

INTERMEDIATE CERTIFICATE EXAMINATION, 1964.

SCIENCE (Syllabus B).

Wednesday, 10th JUNE. — Evening, 3 to 5.30.

(Not more than six questions are to be attempted. Two questions at least must be answered from each Section. Illustrate your answers wherever possible).

SECTION I

1. (a) Describe how you would find the specific gravity of a small stone. The numbers in brackets show the specific gravities (relative densities) of these substances: paraffin oil (0.80), glycerine (1.26), ebonite (1.15), glass (2.45), cork (0.24), pine (0.72), aluminium (2.7). From this list, select the solids that will (i) float in paraffin; (ii) sink in glycerine.
 (b) A cube, with sides of 2 cms., is formed from a metal, which has a specific gravity of 9.6. What is the weight of the cube? (66 marks.)
2. (a) When a given mass of gas expands, what changes, if any, take place in its (i) mass (ii) volume and (iii) density?
 Having been washed in hot water, a tumbler was placed mouth downwards on a wet metal tray. It was noticed that the tumbler blew bubbles outwards at first and then began to blow bubbles inwards. Explain these facts.
 (b) Describe an experiment which shows that air expands on heating. (67 marks.)
3. (a) Describe a type of barometer which does not contain mercury. Why is water not normally used in constructing a barometer?
 (b) Explain what happens to the barometric height in a common mercury barometer if
 (i) the mercury in the tube contains a little water,
 (ii) a drop of ether is introduced into the barometer tube,
 (iii) a finger is pressed into the mercury in the reservoir,
 (iv) the barometer is placed on a high mountain,
 (v) the barometer is placed at the bottom of a mine? (66 marks.)
4. (a) Draw the apparatus used and explain what happens when dry hydrogen is burned in air. Why is the hydrogen dried?
 (b) If you had a beaker of a liquid which you suspected was water, mention three physical tests and one chemical test, you would perform to confirm your suspicion. (66 marks.)
5. (a) Steam is passed over red-hot iron. Describe the changes you expect to occur in the steam and in the iron.
 (b) State fully all the changes you would observe when a small piece of sodium is placed carefully in water. (67 marks.)

SECTION II.

6. (a) What is meant by the terms deciduous and evergreen, as applied to trees? Write a short account on the green colouring matter in leaves.
 (b) Make a labelled drawing of a section of the stem of a four-year-old tree. Describe how you would determine the age of (i) a tree, (ii) a branch. (67 marks.)
7. (a) Name three common flowering plants.
 (b) Make a labelled diagram of any one of the flowers in (a), showing all the principal parts of the flower. Explain clearly the functions of each part. (66 marks.)
8. (a) Outline the conditions which are necessary for the germination of seeds.
 (b) Describe experiments you would perform to illustrate two of these conditions (66 marks.)
9. (a) Describe the main features of the human skeleton, with the aid of a labelled diagram.
 (b) Give a detailed account of the bone structure of the ribs or the leg. (66 marks.)
10. (a) Write a short account of the composition and principal functions of the blood.
 (b) Make a labelled diagram of the heart and give a short account of the functions of each part. (67 marks.)