

AN ROINN OIDEACHAIS
(Department of Education.)

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1941.

PASS.

CHEMISTRY.

THURSDAY, 19th JUNE—AFTERNOON, 4 P.M. TO 6 P.M.

- (a) Not more than *six* questions to be attempted. All questions are of equal value.
- (b) Chemical reactions should be expressed in words and represented by chemical equations.
- (c) Answers should be illustrated with suitable sketches.
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1. Explain any *four* of the following terms, illustrating your answer by *one* suitable example in each case—(a) acid; (b) base; (c) saturated solution; (d) amorphous; (e) anhydrous.

2. Give an account of the preparations and properties of the allotropic modifications of sulphur.

3. What is the percentage composition, by weight, of pure calcium carbonate?

What is the maximum volume of carbon dioxide, measured dry at 27°C . and 750 mm. pressure, which could be obtained from 10 grams of pure calcium carbonate?

(C=12, O=16, Ca=40; Gram-molecular volume of a gas = 22.4 litres at S.T.P.)

4. Write a description of the preparation and the properties of hydrogen chloride.

5. How may the composition of water (a) by weight, or (b) by volume, be determined experimentally?

6. State the "Law of Multiple Proportions."

A certain metal forms two oxides, A and B. In oxide A, 4.60 grams of the metal are combined with 1.60 grams of oxygen. In oxide B, 5.75 grams of the metal are combined with 4.00 grams of oxygen. Show that these figures illustrate the above Law.

7. Write the molecular formulæ of any three of the following compounds, and indicate *one* practical use for *each* of the compounds you have chosen:—(a) sodium bicarbonate; (b) copper sulphate; (c) potassium nitrate; (d) calcium chloride; (e) lead dioxide.

8. In what ways may it be proved that air is a mere "mixture"?

9. What are the effects of heat on any *three* of the following:—

- (a) magnesium in an atmosphere of oxygen;
- (b) a mixture of iron filings and powdered sulphur;
- (c) potassium chlorate;
- (d) copper in the presence of concentrated sulphuric acid;
- (e) tin in the presence of chlorine?

10. Write a brief account of a reaction which involves a process of "fermentation."

11. Give a description of the laboratory preparation of methane.

What products may be obtained by the action of chlorine on methane?

12. Give a short account of any *one* historic achievement connected with Chemistry.