

AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1928.

HONOURS

CHEMISTRY.

TUESDAY, 19th JUNE.—MORNING, 10 A.M. TO 12 NOON.

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

Illustrate your answers by diagrams and equations wherever possible.

All questions are of equal value.

1. What is meant by the term "nascent"? Illustrate your answer by reference to (a) hydrogen, (b) oxygen, giving examples in each case.

2. What happens when—

(a) Lead nitrate is heated?

(b) Barium peroxide is heated?

(c) Air is bubbled slowly into a gas jar half full of nitric oxide over water until there is no further chemical action?

3. A given solution contains either silver, aluminium or zinc. Give the tests by which the metal present may be recognised and confirmed.

4. 7.15 grms. of crystalline sodium carbonate are dissolved in distilled water and this solution requires 500 c.cs. decinormal solution of hydrochloric acid to neutralise it. Determine the percentage by weight of water of crystallisation present in crystalline sodium carbonate.

(Na=23 C=12 O=16 Cl=35.5 H=1)

5. Describe a method of finding the volumetric composition of ammonia

The Density of ammonia is 8.5. What is its formula?

6. How may the vapour density of a liquid be determined?

In a Victor Meyer apparatus 0.1008 grms. of an organic liquid expelled 22.0 c.cs. of air at 16.5° C. and 707 m.m. pressure. Find the molecular weight of the liquid.

7. What are the characteristics of (a) an acid, (b) base (c) an acid salt? What are your reasons for regarding hydrochloric acid and sulphuric acid as monobasic and dibasic respectively? How would you prepare an acid salt from sulphuric acid? Can hydrogen be obtained from this salt?

8. Describe with all essential practical details how to find gravimetrically the percentage sulphate in copper sulphate.

9. Give an account of the chemical changes occurring in the commercial production of ethyl alcohol. By what tests is this substance recognised?

10. Indicate, by structural formulæ, the relationship between ethyl alcohol, acetaldehyde, and acetic acid. How may they be converted into each other?