

# AN ROINN OIDEACHAIS

(Department of Education).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1958.

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## SCIENCE (Syllabus D).

TUESDAY, 17th JUNE.—EVENING, 3 TO 5.30.

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[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.]

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### SECTION I.

1. Describe, with the aid of a diagram, how you would set up a spiral spring and how you would measure the extensions produced by suspending various weights from it.

If a 25 gm. weight produces an extension of 3 cms., what weight would produce an extension of 4.8 cms. ?

[66 marks.]

2. Define (i) density, (ii) specific gravity.

Describe how you would use a density bottle to measure the specific gravity of (i) a given liquid, (ii) sand.

An object weighing 20 gms. has a volume of 3.5 c.c. Find (a) the density of the object, (b) what it would appear to weigh in water.

[66 marks.]

3. Describe how to construct a mercury thermometer and how to graduate it to read in degrees Fahrenheit.

Describe, with the aid of a sketch, a clinical thermometer and explain how it works and how it is used.

What reading on a centigrade thermometer corresponds to 104° F. ?

[66 marks.]

4. Sketch the apparatus you would use to obtain a sample of pure water from sea-water and explain how the apparatus is used.

What is the effect of (i) dissolved solids, (ii) increased pressure, on the boiling point of water ?

Sometimes food is cooked under pressure. Describe how this is done and mention any advantages it has over ordinary methods.

[67 marks.]

5. Describe laboratory experiments, one in each case, to show (i) that copper is a better conductor of heat than iron, (ii) that a black surface absorbs heat more readily than a white one, (iii) that water has a higher capacity for heat than copper, (iv) that water at room temperature expands when heated, (v) that water expands on freezing.

[67 marks.]

## SECTION II.

6. Give a short account of the composition of the air.

Tabulate the properties of the two principal constituents of the air and describe an experiment to measure approximately the percentage volume of each in a mass of air.

[66 marks.]

7. Define (i) acid, (ii) alkali.

Describe the properties of nitric acid.

Give an account of the properties of tartaric acid and of baking soda. Describe and explain what happens when solutions of these two substances are mixed.

[66 marks.]

8. Describe the preparation and properties of carbon dioxide and mention any two of its uses.

How would you show that carbon dioxide contains carbon ?

[66 marks.]

9. Describe, with the aid of a diagram, the structure of the skin and give an account of its functions.

Explain the discomfort which a person may experience in an overcrowded and badly ventilated room.

[67 marks.]

10. Show by means of a labelled diagram the course by which impure blood enters and leaves the heart and is conveyed to the lungs. What changes does blood undergo in the lungs?

Describe briefly the further course of the blood until it is again returned in an impure state to the heart.

Give a short account of any laboratory experiment on blood.

[67 marks.]