AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1950.

SCIENCE Syllabus (D).

THURSDAY, 15th JUNE.—MORNING, 10 TO 12.

[Not more than *six* questions to be attempted, of which *three* must be taken from Section I, and *three* from Section II. Illustrate your answers wherever possible. All questions are of equal value.]

SECTION I.

1. State the Principle of the Lever and describe an experiment to demonstrate it.

Mention two household appliances in the use of which the Principle of the Lever is applied. In each case draw a diagram to show (*a*) the position of the fulcrum, and (*b*) the position and direction of each of the forces acting.

2. Describe an experiment to demonstrate the Law of Flotation.

Explain how this law is applied in the construction and use of a lactometer.

3. How would you show by experiment (*a*) that a liquid becomes colder as it evaporates unless heat is supplied to it, (*b*) that ice absorbs heat on melting? Mention and explain an everyday example of *either* of these phenomena.

4. Describe with the aid of diagrams how a Fahrenheit thermometer is constructed and graduated.

What reading on a Fahrenheit thermometer corresponds to (*a*) 30°C, (*b*) −40°C?

5. What do you understand by the terms "conduction," "convection" and "radiation" as applied to heat?

Draw a diagram of the hot water system of an ordinary house and explain fully how it works.

SECTION II.

6. Sketch the apparatus you would use to examine the effects of heating coal *or* turf in the absence of air.

Give a brief account of the properties of two of the products obtained.

Why are coal and turf uneconomical fuels when burned in an open grate?

7. Tell in what parts of the human body the following are to be found and give a brief account of the work done by each of them; heart, pancreas, pepsin, red marrow, gall bladder, ureter.

8. Give an outline of the structure of the brain and spinal cord and comment briefly on their functions.

9. Describe, with the aid of a diagram, how you would prepare dry hydrogen and how you would burn it in air. What can be deduced from the results of this experiment?

Explain how it happens that breathed air contains a large amount of water vapour.

10. Define "alkali," "acid," "salt."

What may be observed when (*a*) vinegar is added to washing-soda; (*b*) hydrochloric acid is added to lime-stone; (*c*) solutions of tartaric acid and bread-soda are mixed; (*d*) carbon dioxide is passed into lime-water? Name one of the products formed in each case.