

**ICSE Board**  
**Class VII Physics**  
**Sample Paper – 2 Solution**

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**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.

**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 <sup>3</sup>	Density

**(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

**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**

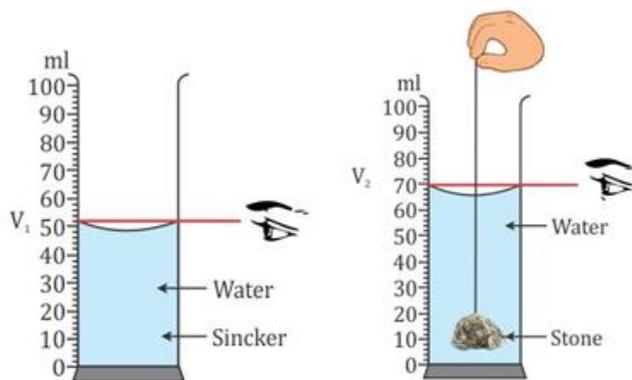
1. The process in which a solid directly goes into its gaseous state is called sublimation. Example: Naphthalene, ammonium chloride, camphor etc.
2. A cork floats in water while an iron nail sinks because the density of the cork is less than that of water. Thus the up thrust of water on the cork is greater 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.

**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:

$$u = 5 \text{ m/s}, v = 20 \text{ m/s}, t = 30 \text{ sec}$$

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:

$$a = \frac{20 \text{ m/s} - 5 \text{ m/s}}{30 \text{ s}}$$

$$a = \frac{15 \text{ m/s}}{30 \text{ s}}$$

$$a = 0.5 \text{ m/s}^2$$

(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

