

**GREENLAWN'S SCHOOL, WORLI**  
**First Semester Examination 2024-25**

**PHYSICS**

**STD: VIII**  
**Date: 23/09/2024**

**Marks: 80**  
**Time: 2 hrs**

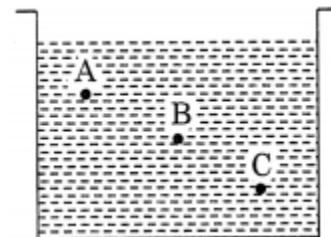
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**Question 1**

- a. Choose the correct answers to the questions from the given options.  
(Do not copy the question, write the correct answers only.) [15]**
- i.** When more than one force acts on an object, the effect on the object is due to the \_\_\_\_\_force acting on it.  
**a. Stronger                      b. Weaker                      c. Net                      d. Average**
- ii.** How does the kinetic energy of a molecule in a substance change with a decrease in its temperature?  
**a. It remains the same      b. It increases      c. It decreases      d. It becomes twice**
- iii.** The state of matter, in which the kinetic energy of the molecules is so small that they cannot overcome the intermolecular force of attraction between them, is –  
**a. solid                      b. Liquid                      c. gas                      d. plasma**
- iv.** For a given rise in temperature, the decrease in density is maximum in case of –  
**a. gases.                      b. liquids,                      c. solids.                      d. none of these**
- v.** Which forms of energy is possessed by a stretched spring?  
**a. chemical                      b. elastic potential      c. kinetic                      d. heat**
- vi.** What is the SI unit of power?  
**a. J                      b. J/s                      c. J. s                      d. s**
- vii.** Which of the following relations is true for spherical mirrors?  
**a.  $f = r$                       b.  $f = 2r$                       c.  $r = 2f$                       d.  $2f = 3r$**
- viii.** The image formed when reflected rays only appear to meet but do not actually meet is  
**a. real.                      b. virtual,                      c. inverted.                      d. cannot say**
- ix.** The phenomenon of light responsible for the formation of rainbow is –  
**a. reflection.                      b. refraction,                      c. dispersion.                      d. lateral inversion.**
- x.** A microphone converts ..... Energy to ..... energy.  
**a. Electrical, sound      b. Sound, electrical      c. Heat, light      d. Light, heat**

**xi.** A container is filled with water as shown in the given figure. Which of the following statements is correct about pressure of water?

- a. Pressure at A > Pressure at B > Pressure at C
- b. Pressure at A = Pressure at B = Pressure at C
- c. Pressure at A < Pressure at B > Pressure at C
- d. Pressure at A < Pressure at B < Pressure at C



**xii.** The nature of image formed by plane mirror is

- a. real and inverted
- b. virtual and erect**
- c. real and erect
- d. virtual and inverted

Use the following diagram to answer questions xiii to xv. Neglect the effect of resistance forces.



**xiii.** As the object moves from point A to point D across the surface, the sum of its gravitational potential and kinetic energies \_\_\_\_\_.

- a. decreases, only
- b. decreases and then increases
- c. increases and then decreases
- d. remains the same

**xiv.** The object will have a minimum gravitational potential energy at point \_\_\_\_\_.

- a. A
- b. B
- c. C
- d. D

**xv.** The object's kinetic energy at point C is less than its kinetic energy at point \_\_\_\_\_.

- a. A only
- b. A, D, and E
- c. B only
- d. D and E

**b. Match the statements**

**[5]**

**Position Of the Object In Front Of A Concave Mirror**

**Nature Of The Image**

- |                    |   |
|--------------------|---|
| 1. At infinity     | a. real, inverted and diminished              |
| 2. Between F and P | b. real, inverted and enlarged                |
| 3. Beyond C        | c. real, inverted and highly diminished       |
| 4. Between C       | d. real, inverted and same size as the object |
| 5. At C            | e. virtual, erect and enlarged                |

## Question 2

- a. The freezing point of glycerol is  $17.8^{\circ}\text{C}$  and its boiling point is  $290^{\circ}\text{C}$ . Find its melting point and condensation point. [2]
- b. State and explain the factors that determine whether a solid will float or sink in a liquid. [2]
- c. Draw ray diagrams of the following.  
Refraction of light through:  
i. a parallel sided glass slab  
ii. a prism [4]
- d. Aman was getting late in the morning, so his mother poured the milk in a saucer, Aman found out that it was easier to sip the hot milk from the Saucer than the glass what could be the reason behind it. [2]

## Question 3

- a. Based on the kinetic theory of matter, explain why gases have neither a fixed volume nor a fixed shape.? [2]
- b. A child climbs a wall of height 4 m. He now possesses a potential energy of 1600 J. What is the mass of the child? ( $g = 10 \text{ m/s}^2$ ) [2]
- c. A ray of light travelling in medium A ( $\mu = 1$ ) enters medium B ( $\mu = 1.4$ ).  
1. Will the ray of light bend towards or away from normal?  
2. In which medium will the speed of light be greater? [2]
- d. Water wets a glass surface whereas mercury does not wet it. Explain. [2]
- e. Piya and her daughter went to buy school bags. While the daughter was choosing fancy bags for herself. Piya was mainly looking at the straps of the bags. What do you think Priya is trying to look in the straps of the bag. Explain the reason behind doing so. [2]

## Question 4

- a. How does the knowledge of relative density help in determining whether a substance floats or sinks in water. [2]
- b. A ball of mass 400 g is thrown at a speed of 2 m/s. Determine its kinetic energy. [2]
- c. In your day-to-day life, state three ways of reducing the consumption of energy. [3]
- d. Name the type of a spherical mirror which always forms a virtual, erect and diminished image. What is the position of such types of images with respect to the mirror? Draw a ray diagram for the same. [3]

## Question 5

- a. The relative density of oak wood is 0.64. What is its density in  
i. the SI system?  
ii. the CGS system? [2]

- b. Why can concave mirrors not be used as rear-view mirrors in vehicles? [2]
- c. What is the relation between the density of the body and the density of the liquid in which the body:  
 i. floats completely submerged  
 ii. floats partially submerged. [2]

- d. Referring to the given figure, answer the following question.  
 i. Force is applied to pull the door; what effects of force is this?  
 ii. Is moment of force being clockwise or anticlockwise  
 iii. If  $d$  is increased, moment increases or decreases.  
 iv. Write the formula for calculating the moment of force.



- e. With the help of ray diagram, show the reflected ray when ray is incident on the pole of a spherical mirror at an angle of  $45^\circ$ . [2]

### Question 6

- a. Calculate the force applied on a body producing a moment of force of  $16 \text{ N m}$  such that the perpendicular distance between the point of application of force and the turning point is  $80 \text{ cm}$ . [2]
- b. Why does a paper catch fire if a concave mirror is used to focus sunlight? [2]
- c. i. How does the pressure exerted on the object change when the force applied is doubled and area on which force is applied reduce to half. [2]  
 ii. Why does a car and a man running with same speed have different kinetic energy. [1]
- d. i. Riddhi lights up a bulb using a battery She wonders which type of energy change could occur during this process. Help her in finding the right answer. [1]  
 ii. Give reason, why convex mirrors are used as vigilance mirror in shopping malls. [2]

### Question 7

- a. Which factor will have a greater effect on the kinetic energy of an object, doubling its mass or doubling its velocity? Explain. [2]
- b. Define the following terms  
 i) Focal point.  
 ii) Refraction. [2]
- c. Draw a diagram to show dispersion of white light and What is the reason behind dispersion of light by prism? [3]
- d. An empty RD bottle weighs  $60 \text{ g}$  but weighs  $120 \text{ g}$  when filled with water. When the bottle is filled with an unknown liquid, it weighs  $90 \text{ g}$ . Calculate the  
 i. volume of the RD bottle.  
 ii. density of the unknown liquid. [3]

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