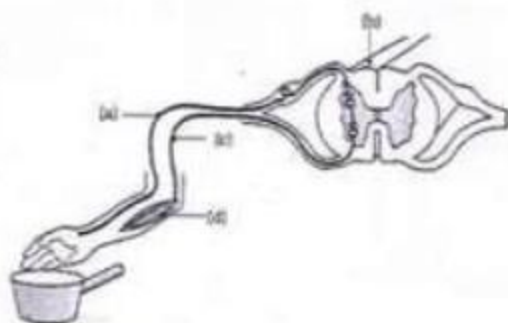


Section A

1. What happens to resistance of a conductor when its area of cross section is increased? (1)
2. A young green plant receives sunlight from one direction only. What will happen to its shoots and roots? (1)
3. Give one example of chemical decomposition reaction which is carried by:  
(a) Electric energy, (b) Heat energy (2)
4. Which brown colour gas is evolved when lead nitrate crystals are heated? Write balanced chemical equation for this reaction. (2)
5. Label the following diagram. (2)



6. (a) Show the formation of  $\text{Na}_2\text{O}$  by transfer of electrons between the combining atoms.  
(b) Why are ionic compounds usually hard?  
(c) How is it that ionic compounds in the solid state do not conduct electricity but they do so when in the molten state? (3)
7. Mahesh saw that some copper vessels were looking bad as they got tarnished. He suggested his mother that tarnished copper vessels can be cleaned with lemon and tamarind juice. His mother was satisfied with his suggestion and thanked him. Answer the following questions based on the above information: (3)  
(a) What values are noticed in Mahesh?

(b) Why are tarnished copper vessels being cleaned with lemon or tamarind juice?

8. What is redox reaction? Identify the substance oxidised and the substance reduced in the following reactions? (3)



9. To make cake, baking powder is used. If at home your mother uses baking soda instead of baking powder in the cake – (3)

(a) How will it affect the taste of cake and why?

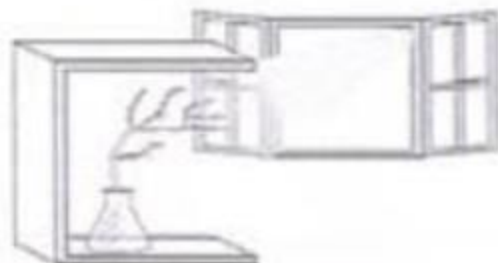
(b) How can baking soda be converted into baking powder?

(c) What is the role of tartaric acid when added to baking soda?

10. Write any three differences between aerobic and anaerobic respiration. (3)

11. (a) Explain how auxins help in bending of plant stem towards light. (3)

(b) State the objective of the experiment for which experimental set up is shown in the given diagram.



12. Which part of the brain controls involuntary actions? Write the function of any two regions of it. (3)

13. (a) Electric fuse is an important component of all domestic circuits. Why? (3)

(b) An electric oven of rating 2 kW, 200 V is operated in a domestic circuit with a current rating of 5 A. What result would you expect? Explain.

14. (a) State Joule's law of heating and give its mathematical form.

- (b) An electric iron takes a current of 5A and develops  $1.5 \times 10^4$  J of heat energy in 30s. Calculate the resistance of the electric iron. (3)
15. State one main difference between A.C. and D.C. Why is A.C. preferred over D.C. for long range transmission of electric power? Name one source each of A.C. and D.C. (3)
16. (a) Describe an activity to demonstrate the pattern of magnetic field lines around a straight conductor carrying current.  
(b) State the rule to find the direction of magnetic field associated with current carrying conductor.  
(c) What is the shape of a current carrying conductor whose magnetic field resembles that of a bar magnet? (5)
17. (a) What is an electro-magnet?  
(b) List any two of its uses.  
(c) Draw a labelled diagram to show how an electro-magnet is made.  
(d) What is the purpose of the soft iron core used in making an electro-magnet? (5)
18. (a) Differentiate between roasting and calcination. Explain the two with the help of suitable chemical equation. How is zinc extracted from its ore?  
(b) Name two metals which can be used to reduce metal oxides in metals. (5)
19. A metal E is stored under kerosene. When a small piece of it left open in the air, it catches fire. When the product formed is dissolved in water, it turns red litmus to blue.  
(a) Name the metal E.  
(b) Write the chemical equation for the reaction when it is exposed to air and when the product is dissolved in water.  
(c) Explain the process by which the metal is obtained from its molten chloride. (5)
20. What are the major parts of the brain? Mention the function of different parts. (5)
21. a) Draw a diagram of human respiratory system and label the following:  
(i) part where air is filtered by fine hair and mucus  
(ii) part which terminates in balloon-like structures  
(iii) balloon-like structures where exchange of gases takes place.  
(iv) part which separates chest cavity from abdominal cavity.  
b) Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms? (5)

### Section B

22. A Solution X gives orange colour when a drop of universal indicator is added to it. On the other hand another solution Y gives bluish-green colour when a drop of universal indicator is added to it. (2)  
(a) What are the types of solution X and Y?  
(b) What type of pH would they have?

23. Which of the following pairs would give displacement reaction?  
(a)  $\text{FeSO}_4$  and Copper metal.  
(b)  $\text{FeSO}_4$  and Aluminium metal. (2)
24. What will be the nature of solution formed when calcium oxide is dissolved in water?  
Name the substance formed when carbon dioxide gas is passed through this solution with a balanced chemical equation. (2)
25. Name and state the law that connects the electric current flowing through a metallic resistor and potential difference across its two ends. State the condition under which it is valid. (2)
26. (a) Name one function of stomata.  
(b) Name the cell which controls opening and closing of stomata. (2)
27. What is destarching? Why do plants get destarched when kept in continuous darkness for about 48 hours? (2)