ICSE Board
Class VII Physics
Sample Paper – 1

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. A plastic mug full of water appears lighter inside water due to
(a) Gravitational force
(b) Pressure
(c) Newton's Third Law
(d) Buoyant force

2. A person gets a severe shock on touching
(a) a neutral wire
(b) a live wire
(c) an earthing wire
(d) None of above

3. A car increases its speed from 20 km/h to 40 km/h in 10 seconds. Its acceleration is:
(a) (5/9) m/s^2
(b) 2 m/s^2
(c) (-5/9) m/s^2
(d) -2 m/s^2

4. Which of the following is not a characteristic of a plane mirror?
(a) The magnification of the image formed is 1.
(b) The image can be formed on a screen
(c) The image formed is erect.
(d) The image is formed at the same distance behind the mirror as the object is in front of it.

5. The ratio of C.G.S. to M.K.S. unit of acceleration is:
(a) 1 : 1
(b) 1 : 10
(c) 1 : 100
(d) 10 : 1

6. Pick the odd one out in terms of behavior towards light.
(a) Air
(b) Water
(c) Glass
(d) Milk

7. The size of the image formed by a plane mirror is
(a) Smaller than the object
(b) Same as that of the object
(c) Larger than the object
(d) None of the above

8. Let the internal circuit of a torch contain a cell, key and a bulb connected with wires. What happens when the torch is switched on?
(a) Key closes, current does not flow and the bulb glows
(b) Key closes, current flows and bulb glows
(c) Key opens, current flows and the bulb glows
(d) Key opens, current does not flow and the bulb does not glow

9. The instrument used to produce sound of a fixed frequency:
(a) simple pendulum
(b) thermometer
(c) tuning fork
(d) metre

10. Sea breeze blows during the
(a) Day
(b) Night
(c) Summer
(d) Evening

11. In a concave mirror, the image is inverted and the same size as the object when the object is placed at the
(a) Principal Focus
(b) Centre of curvature
(c) Between the focus and the centre of curvature
(d) Between the focus and the pole of mirror

12. Which of the following voices is likely to have minimum frequency?
(a) Baby girl
(b) Baby boy
(c) A man
(d) A woman

13. If we want to determine the volume of a solid by immersing it in water, the solid should be
(a) lighter than water
(b) heavier than water
(c) insoluble in water
(d) heavier than water and insoluble in it

14. In hot countries, it is preferred to wear light colours on a hot day because
(a) light colours are poor absorbers of heat
(b) light colours are good radiators of heat
(c) light colours are good absorbers of heat
(d) light colours are poor radiators of heat

15. Light causes the
(a) sensation of heat
(b) sensation of sound
(c) sensation of sight
(d) sensation of touch

Question 2

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

1. Name the unit used to measure the loudness of sound.
2. What is the law of length?
3. Which lens would you prefer to use while reading small letters found in a dictionary?
4. Name the temperature scale which does not have negative temperature readings.
5. What happens when two bodies are rubbed together?

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

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

Question 3

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

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

(B) Define the following: [5]

1. Rotational motion
2. Angle of incidence
3. Infrasonic vibrations.
4. Electroplating
5. Radiation

Question 4

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

Motion of spinning top	
The swinging pendulum of a wall clock	
Firing of a bullet from a gun	
Wheel of a moving cycle	
Motion of a plucked string of a sitar	

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

1. When an object is placed over a liquid whose density is less than the density of the object, the object will
2. The Sun is completely blocked by the Moon.
3. The method which determine the distance of sound of reflecting surface by producing echo.
4. The property which is used to generate electricity in generator.
5. The maximum displacement of the bob on either side of the mean position is

Question 5

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

1. Inertia is the specific property of a body by virtue of which the body changes its state of rest by itself.
2. Designers of wallpapers and fabrics and artists use periscopes to get ideas for new patterns.
3. Formation of images s done by ray diagram.
4. When the chemicals in an electric cell are used up, the electric cell stops producing electricity.
5. The air from the sea is called the warm air.

(B)

1. Give reasons.
   Cooking pots are provided with wooden or plastic handles. [2]
2. What is a pinhole camera? How does the letter F appear in a pin hole camera? [3]

Question 6

Answer the following questions in short:

1. Pick out the conductors and insulators from the list:
   Brass, mica, air, silver, aluminium, human body, lead, copper, glass, plastic, bakelite, rubber, common salt solution, alcohol, mercury, wool, leather, ebonite [2]
2. On what factors does the time period of a simple pendulum depend? [2]
3. What is the radius of curvature of a spherical mirror whose focal length is -0.5 cm? Also name the type of mirror? [2]
4. Find the odd man out and give reasons for your choice.
   i. Loudness, reflection, pitch, quality.
   ii. 40 decibels, 70 decibels, 150 decibels, 90decibels. [2]
5. Express 78 tonnes in kilograms. [2]

Question 7

(A)

1. Draw ray diagrams to show the image formation by a concave mirror, when it is placed (i) beyond C (ii) at C [4]
2. Explain the effects of heat. [3]

(B)

1. What is an echo?
2. State two conditions necessary for hearing an echo. [3]

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 m/s^2

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

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

   t = 10 s

   a = ?

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

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

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

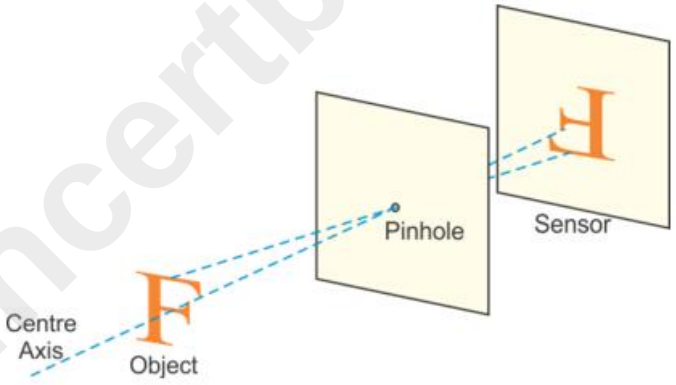
(A)

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 × Focal length (f)
   Since, f = -0.5 cm; therefore, R = 2 × (-0.5) = -1cm
   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

⇒ 78 tonne = 780 quintal

1 quintal = 100 kg

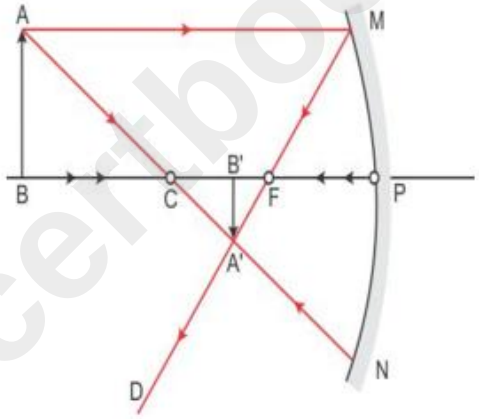
⇒ 780 quintal = 78000 kg

Question 7

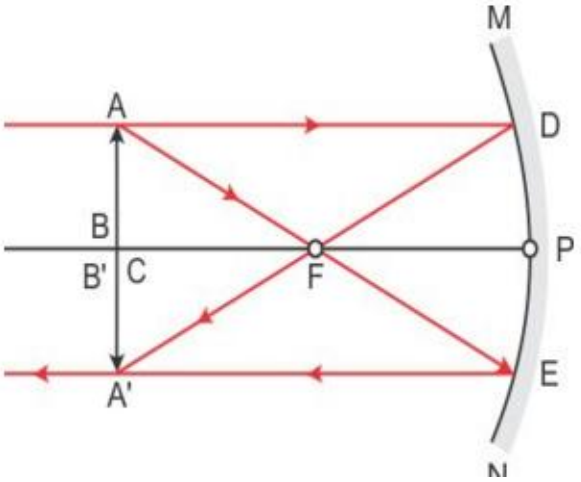
(A)

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.