

**ICSE Board**  
**Class VII Physics**  
**Sample Paper – 3**

**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. What is the weight of a body of mass of 25 kg? ( $g = 9.8 \text{ m/s}^2$ )
  - (a) 25N
  - (b) 25 kg
  - (c) 245 N
  - (d) 245 kg
  
2. Sea water is denser than fresh water due to
  - (a) Evaporation
  - (b) Mixing of sand
  - (c) Mixing of salts
  - (d) Stagnation
  
3. How much distance does a car cover when it moves 20 km to the east and then 60 km to the west?
  - (a) 60 km
  - (b) 80 km
  - (c) 20 km
  - (d) 40 km
  
4. Children below 5 years can hear sounds having a frequency up to
  - (a) 20 KHz
  - (b) 30 KHz
  - (c) 25 KHz
  - (d) 40 KHz

5. Glass allows light to pass through it because it is
  - (a) transparent
  - (b) opaque
  - (c) luminous
  - (d) non-luminous
  
6. When heat is absorbed, the temperature:
  - (a) Increases
  - (b) Decreases
  - (c) Remains same
  - (d) Becomes zero
  
7. If an object is at the focus of a concave mirror, then the size of the image formed is
  - (a) Diminished
  - (b) Highly diminished
  - (c) Highly enlarged
  - (d) Enlarged
  
8. The degree of hotness or coldness of a body or environment is called
  - (a) Pressure
  - (b) Temperature
  - (c) Melting point
  - (d) Boiling point
  
9. What is the angle between the incident and reflected rays when a ray of light is incident normally on a plane mirror?
  - (a)  $90^\circ$
  - (b)  $45^\circ$
  - (c)  $180^\circ$
  - (d)  $0^\circ$
  
10. At what time during the day, will the shadow of a stick be shortest?
  - (a) Dawn
  - (b) Mid-day
  - (c) Afternoon
  - (d) Dusk

11. If the radius of curvature of a spherical mirror is 34.52 cm, then the focal length of that spherical mirror is

- (a) 17.26 cm
- (b) -34.52 cm
- (c) 69.04 cm
- (d) 34.52 cm

12. A metal released in the electrolysis of a salt gets deposited on the

- (a) Anode
- (b) Cathode
- (c) Half on the anode and half on the cathode
- (d) Sides of the container

13. Sound can travel through

- (a) gases only
- (b) solids only
- (c) liquids only
- (d) solids, liquids and gases

14. Which of the following is used to make a periscope?

- (a) Concave mirror
- (b) Convex mirror
- (c) Plane mirror
- (d) Lens

15. Time period of a simple pendulum is given by the formula

- (a)  $T = \sqrt{\frac{g}{l}}$
- (b)  $T = 2\pi\sqrt{\frac{g}{l}}$
- (c)  $T = \sqrt{\frac{l}{g}}$
- (d)  $T = 2\pi\sqrt{\frac{l}{g}}$

## Question 2

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

1. Name two household electric appliances which cool the surroundings.
2. Write any one use of a pinhole camera.
3. What is the speed of sound when it travels through water?
4. State the relationship between focal length and radius of curvature of a spherical mirror.
5. Define kilogram-force?

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

1. To test the purity of a sample of milk, we use a device called \_\_\_\_\_.
2. Light takes about \_\_\_\_\_ to travel from the Sun to the Earth.
3. Pitch increases with an increase in the \_\_\_\_\_ of a vibrating body.
4. Non-uniform motion is also called \_\_\_\_\_ motion.
5. Dry cell was invented by \_\_\_\_\_.

## Question 3

(A) Match the item in column I with the appropriate item in column II. [5]

Column A	Column B
Velocity	Irregular vibration
Noise	Solidification
Gas condenses into solid	Vector
Opaque medium	$10^5$ dyne
1 N	Wood

(B) Define the following: [5]

1. Uniform Motion
2. Amplitude
3. Freezing
4. Virtual Image
5. Electrolysis

#### Question 4

- (A) Identify and classify the following types of motions as rotatory, non-periodic, vibratory, rolling motion or uniform motion: [5]

A spinning wheel	
Breathing	
A train is moving in straight track	
Movement of a drill	
Motion of tides in the sea	

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

1. The motion in which an object does not cover equal distances in equal intervals of time.
2. The sound produced when two distinct sounds are heard due to the reflection of sound from a rigid smooth distance surface.
3. S.I. unit of temperature.
4. The outer rim of the Sun.
5. Material which does not allow electric current to flow through a circuit.

#### Question 5

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

1. Battery is a device which produces an electric current by means of a chemical reaction.
2. A cork floats in water because its density is greater than that of water.
3. Conduction is possible in vacuum.
4. Any polished or shining surface acts as a mirror.
5. For a moving object, displacement can be zero, but distance can never be zero.

- (B)

1. Define rules to draw a ray diagram. [3]
2. List three effects of rectilinear propagation of light. [2]

#### Question 6

Answer the following questions in short:

1. The distance between two stations is 560 km. A train takes 480 minutes to cover this distance. Calculate the speed of the train. [2]
2. Why do we use wooden handles in frying pans [2]
3. Draw a diagram to show the formation of image of a point object in a plane mirror. [2]
4. We should not be barefooted while repairing or replacing any electrical components. Give reasons. [2]
5. When does a lunar eclipse take place? [2]

**Question 7**

**(A)**

1. Describe the working of a beam balance. [4]
2. How can you identify a plane mirror, a concave mirror and a convex mirror without touching them? [3]

**(B)**

1. Difference between a shadow and an image of any object. [3]

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**Sample Paper – 3 Solution**

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**Question 1**

1. **(c)** 245 N

$$W = mg = 25 \times 9.8 = 245 \text{ N}$$

2. **(C)** Mixing of salts

Mixing of salts causes the density of sea water to increase.

3. **(b)** 80 km

As the distance does not depend on direction, total distance =  $(20 + 60) \text{ km} = 80 \text{ km}$

4. **(c)** 25 KHz

Children below 5 years can hear sounds having a frequency up to 25 KHz.

5. **(a)** transparent

Glass allows light to pass through it because it is transparent.

6. **(b)** increases

When heat is absorbed, the temperature increases.

7. **(c)** Highly enlarged

A highly enlarged image is formed at infinity if the object is at the focus of a concave mirror.

8. **(b)** Temperature

The degree of hotness or coldness of a body or environment is called temperature.

9. **(a)**  $90^\circ$

The angle between the incident and reflected rays, when a ray of light is incident normally on a plane mirror, is  $90^\circ$  because the normal is perpendicular to the surface and thus creates an angle of  $90^\circ$ .

10. **(b)** mid-day

Shadow of an object is shortest during mid-day when the Sun is exactly above the horizon.

**11. (a)** 17.26 cm

Since,  $R = 34.52$  cm and  $R = 2f$

$$f = \frac{34.52}{2} = 17.26 \text{ cm}$$

**12. (b)** Cathode

A metal released in the electrolysis of a salt gets deposited on the cathode.

**13. (d)** solids, liquids and gases

Sound can travel through solids, liquids and gases as it requires a medium to travel.  
Sound cannot travel through vacuum.

**14. (c)** Plane mirror

Plane mirror is used to make a periscope.

**15. (d)**  $T = 2\pi\sqrt{\frac{l}{g}}$

Time period of a simple pendulum is  $T = 2\pi\sqrt{\frac{l}{g}}$

## Question 2

**(A)**

1. Water cooler and air conditioner are two electric household appliances which cool the surroundings.
2. A common use of a pinhole camera is to capture the movement of the Sun over a long period of time. This type of photography is called solargraphy.
3. Sound travels through water at a speed of 1440 m/s.
4. Focal length = Radius of curvature/2
5. A kilogram-force is the force with which a mass of one kilogram is attracted by the Earth.

**(B)**

1. To test the purity of a sample of milk, we use a device called a hydrometer.
2. Light takes about 8 minutes to travel from the Sun to the Earth.
3. Pitch increases with an increase in the frequency of a vibrating body.
4. Non-uniform motion is also called accelerated motion.
5. Dry cell was invented by Leclanche.

### Question 3

(A)

Column A	Column B
Velocity	Vector
Noise	Irregular vibration
Gas condenses into solid	Solidification
Opaque medium	wood
1 N	$10^5$ dyne

(B)

1. Uniform Motion: If an object covers equal distances in equal intervals of time, we say that the object is in uniform motion.
2. Amplitude: The maximum displacement of a wave on either side of its mean position is known as the amplitude.
3. Freezing: The process in which a liquid changes into the solid state at a constant temperature by releasing heat is called freezing.
4. Virtual Image: The image which cannot be obtained on a screen is called a virtual image.
5. Electrolysis: The process by which certain chemicals, in the molten state or in solution, break up into ions due to the passage of electric current through them is called electrolysis.

### Question 4

(A)

A spinning wheel	Rotatory motion
Breathing	Vibratory motion
A train is moving in straight track	Uniform motion
Movement of a drill	Rolling motion
Motion of tides in the sea	Non-Periodic motion

(B)

1. Non-uniform motion
2. Echo
3. Kelvin
4. Corona
5. Insulator

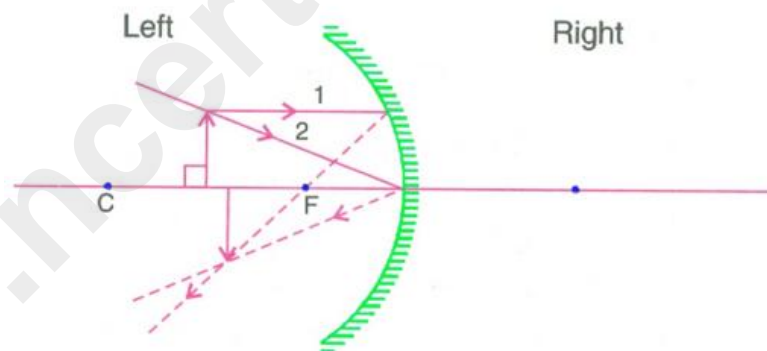
## Question 5

(A)

1. True
2. False. A cork floats in water because its density is lesser than that of water
3. False. Conduction and convection requires a material medium. Radiation is possible in vacuum.
4. True
5. True

(B)

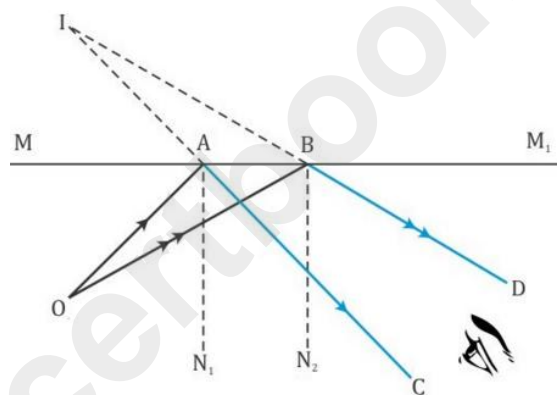
1. Rules to draw a ray diagram:
  - i. To construct a ray diagram, at least two rays whose paths can be traced after reflections are required.
  - ii. An object is kept on the left side of the reflecting surface and not on the right side.
  - iii. An object is always to be kept on the principal axis and its foot should touch the principal axis.



2. Effects of rectilinear propagation of light:
  - i. Formation of shadow
  - ii. Formation of day and night
  - iii. Formation of image from a pinhole camera

### Question 6

1. Distance = 560 km  
Time taken = 480 min =  $480/60 = 8$  hours  
Hence, speed of train = distance travelled/time taken =  $560 \text{ km}/8 \text{ h} = 70 \text{ km/h}$ .
2. The material of pans is a good conductor of heat. Hence, a wooden handle (which is a bad conductor of heat) is used in a frying pan so that it does not get heated by conduction.
3. Formation of image of a point object in a plane mirror:

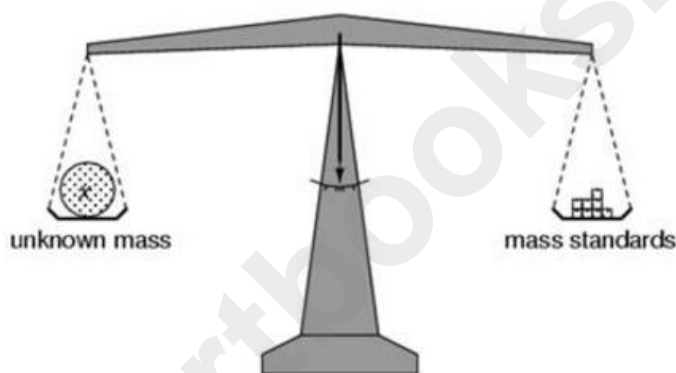


4. We should not be barefooted while repairing or replacing any electrical components because if there is damage or cut in the wire, the current may leak through the cut and result in you getting electrical shocks.
5. When the Earth comes in between the Sun and the Moon, the light reaching the Moon from the Sun is obstructed by the Earth. This makes the Moon invisible to the observer on the Earth and thus a lunar eclipse is said to occur.

## Question 7

(A)

1. A beam balance is used to measure mass. It consists of a horizontal beam, supported at its centre. The beam can move freely about its support and a pointer is attached to the centre of the beam. Two similar pans are suspended at equal distances from the centre of the beam by means of strings of equal lengths. The object whose mass is to be measured is kept on one pan and standard known masses are kept on the other pan till the beam is horizontal and the pointer is vertical. The sum of the known masses gives the mass of the object.



2. Different types of mirrors can be identified by observing the nature of the image formed of our face.

**Plane mirror** - produces virtual, erect image of the **same size** as our face.

**Concave mirror** - produces virtual, erect and **magnified** image of our face.

**Convex mirror** - produces virtual, erect and **diminished** image of our face.

(B)

- 1.

Image	Shadow
Image is formed due to reflection or refraction.	Shadow is formed when light falls on an opaque object.
Image is seen when light comes from the object after reflection or refraction enters the observer's eye	No light enters the eye from the shadow of the object.
Image gives more information such as colour, structure, etc. about the object.	Shadow does not provide any details about the object but gives an idea about the shape of the object.