

AN ROINN OIDEACHAIS

(Department of Education).

LEAVING CERTIFICATE EXAMINATION, 1947.

CHEMISTRY.—PASS.

WEDNESDAY, 18th JUNE.—MORNING, 10 TO 12.

Not more than six questions to be answered. All the questions have the same value.

Chemical changes should be expressed by equations as well as in words.

1. How would you proceed to separate the constituents of a mixture of sand, chalk and common salt from one another?
2. Write an equation for the action of sulphuric acid on magnesium. 0.1 gram of a mixture of magnesium powder and common salt, on treatment with dilute sulphuric acid in excess, gave 80 c.c. of hydrogen measured at 15° C. and 720 mm. pressure. Find the percentage of magnesium in the mixture.
[Atomic weight of magnesium = 24; gram-molecular volume = 22.4 litres.]
3. Define "the solubility of a salt".
Describe an experiment to determine the solubility of a salt at a certain temperature.
4. What is water of crystallisation?
0.966 gram of crystalline sodium sulphate was heated at 120° C. until its weight was constant. The weight of the residue was 0.426 gram. Find the number of molecules of water of crystallisation in a molecule of the crystalline salt.
[Atomic weights: Na = 23; S = 32; O = 16.]
5. Name the chief constituents of the atmosphere and give some reasons for the belief that air is not a chemical compound, but a mixture.
6. Describe (with sketch) a method for the preparation of ammonia in the laboratory.
How does chlorine act on ammonia?
7. Describe the properties of carbon dioxide and its action on (a) caustic soda, and (b) lime water.
8. Give an account of the method of preparation and the properties of hydrochloric acid.

9. How would you obtain (a) sulphur dioxide from sulphuric acid; (b) hydrogen sulphide from pyrites; (c) sulphur trioxide from sulphur?

10. Describe the action of heat on (a) ammonium nitrate; (b) red lead; (c) potassium chlorate.

11. Write the formulæ for orthophosphoric acid, metaphosphoric acid and pyrophosphoric acid, and write equations for the action of caustic soda on each of them.

12. How would you obtain (a) copper oxide from copper; (b) calcium oxide from calcium carbonate; (c) caustic soda from sodium carbonate?