

AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1947.

(SCIENCE Syllabus D).

WEDNESDAY, 18th 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. Describe with the aid of diagrams how you would use (a) a graduated cylinder to find the volume of a piece of iron, (b) a burette to measure out 30 c.c. of a given liquid into a beaker. Mention the precautions you would take in each case and explain the necessity for them.

What further work would be required in order to find the density of iron and, also, the density of the given liquid?

2. Explain what is meant by saying that the atmosphere exerts a pressure and explain, also, why we do not feel the pressure.

Sketch *two* appliances the working of which depends on the pressure of the atmosphere, and explain fully how *one* of them works.

3. Explain (a) how heat travels from one end of an iron poker to the other end (b) how heat passes from a fire to a person sitting in front of it, (c) the advantage of having fire irons highly polished.

Describe, with the aid of a diagram, the construction of a thermos flask and explain fully how it conserves the heat.

4. Describe two experiments, one to show that a liquid expands when heated, and the other to show that a gas expands when heated.

Explain any method by means of which a house may be ventilated and explain, also, how a house may be heated by using one fire only.

5. How would you show by experiment,

(a) that water expands on freezing,

(b) that ice absorbs a good deal of heat on melting?

Give an everyday example to illustrate each of these phenomena.

6. Give the properties of the substances formed when carbon and hydrogen are burned in the air.

How would you show experimentally that respiration is similar to combustion?

7. What do you understand by (a) alkali, (b) acid, (c) salt? Name an example of each from substances commonly used in the kitchen and describe how you would make, in the laboratory, a pure sample of the salt you have named.

8. Explain what is meant by each of the following:—(a) solution, (b) crystallization, (c) evaporation, (d) distillation.

Describe how you would obtain a dry sample of salt from a mixture of sand and salt.

9. (a) Make a sketch to show the chief muscles which enable a person to stand erect, and explain how they operate.

(b) Explain the action of the muscles which enable a person to bend and straighten the knee.

10. Describe with diagram the alimentary canal. How is the food passed through it? What changes take place in the food during its passage through the alimentary canal and what happens to this food eventually?