BCM SCHOOL BASANT AVENUE DUGRI ROAD, LUDHIANA

SCIENCE ASSIGNMENT II (2023 – 2024)

CLASS – X

CASE STUDY I

Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. This material is taken in the form of carbon dioxide and water which is converted into carbohydrates in the presence of sunlight and chlorophyll. Carbohydrates are utilised for providing energy to the plant.

i) Write a chemical reaction which occur during photosynthesis?

ii) In which form of carbohydrates does the plant stored in them?

iii) What is stomata?

iv) What are the functions of stomata?

v) What is Chloroplast?

CASE STUDY II

Oxidation is the process of gaining of oxygen, or losing of hydrogen. Reduction is the process of losing of oxygen or gaining of hydrogen. The substance which undergoes oxidation is the reducing agent while the substance which undergoes reduction is known as the oxidising agent. Oxidation and reduction always take place together and these type of reactions are known as redox reactions. Some of the examples of redox reactions are given below:

I. $Pb_3O_4 + 8HCl \longrightarrow 3PbCl_2 + Cl_2 + 4H_2O$

II. $2Mg + O_2 \longrightarrow 2MgO$

III. $CuSO_4 + Zn \longrightarrow Cu + ZnSO_4$

IV. $V_2O_5 + 5Ca \longrightarrow 2V + 5CaO$

V. $3Fe + 4H_2O \longrightarrow Fe_3O_4 + 4H_2$

VI. $CuO + H_2 \longrightarrow Cu + H_2O$

i) Give two examples of oxidation reaction from your everyday life.

ii) Write the oxidising agent in the reaction III and VI.

iii) Which of the following is an oxidising agent?
(a) $LiAlH_4$
(b) Alkaline $KMnO_4$
(c) Acidified $K_2Cr_2O_7$
(d) Both (b) and (c)

iv) Out of oxidation and reduction, which reaction takes place at anode?

CASE STUDY III

The spherical mirror forms different types of images when the object is placed at different locations. When the image is formed on screen, the image is real and when the image does not form on screen, the image is virtual. When the two reflected rays meet actually, the image is real and when they appear to meet, the image is virtual. A concave mirror always forms a real and inverted image for different positions of the object. But if the object is placed between the focus and pole. the image formed is virtual and erect. A convex mirror always forms a virtual, erect and diminished image. A concave mirror is used as doctor's head mirror to focus light on body parts like eyes, ears, nose etc., to be examined because it can form erect and magnified image of the object. The convex mirror is used as a rear view mirrors in automobiles because it can form an erect virtual and diminished image.

i) When an object is placed at the centre of curvature of a concave mirror, the image formed is
(a) larger than the object
(b) smaller than the object
(c) same size as that of the object
(d) highly enlarged and erect image of an object.

ii) No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be
(a)plane
(b)concave
(c)convex
(d) either plane or convex.

iii) A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.
(a) Plane, convex and concave
(b) Convex, concave and plane
(c) Concave, plane and convex
(d) Convex, plane and concave

iv) To get an image larger than the object, one can use
(a) convex mirror but not a concave mirror
(b) a concave mirror but not a convex mirror
(c) either a convex mirror or a concave mirror
(d) a plane mirror.

v) A convex mirror has wider field of view because
(a) the image formed is much smaller than the object and large number of images can be seen.

(b) the image formed is much closer to the mirror
(c) both (a) and (b)
(d) none of these.

ASSERTION & REASON

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

1. **Assertion (A)**: Decomposition of vegetable matter into compost is an example of exothermic reactions.
   Reason (R): Exothermic reaction are those reactions in which heat is evolved.
2. **Assertion (A)** : When HCl is added to zinc granules, a chemical reaction occurs.
   Reason (R) : Evolution of a gas and change in colour indicate that the chemical reaction is taking place.
3. **Assertion (A)** : Plants lack excretory organs.
   Reason (R) : Plants usually absorb essential nutrients.
4. **Assertion (A) :** In anaerobic respiration, one of the end product is alcohol.
   Reason (R) : There is an incomplete breakdown of glucose.
5. **Assertion(A) :** The centre of curvature is not a part of the mirror. It lies outside its reflecting surface.
   Reason (R) : The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre.
6. **Assertion (A) :** A ray passing through the centre of curvature of a concave mirror after reflection, is reflected back along the same path.
   Reason (R) : The incident rays fall on the mirror along the normal to the reflecting surface.