

AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1929.

PASS

CHEMISTRY.

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

Not more than *six* questions may be attempted.

All questions are of equal value.

1. What gases are obtained when oxalic acid is gently heated with concentrated sulphuric acid? How may the proportion of each gas in the resulting mixture be determined?
2. Justify the classification of chlorine, bromine and iodine in the same group of elements.
3. What is the effect of strongly heating in air (a) magnesium, (b) chalk, (c) lead dioxide? Describe the reactions which take place when these substances and the solid products of their calcination, respectively, are treated with hydrochloric acid.
4. Describe briefly a process by which sulphuric acid is manufactured on a large scale.
5. If you were given a number of gas-jars all filled with the same gas, how would you ascertain whether the gas was hydrogen, oxygen, nitric oxide, or nitrous oxide?
6. A piece of calcium carbonate was dissolved in 250 c.c. of a decinormal solution of hydrochloric acid. The resulting solution required 25 c.c. of a decinormal solution of sodium hydroxide to neutralise it. Calculate the weight of calcium carbonate dissolved.

Ca = 40, Na = 23, C = 12, O = 16, H = 1, Cl = 35.5.

7. Describe the preparation of acetylene. Compare the properties of acetylene with those of methane.

8. State Dulong and Petit's Law, and show how it is used in ascertaining the atomic weights of solid elements.

The chloride of a metal contains 57.66 per cent. of chlorine. The specific heat of the metal is 0.125. State the formula of the chloride ($cl=35.5$).

9. Explain the meaning of the terms:—Valency, reduction, combustion, oxidation. Give an example in each case.

10. Write a short account of the contributions to scientific knowledge, made by any two of the following:—Boyle, Dalton, Priestly, Cavendish, Dumas, Lavoisier.