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(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1933.

PASS.

CHEMISTRY.

MONDAY 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 by sketches wherever possible.

1. Describe one important contribution to science associated with each of the following:—Priestley, Scheele, Cavendish, Bunsen, Avogadro.

2. What weight of oxygen would be liberated on heating 6.125 grams of potassium chlorate? What volume would the gas occupy at 17° C. and 754 mms. pressure? The gram molecular volume is 22.4 litres at S.T.P. $O=16$; $Cl=35.5$; $K=39$.

3. Explain the meaning of the following terms, giving an example in each case:—(a) catalyst, (b) synthesis, (c) compound radical, (d) gaseous dissociation, (e) allotropy.

4. Define the terms equivalent weight and atomic weight of an element. What is the relation between these terms? Sketch the apparatus you would employ to determine the equivalent of a metal by displacement of hydrogen from an acid. (You need not describe the actual experiment.)

5. Describe in detail how you would determine the weight of a litre of carbon dioxide at S.T.P.

6. Give the structural formulæ for ethyl alcohol and its oxidation products.

Describe a method of preparing ethylene from ethyl alcohol.

7. Give equations expressing the result of interaction between the following :—

- (a) Copper oxide and hydrochloric acid.
- (b) Calcium hydrate and carbon dioxide.
- (c) Calcium sulphate and sodium carbonate.
- (d) Ammonia and nitric acid.
- (e) Sulphuretted hydrogen and copper sulphate.

Name the products in each case.

8. How would you prepare hydrogen and demonstrate its (a) lightness, (b) action as a reducing agent, (c) property of forming water when burnt in air?

What precaution is advisable before igniting a jet of hydrogen?

9. Give the names and corresponding formulæ of three oxides of nitrogen.

Describe methods for preparing any *two* of them.

10. 50 grams of concentrated sulphuric acid were added to water and diluted to a litre. 50 c.c. of the resulting solution required 49 c.c. of normal sodium hydroxide solution for neutralization.

What was the percentage of H_2SO_4 in the concentrated acid?
 $\text{H}=1$; $\text{O}=16$; $\text{Na}=23$; $\text{S}=32$.