

# AN ROINN OIDEACHAIS

(Department of Education).

## BRAINSE AN MHEADHON-OIDEACHAIS

(Secondary Education Branch).

### INTERMEDIATE CERTIFICATE EXAMINATION, 1925

#### SCIENCE (Syllabus A).

TUESDAY, 23rd JUNE.—MORNING, 10 A.M. to 12 NOON.

[Not more than *six* questions are to be attempted.]

1. What units would you use in stating—

(a) The area of a school-room floor?

(b) The force required to push a wheelbarrow along a level pavement?

(c) The turning effect, or moment, of a weight hanging on a lever?

(d) The pressure of a gas?

In a square sheet of paper of 3 inch side a circular hole 6 centimetres in diameter is cut. Find the area of the paper which remains. [1 inch = 2.54 cms.]

2. What is the Principle of Archimedes?

Explain how you would use it to determine the density of a body lighter than water.

3. The true height of the barometer on a certain day is 760 mms. One boy setting up a barometer that day gives its height as 755 mms. and another as 765 mms. To what do you think these errors are due? What would you do to test the truth of your suppositions?

Physiology  
and Hygiene

Botany

Physics

Chemistry

Science

Drawing

Shorthand

Economics

Book-keeping

Arithmetic

Algebra

4. How and why does pressure influence the boiling-point?  
Describe an experiment to show its influence.

5. What is the difference between 'melting' and 'dissolving'? Give illustrations.

What is latent heat, and how may its existence be demonstrated?

6. Describe an accurate method of determining the proportions of oxygen and nitrogen in air. Why is the burning of a candle in a confined volume of air quite useless for this purpose?

7. Quote examples to show that different oxides possess very different properties. Mention three soluble and three insoluble oxides.

8. Write an account of the origin, chemical composition, and properties of chalk and lime.

9. When 3 pints of water and 4 pints of water are put into the same jug the total volume in the jug is 7 pints.

When £3 and £4 are put into the same box the total amount in the box is £7.

Why then is it that when forces of 3 kilograms and 4 kilograms are applied to the same point their total effect need not be equal to 7 kilograms?

Find the values of (a) the minimum force, (b) the maximum force, (c) any other force, which may be produced by forces of 3 kilograms and 4 kilograms acting together at a point.

10. State what you know about friction. Explain carefully how you would measure the friction between two wooden surfaces. Assume your own figures, and give a result.