

**Multiple choice questions**

1. Choose the best alternative of the following questions and write in the answer sheet.

a. A car makes one complete revolution round a circular field. In this condition, which statement is true?

- i. Its displacement is equal to the perimeter of the circular plot.
- ii. The distance covered and the displacement of the car are equal.
- iii. Its displacement is zero.
- iv. The displacement is greater than the distance covered by it.

a. Car makes one complete revolution around a circular field

Correct answer: iii. Its displacement is zero

**Explanation:**

After one complete round, the car comes back to the **starting point**.

Distance = circumference of the circle

Displacement = shortest straight-line distance between start and end = 0

- ✗ (i) Perimeter is distance, not displacement
- ✗ (ii) Distance  $\neq$  displacement
- ✗ (iv) Displacement can never be greater than distance

b. How much effort is needed to lift the load of 800N to balance the lever as shown in figure?

- i. 266.66 N
- ii. 1066.66 N
- iii. 1200 N
- iv. 600 N

Correct Answer: 266.66N

$$L \times L_d = E \times E_d$$

$$800 \times 0.5 = E \times 1.5$$

$$E = 266.6N$$

c. Which of the following reasons that eggs floats on saturated solution of salt water?

- i. The density of salt water is greater than that of an egg.
- ii. The volume of salt water is greater than that of an egg.
- iii. The weight of salt water is greater than that of an egg.
- iv. The mass of salt water is greater than that of an egg.

**Correct answer: i. The density of salt water is greater than that of an egg**

**Explanation:**

An object floats if the **density of liquid > density of object**.  
Salt increases the density of water, so the egg floats.

**✗ Volume, weight, or mass of water do not decide floating directly.**

**d. Which geological time represents the present time?**

- i. Precambrian era
- ii. Paleoizoic era
- iii. Mesozoic era
- iv. Cenozoic era

**Correct answer: iv. Cenozoic era**

**Explanation:**

The **Cenozoic era** is the current geological era, also called the **Age of Mammals**.

**e. Which of the following statement is true regarding the characteristics of the group in modern periodic table?**

- i. Elements in the same group have different chemical and physical properties.
- ii. Atomic size of elements decrease from top to bottom of the group.
- iii. Elements in the same group have same valency.
- iv. The non-metallic properties of the elements increase from top to bottom.

**Correct answer: iii. Elements in the same group have same valency**

**Explanation:**

Elements in the same group have the **same number of valence electrons**, so they have the **same valency**.

f. Model of atomic structure of two elements are given in the figure. Which of the following is the molecular formula of compound formed by the combination of these two atoms?

- i.  $Mg_2O$
- ii.  $NaCl$
- iii.  $MgO$
- iv.  $Na_2O$

**Correct answer: iii.  $MgO$**

**Explanation:**

From typical atomic models:

**Magnesium (Mg)  $\rightarrow$  valency = 2**

**Oxygen (O)  $\rightarrow$  valency = 2**

They combine in **1 : 1 ratio**, forming **magnesium oxide ( $MgO$ )**.

### **Group B**

**Write very short answers to the following questions.**

**1. Write one example of scientific test.**

Litmus test is an example of a scientific test.

**2. Which property of steel is considered to make its bowl?**

Steel bowl is made due to its hardness.

**3. Which ion does acid give while dissolving in water?**

4. Acid gives hydrogen ion ( $H^+$ ) when dissolved in water.

### **Group C**

**1. Name the device shown in the picture? How can you use it in your study?**

Printer

**Answer:**

The device shown in the picture is a printer.

It is used to print study materials, notes, assignments, and question papers.

**2. Mention any two examples of gem minerals.**

Two examples of gem minerals are diamond and ruby.

3. White hard substance is deposited on the tap of water. After testing it was found calcium carbonate.

a. Write one effect seen while washing clothes with that water.

One effect seen while washing clothes with that water:

Soap does not lather properly and more soap is required.

b. Write one measure to remove that effect.

The water can be softened by boiling it.

#### Group D

1. Study the electronic configuration of the elements given below and answer these questions.

|   |   |   |   |
|---|---|---|---|
| K | L | M | N |
| 2 | 8 | 8 | 2 |

i. Write the name of this element.

ii. Write the group of this element.

iii. Write the valency of this element.

iv. Write the period of this element.

Answers:

i. Name of the element:

The element is Calcium (Ca).

ii. Group of the element:

Calcium belongs to Group 2 of the modern periodic table.

iii. Valency of the element:

The valency of calcium is 2 because it has two electrons in its outermost shell.

iv. Period of the element:

Calcium belongs to Period 4 as it has four shells.

2. Rabi's father saw him in the given condition and he wants to know the name and advantage of that device. How will you explain his father about the device's name and its advantages in various fields? Write the name and any three advantages of the device.

Figure: VR using boy

The device is called **Virtual Reality (VR)**.

**Advantages of Virtual Reality :**

It is used in **education** to understand complex topics through virtual learning.

It is used in **medical field** for training doctors and surgeons.

It is used in **entertainment and gaming** to give a realistic experience.