

AN ROINN OIDEACHAIS

(Department of Education)

INTERMEDIATE CERTIFICATE EXAMINATION, 1961.

SCIENCE (Syllabus D).

WEDNESDAY, 14th JUNE.—EVENING, 3 TO 5.30.

[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.]

SECTION I.

1. What is a lever ?

State the law of the lever and describe how you would demonstrate it.

Given a known weight, describe how to find by means of a lever (i) the weight of a given body, (ii) the weight of the lever itself.

[66 marks.]

2. State the Principle of Archimedes and describe an experiment to demonstrate it in the case of a liquid other than water.

A solid object weighs 30 gms. in air. If it weighs 6 gms. in water and 3.6 gms. in a given liquid, find (i) the density of the object, (ii) the density of the liquid.

[66 marks.]

3. Describe fully how you would construct a mercury barometer and how you would use it to measure the pressure of the atmosphere.

Describe, with the aid of a diagram, how you would transfer water from a stopped kitchen sink to a bucket on the floor by means of a rubber tube. Explain the scientific principle involved.

[66 marks.]

4. Describe, with the aid of a diagram, a clinical thermometer. Explain how it works and describe how you would use it to measure the temperature of the body.

Write down the approximate temperature readings you would expect to get for each of the following :—(i) the human body, (ii) a cup of tea (iii) a hot bath, (iv) a warm Summer's day—in the shade, (v) a warm Summer's day—in the sun, (vi) boiling water.

What reading on a centigrade thermometer corresponds to a reading of 50° on the Fahrenheit scale ?

[67 marks.]

5. (a) Describe, with the aid of a diagram, how you would distil salt water and give an account of what happens during the distillation.

What differences would you expect to find between distilled water and well-water? Give reasons for your answer.

- (b) What do you understand by the hardness of water? State what causes hardness in water.

[67 marks.]

SECTION II.

6. Give an account of the preparation and properties of hydrogen.

Draw a sketch of the apparatus you would use to prepare and burn dry hydrogen and to collect the product formed. Describe how you would identify the product.

[66 marks.]

7. Describe fully an experiment in which turf (or coal) is heated in a test-tube. Name the products obtained and give a brief account of their properties.

[66 marks.]

8. Describe, with the aid of a diagram, how you would prepare and collect oxygen. Give an account of the properties of oxygen.

Describe how you would burn (i) carbon, (ii) magnesium, (iii) iron, in oxygen. Name the products formed and describe the differences between them.

[66 marks.]

9. Show, with the aid of a sketch, how you would examine a sheep's heart and describe the blood vessels attached to it.

Explain, with the aid of a sketch, how the human heart keeps the blood in circulation and refer to the importance of good circulation.

[67 marks.]

10. Name the bones of the human skull and draw a sketch to show their relative positions.

Give a short account of the contents of the skull.

[67 marks.]