

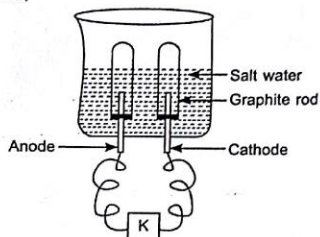
Time Allowed : 3 hrs.

Maximum Marks : 80

Questions 1-2 (1 Mark), 3-5 (2 Marks), 6-15 (3 Marks), 16-21 (5 Marks), 22-27 (2 Marks)

SECTION-A

1. What is the role of the two conducting stationary brushes in a simple electric motor?
2. Name the major fuel component of biogas. How can biogas be obtained?
3. State Snell's law of refraction.
4. State what happens when zinc granules are heated with sodium hydroxide. Write balanced equation and the name of main product formed.
5. In what way household appliances should be connected and why?
6. The far point of a myopic person is 80 cm in front of the eyes. What is the nature and power of the lens required to enable him to see very distant objects distinctly? List two causes leading to myopia of the eye.
7. Observe the diagram and answer the following questions:
 - (a) Identify the gases evolved at anode and at cathode.
 - (b) Why the amounts of gases collected does not have the same volume?
 - (c) Name the type of reaction.



8. Outline a project which aims to find the dominant coat colour in dogs.

Or

 - (a) Name the Scientist who gave the idea of evolution of species by natural selection.
 - (b) What conclusion did Mendel draw from his experiments about traits?
 - (c) Arrange the following according to evolution:
Cockroach, Mango tree, Gorilla, Fish.
9. How does the strength of magnetic field at the centre of a circular coil of wire depend on:
 - (a) the radius of the coil?
 - (b) the number of turns of wire in the coil?
 - (c) the strength of the current flowing in the coil?

Or

Enlist three properties of magnetic lines of force.
10. Explain how the following trends vary down the group and across a period
 - (a) Electropositive character
 - (b) Atomic size

11. Name a metal that

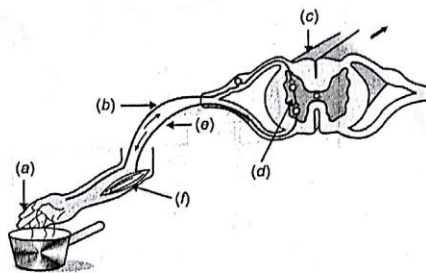
- (a) can be cut with knife.
- (b) is liquid at room temperature.
- (c) has 3 valence electrons.

*12. Radha has just moved into a new house in another colony along with her family. She is a keen observer of all human activities going around her in the colony and noticed that the people in the colony threw the garbage, leftover food, fruits and vegetables peels into overflowing garbage bins to be taken away by municipal staff. She also observed that gardener collected the fallen leaves in one corner of the park and burnt them. She also came to know that Residents Welfare Association of the colony spent a lot of money every year purchasing chemical fertilizer for maintaining garden and lawns. Keeping all this in mind, Radha presented an action plan to the President of the association. After a few months of its successful implementation, there was no need to buy chemical fertilizers anymore. The environment around the colony was found to be neat and clean.

- (a) What do you think was Radha's plan of action?
- (b) How did Radha's plan help the environment?
- (c) What values are displayed by her?

13. What are fossil fuels? List any four methods to conserve them.

14. Label the parts a, b, c, d, e, f and show the direction of flow of electric signals in the following.



15. Give reasons:

- (a) Wind acts as a pollinating agent.
- (b) Variation is essential and beneficial for species.
- (c) Use of condoms prevent pregnancy.

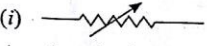
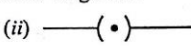
16. Give reasons for the following:

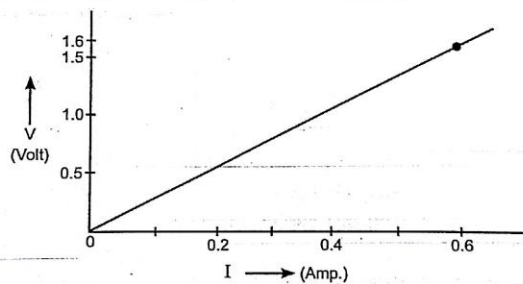
- (a) Carbon can reduce zinc oxide to zinc but not calcium oxide to calcium.
- (b) Copper and aluminium wires are usually used for electricity transmission.
- (c) Alloys are used in electrical heating devices rather than pure metals.
- (d) Gold ornaments look new even after several years of use.
- (e) An iron grill should be painted frequently.

* Value Based Question

17. (a) Write chemical equation of reactions of ethanoic acid with:
 (i) sodium (ii) sodium carbonate (iii) ethanol in presence of conc. H_2SO_4 .
 (b) State the role of concentrated H_2SO_4 in the esterification reaction.
 (c) State one use of ethanoic acid.

Or

- (a) Soaps cannot be used in hard water, why?
 (b) Give the chemical composition of detergents.
 (c) Give one advantage of the detergent over soaps.
 (d) With the help of diagram, explain the cleansing action of soap.
18. List five distinguishing features between sexual and asexual type of reproduction in tabular form.
19. (a) How is small intestine designed to absorb digested food?
 (b) What is the function of digestive enzymes?
20. Draw a neat labelled diagram of the structure of the human eye and mention the function of any four parts.
21. (a) Name an instrument that measures electric current in a circuit. Define the unit of electric current.
 (b) What do the following symbols mean in the circuit diagrams?
 (i)  (ii) 
 (c) An electric circuit consisting of a 0.5 m long nichrome wire XY, an ammeter, a voltmeter, four cells of 1.5 V each and a plug key was set up.
 (i) Draw a diagram of this electric circuit to study the relation between the potential difference maintained between the points X and Y and the electric current flowing through XY.
 (ii) Following graph was plotted between V and I values:



What would be the values of V/I ratios when the potential difference is 0.8V, 1.2V and 1.6V respectively?
 What conclusion do you draw from these values?

SECTION-B

22. What do you observe when you drop a few drops of acetic acid in a test-tube containing:
 (a) phenolphthalein (b) distilled water
 (c) universal indicator (d) sodium hydrogen carbonate powder.
23. Write two methods to determine pH of a solution.

24. To illustrate the process of binary fusion in *amoeba*, draw diagrams of various stages of this process in the correct sequence.
25. What is respiration? How is it different from breathing?
26. A student focuses the image of a well illuminated distant object on a screen using a convex lens after that he gradually moves the object towards the lens and each time focuses its image on the screen by adjusting the lens.
- (a) In which direction—towards the screen or away from the screen does he moves the lens?
 - (b) What happens to the size of the image- does it decrease or increase?
 - (c) What happens to the image when he moves the object very close to the lens?
27. A student takes a mirror which is depressed at the centre and mounts it on a mirror stand. An erect and enlarged image of his face is formed. He places the mirror on a stand along a metre scale at 10 cm mark. In front of this mirror, he mounts a white screen and moves it back and froth along the metre scale till a highly sharp well-defined image of a distant building is formed on the screen at 25.5 cm mark.
- (a) Name the mirror and find its focal length.
 - (b) Why does the student get sharp image of distant building at 25.5 cm mark.