

ICSE Board
Class VII Physics
Sample Paper – 5 Solution

Question 1

1. **(d)** Buoyant force

When a plastic mug full of water is placed in water, it experiences an upward thrust (buoyant force). As a result, it appears lighter when placed inside water.

2. **(b)** live wire

A person gets a severe shock on touching a live wire.

3. **(a)** $5/9 \text{ m/s}^2$

$$u = 20 \text{ km/hr} = \frac{50}{9} \text{ m/s}$$

$$v = 40 \text{ km/hr} = \frac{100}{9} \text{ m/s}$$

$$t = 10 \text{ s}$$

$$a = ?$$

$$a = \frac{v - u}{t} = \frac{\frac{100}{9} - \frac{50}{9}}{10} = \frac{5}{9} \text{ m/s}^2$$

4. **(b)** The image can be formed on a screen

Plane mirrors form virtual images which cannot be projected on a screen.

5. **(c)** 1 : 100

C.G.S. unit of acceleration = 1 cm/s^2

M.K.S. unit of acceleration = 1 m/s^2

$$\frac{\text{C.G.S. unit of acceleration}}{\text{M.K.S. unit of acceleration}} = \frac{1 \text{ cm/s}^2}{1 \text{ m/s}^2} = \frac{1 \text{ cm}}{100 \text{ cm}} = 1:100$$

6. **(d)** milk

Milk is an opaque object while all the others are transparent.

7. **(b)** Same as that of the object

An image formed by a plane mirror is erect and of the same size as the object.

8. **(b)** Key closes, current flows and bulb glows

When the torch is switched on, the key closes, the current flows and the bulb glows.

9. (c) tuning fork

The instrument used to produce sound of a fixed frequency is tuning fork.

10. (a) day

Sea breeze blows during the day, as the warm air over the land rises up and cooler air from the sea rushes in to take its place.

11. (b) centre of curvature

The image formed by a concave mirror is inverted and of the same size as the object, only if the object is placed at the centre of curvature.

12. (c) A man

Frequency of sound is directly proportional to its pitch. The voice of an adult man is of lower pitch in comparison to voices of a baby boy, baby girl and woman. The voice of a baby girl has highest pitch among this group.

13. (d) heavier than water and insoluble in it

It should be heavier than water and insoluble in it, so that it sinks and displaces the water and also does not mix in the water.

14. (a) light colours are poor absorbers of heat

In hot countries, it is preferred to wear light colours on a hot day because light colours are poor absorbers of heat.

15. (c) sensation of light

Light causes the sensation of sight.

Question 2**(A)**

1. The loudness of sound is measured on the decibel scale.
2. The time period of a simple pendulum is directly proportional to the square root of its effective length.
3. A convex lens.
4. Kelvin scale.
5. They get electrically charged due to the transfer of electrons from one body to the other.

(B)

1. No medium is required for the transfer of heat by the process of radiation.
2. A concave mirror can form a real and inverted image.
3. Density is the characteristic property of a substance, which decreases with an increase in temperature.
4. A collection of rays is known as beam of light.
5. When a body travels with uniform velocity, its acceleration is zero.

Question 3

(A)

Column A	Column B
Pitch	Frequency
When two oppositely charged clouds approach each other	Lightning produced
Used by dentist to see enlarged image of teeth	A concave mirror
Absolute zero	-273°K
Acceleration	m/s ²

(B)

1. Rotational motion: When an object turns about a fixed axis, it is called rotational motion.
2. Infrasonic vibrations: The vibrations whose frequencies are less than 20 Hz are called infrasonic vibrations.
3. Angle of incidence: The angle formed between the incident ray and the normal is called the angle of incidence.
4. Electroplating: When an electric current is passed through an electrolyte, the positive metal ions move to the cathode and get uniformly coated on the object kept as the cathode. This process is called electroplating.
5. Radiation: It is the transfer of heat energy from a hot body to a cold body by means of heat rays without requiring any medium between the two bodies.

Question 4

(A)

Motion of spinning top	Rotatory motion
The swinging pendulum of a wall clock	Periodic motion
Firing of a bullet from a gun	Translatory motion
Wheel of a moving cycle	Translatory and rotatory motion
Motion of a plucked string of a sitar	Vibratory motion

(B)

1. Sink
2. Total solar eclipse
3. SONAR
4. Electromagnetic induction
5. Amplitude

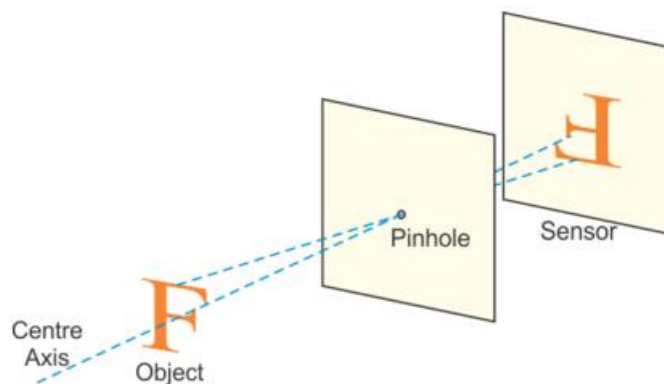
Question 5

(A)

1. True
2. False. Designers of wallpapers and fabrics and artists use kaleidoscopes to get ideas for new patterns.
3. True.
4. True
5. False. Warm air over land moves towards the sea. The air from the sea is called sea breeze.

(B)

1. Cooking pots are provided with wooden or plastic handles because wood or plastic handles are bad conductors of heat. Hence, the heat from the hot appliances does not flow to our hands. Hence we can handle the hot appliances without any difficulty.
2. A pinhole camera is a simple camera with no lens and with a single small aperture. The image of the letter F through a pinhole camera appears as given below:



Question 6

1. Conductors: Brass, aluminium, mercury, silver, copper, human body, alcohol
Insulators: Air, lead, glass, leather, mica, plastic, rubber, wool, ebonite, bakelite
2. The time period of a simple pendulum depends on
 - i. The length of the pendulum.
 - ii. Acceleration due to gravity.
3. Radius of curvature (R) = $2 \times$ Focal length (f)
Since, $f = -0.5$ cm; therefore, $R = 2 \times (-0.5) = -1$ cm
It is a concave mirror, since its focal length is negative.

4.

i. Reflection—as it is not a characteristic of sound while loudness, pitch and quality are characteristics of sound.

ii. 150 decibels—as it is undesirable, very loud and painful sound and thus considered to be noise.

5. 1 tonne = 10 quintal

$\Rightarrow 78 \text{ tonne} = 780 \text{ quintal}$

1 quintal = 100 kg

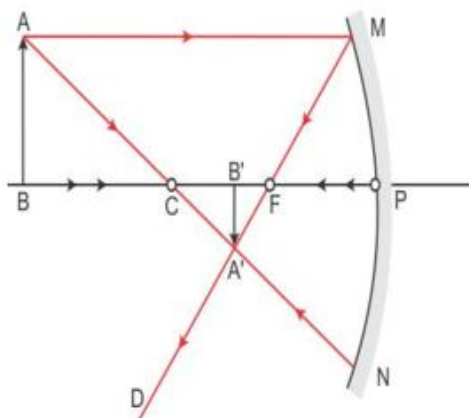
$\Rightarrow 780 \text{ quintal} = 78000 \text{ kg}$

Question 7

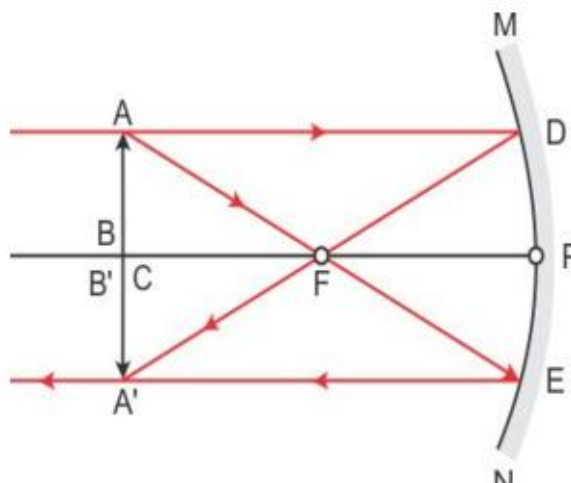
(A)

1.

i. Beyond C:



ii. At C:



2. Effects of heat:
 - i. Heat energy produces various effects on matter. A substance may change its state from solid to liquid and from liquid to gas when heated.
 - ii. Heat can kill organisms. Hence milk and water is boiled to kill harmful bacteria present in them.
 - iii. The effects of heat are classified as:
 - Change in temperature of the body.
 - Change in the shape of the body.
 - Change of state of matter.

(B)

1. The repetition of sound which is reflected from a high building or any such object is called an echo.
2. Conditions necessary for hearing an echo:
 - i. The place should be a high rise building or hill or wall or well.
 - ii. Minimum distance between the source of sound and reflecting body should be 17 metres.