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(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1927.

HONOURS

CHEMISTRY.

WEDNESDAY, 22nd 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.

1. $10·0$ grms. of barium carbonate are immersed in 500 c.cs decinormal solution of hydrochloric acid. Determine the weight of barium carbonate left unattacked.

(Ba=$137·37$. C=12. O=16. H=1. Cl=$35·5$).

2. A given solution contains either copper, lead or calcium. Give the tests by which the metal present is recognised and confirmed.

3. Give three methods for the preparation of carbon monoxide. How can the volumetric composition of the gas be determined?

4. Give an outline of a method now employed for the production on a large scale of ammonia from its elements.

5. State Avogadro's Hypothesis, and use it to prove that the molecule of hydrogen contains at least two atoms. Hence show that the molecular weight of a substance is twice its vapour density.

6. Describe the preparation and properties of chlorine. What is the action of the gas on (*a*) caustic potash solution, (*b*) ethylene, (*c*) methane?

7. What is meant by the term " allotropy "? Illustrate your answer by reference to carbon and sulphur. How are the allotropes of the latter element prepared from flowers of sulphur?

8. Explain what is understood by the following terms :—(a) atom, (b) molecule, (c) acid, (d) salt, (e) atomic heat, (f) compound radicle.

9. How is the presence of (a) hydrogen, (b) nitrogen detected in an organic compound?

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