

GENERAL SCIENCE. (1½ hrs)

SECTION A. Answer all questions in this Section, spending about 30 mins. on them.

1. Name five characteristics of living things.
2. What are the uses of starch, fat and protein to an animal? Describe briefly how you would test for (a) starch and (b) fat in a food.
3. Draw a bunsen burner flame when the valve is (a) fully open, (b) closed, (c) half open. (Note: there is no need to draw the complete burner).  
Which of these flames would you use to evaporate some water in an evaporating dish?
4. Draw and label a simple mercury barometer. What is the normal height of the mercury in this barometer? What does a barometer measure?
5. Name two indicators in common use in the laboratory. Give their colours in acidic and alkaline solutions.
6. Explain the following: (a) iron nails rust more quickly in Hemsworth than they do in the Sahara Desert.  
(b) iron nails rust quickly when left in a flask containing tap water but not when kept in a sealed flask full of boiled tap water.
7. Explain why the wires carrying electricity in your home have a metal centre surrounded by rubber. What is the metal commonly used in wire?
8. Draw a labelled diagram to show how an eclipse of the sun is caused.

SECTION B. Answer all three questions, spending about 20 minutes on each. Marks will be given for good, clear diagrams where applicable.

9. Either (a) Describe with help of a labelled drawing, the preparation of oxygen in the laboratory.  
State what you would see if (i) sulphur (ii) magnesium were burned in gas jars of oxygen, the products shaken with water and neutral litmus added to the resulting solutions.
- Or (b) Describe, with the help of a labelled drawing, the preparation of carbon dioxide in the laboratory.  
How would you show that this gas is more dense than air?  
If shaken with neutral litmus solution, what would be the colour of the resulting solution.  
What would you observe on bubbling the gas through limewater for some time?  
Why is it of importance to water animals and plants that carbon dioxide is soluble in water?
10. Either (a) Describe in detail (i) how we take air into our lungs; (ii) how oxygen is carried from the lungs to the muscles; (iii) what use is made of oxygen in the muscles.  
What gas is returned from the muscles to the lungs?
- Or (b) Draw a labelled diagram of any named plant. State briefly the main functions of (i) the root, (ii) the stem, (iii) the leaves.  
What is meant by transpiration? Describe a simple experiment by which the rate of transpiration of a plant may be measured.
11. Either (a) Explain (i) how lemonade rises up a straw as we drink it; (ii) how water rises up the stem of a plant; (iii) why the water of a swimming pool appears to be less deep than it really is.
- Or (b) (i) Draw a labelled diagram of an electric light bulb. Why does the light go out when we "switch off"?  
(ii) Why is a fuse included in the electric wiring of a house? What happens when a fuse "blows"?  
(iii) Describe one use of an electromagnet.