound depends on frequency.
5. A stone tied to a string has circular motion when it is whirled around.

Question 3

(A)

Column A	Column B
Sonar	Echo
Wood	Opaque
Graphite	Conductor
Ampere	Current
kg/m^3	Density

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(B)

1. Rest: When the position of a body with respect to its surroundings does not change with time, the body is said to be at rest.
2. Convection: The process of heat transfer when molecules actually come to the source of heat and then after absorbing heat energy move away from it.
3. Timbre or quality: Timbre or sound quality is that characteristics by virtue of which we can distinguish between sounds of the same pitch and loudness produced by two different musical instruments or by different voices.
4. Reflected ray: The ray of light which bounces back from the surface of an object is called a reflected ray of light.
5. Mass: Mass is the amount of matter present in a body.

Question 4

(A)

A car moving on a straight road	Rectilinear motion
A train moving along a curved track	Curvilinear motion
A child on a swing	Oscillatory motion
A freely falling stone	Rectilinear motion
Motion of a ceiling fan	Rotatory motion

(B)

1. Bioluminescence
2. Weight
3. Switch
4. Time period
5. Eclipse

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Question 5

(A)

1. False. Fuses should be connected to the live wire.
2. False. Relative density has no unit.
3. True.
4. True
5. False: The image in a pinhole camera is of the same colour as the object.

(B)

1. Three ways of conserving electric energy at home are
   i. Put off all the fans and lights in a room when you leave that room.
   ii. Use tube lights instead of bulbs.
   iii. Switch off the television when you are not using it.
2. The property by which light passes through a medium is called the transmission property of an object and the objects which allow light to pass through them are called transparent objects. Example: A clear empty glass, a window pane etc.
   Objects which allow only some of the light to pass through them, but the scatter other light rays are called translucent objects. Example: Thin tissue paper, frosted glass, tinted car windows.
   Objects which do not allow light to pass through them are called opaque objects.When light falls on opaque materials it is either absorbed or scattered.
   Example: Cardboard, bricks, wood.

Question 6

1. The process in which a solid directly goes into its gaseous state is called sublimation. Example: Naphthalene, ammonium chloride, camphor etc.
2. A cork floats in water while an iron nail sinks because the density of the cork is less than that of water. Thus the up thrust of water on the cork is greater than the weight of the cork. Hence it floats. On the other hand, the density of the iron nail is more than water, and the up thrust of water on the iron nail is less than the weight of the iron nail. Thus it sinks.
3. If an object is placed at a distance of 10 cm in front of a plane mirror, it would be 20 cm away from its image since the image formed is at the same distance from the mirror as the object is in front of it.
4. Copper and aluminium are used for making wires because they are good conductors of electricity and hence allow electric current to pass through them.
5. Every sound have the following three properties:
   i. Loudness: The measure of heaviness of a sound. It is the property of a sound which depends only upon the amplitude of the vibrations producing it.
   ii. Pitch: The measure of the shrillness of a sound. It is the property of a sound which depends only upon the frequency of the vibrations producing it.
   iii. Quality: The characteristics which distinguishes the same notes from different instruments.

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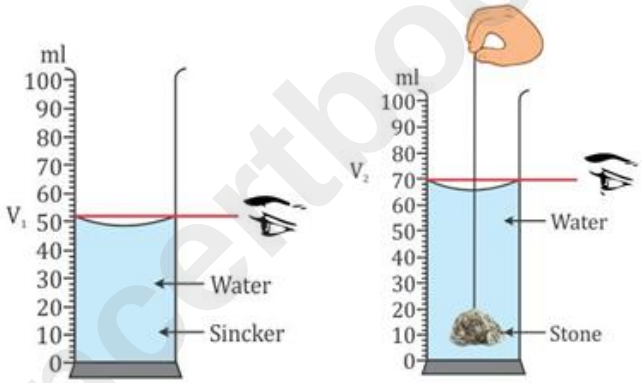
Question 7

(A)

1. The density of an irregularly shaped solid (insoluble in water) such as a stone can be determined as follows:
   i. Find the mass of the stone with the help of a beam balance. Let the mass of the stone be (M).
   ii. Take a measuring cylinder which is partially filled with water upto a certain mark. Measure the initial reading V_1 of water in the measuring cylinder.
   iii. Now immerse the stone into the cylinder which contains water and note the reading of the new water level, i.e. V_2.
   iv. The difference between the two levels of water gives the volume of the stone ($V_2 - V_1$).
   v. Use the formula $\text{Density} = \frac{\text{Mass}}{\text{Volume}} = \frac{M}{V_2 - V_1}$ to calculate the density of the solid.



2. Given that:
   u = 5 m/s, v = 20 m/s, t = 30 sec
   We know that v = u + at
   $v = u + at$
   On rearranging we get that:
   $v - u = at$
   $a = \frac{v - u}{t}$
   On substituting values of u, v and t we get:
   $a = \frac{20\ m/s - 5\ m/s}{30s}$
   $a = \frac{15\ m/s}{30\ s}$
   $a = 0.5\ m/s^2$

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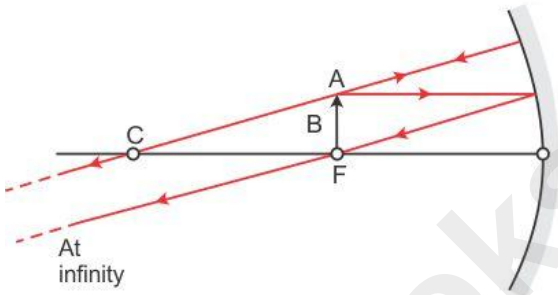
(B)

1. Characteristics of an image formed by a concave mirror when the object is placed at the focus are
   i. Image formed is real
   ii. Image formed is inverted
   iii. It is highly magnified
   iv. Image is formed at infinity



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