Class: X – Science Time: 3 Hours | Max Marks: 80

General Instructions:

• All questions are compulsory.

• Answer the questions according to marks allotted.

• Draw neat diagrams wherever necessary.

• Use of calculator is not permitted.

Section A – Very Short Answer Questions (1 Mark Each)

1. Write the balanced chemical equation for the reaction of zinc with dilute sulphuric acid.

2. Why should magnesium ribbon be cleaned before burning?

3. State one difference between autotrophic and heterotrophic nutrition.

4. What is the role of hydrochloric acid in our stomach?

5. Define the principal focus of a concave mirror.

6. Why do we prefer convex mirrors as rear-view mirrors in vehicles?

Section B – Short Answer Questions – I (2 Marks Each)

1. Differentiate between combination reaction and decomposition reaction with examples.

2. Write a balanced equation for the decomposition of ferrous sulphate.

3. List any two differences between aerobic and anaerobic respiration.

4. How is small intestine structurally adapted for absorption of digested food?

5. A concave mirror has a radius of curvature of 20 cm. Find its focal length.

6. Draw a ray diagram to show image formation by a convex mirror when the object is at infinity.

Section C – Short Answer Questions – II (3 Marks Each)

1. Explain with an example what is meant by a displacement reaction. Write a balanced equation.

2. Define exothermic and endothermic reactions. Give one example of each.

3. Describe the process of nutrition in Amoeba with a neat diagram.

4. How does respiration in human beings differ when oxygen is available and when it is not available?

5. Draw ray diagrams for image formation by a concave mirror when the object is placed at: (i) Beyond C (ii) At C(iii) Between C and F

6. A concave mirror produces three times magnified real image of an object placed 10 cm in front of it. Find theposition of the image.

Section D – Long Answer Questions (5 Marks Each)

1. Explain the steps involved in balancing a chemical equation with the help of the equation: $Fe + H_2O \rightarrow Fe_3O_4 + H_2$

2. Explain the process of digestion of food in human beings. Draw a labelled diagram of the human alimentarycanal.

3. Derive the mirror formula (1/f = 1/v + 1/u). State the sign conventions used.

Section E – Case Study Based Questions (4 Marks Each)

1.   Case Study – Ch 1: A student takes 2 g of ferrous sulphate crystals in a test tube and heats it strongly. (a) What is the colour of crystals before and after heating? (b) Write the balanced chemical equation. (c) Name the type of reaction. (d) Which gases are released?

2.   Case Study – Ch 5: During physical exercise, muscle cells in humans undergo anaerobic respiration. (a) Which compound is formed in the muscles? (b) Why does muscle cramp occur? (c) Write the chemical equation. (d) Which process provides more energy: aerobic or anaerobic respiration?

3.   Case Study – Ch 9: A convex mirror is used as a rear-view mirror in vehicles. (a) State the characteristics of image formed by a convex mirror. (b) Why is it preferred over a plane mirror? (c) If focal length of convex mirror is
15 cm, find the position of the image of an object placed 30 cm in front of it. (d) What is the magnification produced?