SCIENCE **GARDE X** **Assignment - 2**

Topics: **Acids, Bases and Salts**
Reflection & Refraction
Control & Co-ordination

1) With the help of an example explain what happens when a base reacts with a non- metallic oxide. What do you infer about the nature of non-metal oxide?

2) What is observed when carbon dioxide gas is passed through lime water
(i) for a short duration?
(ii) for a long duration? Also write the chemical equations for the reactions involved.

3) 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the content are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.

4) To. a solution of sodium hydroxide in a test tube, two drops of phenolphthalein are added.
(i) State the colour change observed.
(ii) If dil HCl is added dropwise to the solution, what will be the colour change?
(iii) On adding few drops of NaOH solution to the above mixture the colour of the solution reappears. Why?

5) Sugandha prepares HCl gas in her school laboratory using certain chemicals. She puts both dry and wet blue litmus papers in contact with the gas.
(i) Name the reagents used by Sugandha to prepare HCl gas.
(ii) State the colour changes observed with the dry and wet blue litmus papers.
(iii) Show the formation of ions when HCl gas combines with water.

6) Illustrate an activity to investigate whether all compounds containing hydrogen are acidic.
(b) What happens when hydrochloric acid and sodium hydroxide are dissolved in water. Explain by giving equation of each.

7) Out of HCl and CH_3COOH, which one is a weak acid and why? Explain with the help of an example.

8) Explain how an antacid works.

9) A compound P forms the enamel of teeth. It is the hardest substance of the body. It doesn't dissolve in water but gets corroded when the pH is lowered below 5.5.
(a) Identify the compound P.
(b) How does it undergo damage due to eating chocolate and sweets? What should we do to prevent tooth decay?

10) Write the chemical formula of Bleaching powder. How is bleaching powder prepared? For what purpose is it used in drinking water?

11) How is washing soda prepared from sodium carbonate? Give its chemical equation. State the type of this salt. Name the type of hardness of water which can be removed by it?

12) Give reasons for the following:
(i) Only one half of water molecule is shown in the formula of plaster of Paris.
(ii) Sodium hydrogen carbonate is used as an antacid.
(iii) On strong heating, blue coloured copper sulphate crystals turn white.

13) A white powder is added while baking cakes to make it soft and spongy. Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction taking place when the powder is heated during baking.

14) How is sodium hydroxide produced? Write the balanced chemical equation also. Why is this process called as chlor-alkali process? In this process name the products given off at:
(a) anode (b) cathode
Write one use of each of these products.

15) State the laws of reflection and refraction of light.

16) If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished , what type of mirror is it? Draw a labelled ray diagram to support your answer.

17) "The magnification produced by a spherical mirror is -3". List four informations you obtain from this statement about the mirror/ image.

18) A concave mirror is used for image formation for different positions of an object. What inferences can be drawn about the following when an object is placed at a distance of 10 cm from the pole of a concave mirror of focal length 15 cm?
(a) Position of the image (b) Size of the image (c) Nature of the image
Draw a labelled ray diagram to justify your inferences.

19) A student wants to project the image of a candle flame on a screen 48 cm in front of a mirror by keeping the flame at a distance of 12 cm from its pole.
(a) Suggest the type of mirror he should use. (b) Find the linear magnification of the image produced. (c) How far is the image from its object?
(d) Draw ray diagram to show the image formation in this case.

20) Define the following terms in the context of spherical mirrors:
(i) Pole (ii) Centre of curvature (iii) Principal axis (iv) Principal focus

21) List the sign conventions for reflection of light by spherical mirrors. Draw a diagram and apply these conventions in the determination of focal length of a spherical mirror which forms a three times magnified real image of an object placed 16 cm infront of it.

22) The absolute refractive indices of glass and water are 4/3 and 3/2 respectively. If the speed of light in glass is 2×10^8 m/s, calculate the speed of light in (i) vacuum, (ii) water.

23) "A ray of light incident on a rectangular glass slab immersed in any medium emerges parallel to itself." Draw labelled ray diagram to justify the statement".

24) The image of an object formed by a lens is of magnification -1. If the distance between the object and its image is 60 cm, what is the focal length of the lens? If the object is moved 20 cm towards the lens, where would the image be formed? State reason and also draw a ray diagram in support of your answer.

25) Write the main functions of the following :
(a) sensory neuron (b) cranium (c) vertebral column (d) motor neuron.

26) What are plant hormones? Name the plant hormones responsible for the following :
(i) Growth of stem (ii) Promotion of cell division (iii) Inhibition of growth (iv) Elongation of cells

27) Define reflex arc. Draw a flow chart showing the sequence of events which occur during sneezing.

28) A squirrel is in a scary situation. Its body has to prepare for either fighting or running away. State the immediate changes that take place in its body so that the squirrel is able to either fight or run.

29) Name the hormones secreted by the following endocrine glands and specify one function of each: (a) Thyroid (b) Pituitary (c) Pancreas.

30) What is synapse? In a neuron cell how is an electrical impulse created and what is the role of synapse in this context?

31) What are 'nastic' and 'curvature' movements? Give one example of each.

32) Name, the two main organs of our central nervous system. Which one of them plays a major role in sending command to muscles to act without involving thinking process?

33) It is advised to use iodised salt. Give reason.

34) (a) Explain any three directional movements in plants.
(b) How brain and spinal cord are protected in human ?
(c) Name the master gland present in the brain.

35) (a) Name the hormone which is released into the blood when its sugar level rises. Explain the need of Chemical communication in multicellular organisms the organ which produces this hormone and its effect on blood sugar level. Also mention the digestive enzymes secreted by this organ with one function of each.
(b) Explain the need of Chemical communication in multicellular organisms.