

AN ROINN OIDEACHAIS
(Department of Education).

BRAINNSE AN MHEÁN-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1934.

FULL COURSE

SCIENCE (Syllabus B).

FRIDAY, 15th 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. You are given a piece of india-rubber tubing, show how you could use it to empty a tank of water. Explain the principle on which the operation works and illustrate by means of a sketch.

2. A beaker of cold water is gradually heated to boiling. State and explain all you would observe during the process. Upon what conditions does the rate of evaporation depend?

3. Describe with the aid of a diagram how a building may be heated by hot water conveyed in pipes from a boiler in the basement. Explain the various modes of heat transference occurring in the passage of heat from the boiler furnace to objects in a room.

4. Describe stating the necessary precautions, how you would use an ungraduated spiral spring to find the weight in grms of an irregular lump of iron. Without using a graduated vessel, what further measurements would you make to determine the volume of the irregular lump of iron?

5. State three points of difference between chemical and physical change, illustrating your statements by examples. Describe an experiment you would perform to investigate the change in weight when a piece of copper is heated in air. State the result you would expect to obtain and describe briefly how you would proceed to reconvert the product formed into copper. Sketch the apparatus.

6. Explain what occurs when iron rusts and give a brief outline of the experiments you would perform in support of your statements. Describe three methods that are used to keep iron from rusting.

7. How would you prove that the cotyledons of a bean seed feed the young plant? Compare the behaviour of the cotyledons in the germination of the broad bean and the sunflower.

8. What do you understand by "pollination"? Name the agencies which effect cross-pollination in plants. Describe any **two** contrivances you know which favour this type of pollination. What is the advantage of cross-pollination?

9. In what organs of a green plant are foods stored? Name **four** common foods made in the plant and describe simple tests you would apply to identify them.

10. In what region of the body is the liver placed? What are its functions? At what part of the alimentary canal does the bile juice enter it and in what way does this juice aid digestion?

11. Write a short note on the functions of any **five** of the following, in the body:—(a) red-blood corpuscles; (b) antibodies; (c) tongue; (d) villi; (e) amylase; (f) saliva.

12. How is the heat of the body produced? Describe the efforts of nature to keep the body temperature at a constant level.