AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1931.

SCIENCE (Syllabus B).

FRIDAY, 12th JUNE.—AFTERNOON, 4 TO 6 P.M.

[Not more than *six* questions to be attempted. All the questions are of equal value. Illustrate your answers wherever possible.]

1. Describe three methods of proving that the atmosphere is a mixture of gases and not a compound. How does a coal fire affect the composition of the air that passes through it ?

2. Explain why the length of a solar day is not equal to that of a siderial day. The lengths of two pendulums are 16 cm. and 25 cm.; compare the times taken by each in making 50 swings.

3. Describe each step in the making of a thermometer from a piece of glass tubing and mercury. What does a thermometer measure ?

4. What is the difference between evaporation and boiling ? On what conditions does the rate of evaporation depend ? Explain how each condition influences the rate.

5. A loaded test tube sinks 16·8 cms. in water, 15 cms. in brine. What is the density of the brine ? How deep will it sink in milk of relative density 1·03 ? A cork of relative density 0·25 is dropped into water in a graduated cylinder and causes the water to rise from 30 c.cm. to 32 c.cm. What is the volume of the cork ?

6. How would you show that water is a compound of two elements ? How would you prepare these elements in the laboratory ?

7. Describe briefly the structure, arrangement, and function of the parts of any flower you have dissected.

8. Explain fully how deciduous trees cast off their leaves in Autumn. How do the special characteristics of the leaves of evergreen trees aid the plant ?

9. Make a labelled sketch showing the position of the respiratory organs in the human body with relation to those surrounding them. What exchange of gases occurs in the lungs ?

10. Compare, with the aid of sketches, the bones of the left arm with those of the left leg.

11. What experiments would you perform in the laboratory to demonstrate the conditions under which any one of the digestive juices of the body works best ?

12. Make labelled drawings of four different types of fruits which are scattered by wind. What other agents help to scatter seeds ?