

AN ROINN OIDEACHAIS

(Department of Education).

LEAVING CERTIFICATE EXAMINATION, 1958.

CHEMISTRY.—PASS.

TUESDAY, 17th JUNE.—AFTERNOON, 3 TO 5.30.

Not more than six questions may be attempted.

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

1. Define (a) atomic weight, (b) specific heat.

Describe fully how you would measure the exact atomic weight of zinc.

[66 marks.]

2. Sketch the apparatus you would use to compare the volumes of the gases liberated in the electrolysis of water, and describe how you would use it.

Calculate the total volume of the gases, measured at 18°C. and at a pressure of 700 mm. of mercury, which could be obtained from the electrolysis of 0.045 gm. of water.

[Atomic wt. of oxygen=16 ; gram-molecular volume =22.4 litres.]

[66 marks.]

3. Write a note on each of the following :—

(a) Avogadro's hypothesis, (b) the differences between a mixture and a compound, (c) the relationship between the atomic number of an element and the structure of its atom.

[66 marks.]

4. Name three oxides of lead and write the formula for each of them.

Describe how they may be prepared from the metal and give an account of their properties.

What position does lead occupy in the Periodic Table ?

[66 marks.]

5. Describe, with the aid of a sketch of the apparatus, how pure dry carbon monoxide may be prepared in the laboratory and how its relative density may be measured.

[66 marks.]

6. Give an account of how you would prepare and collect sulphur dioxide. Describe its properties and give a brief account of how sulphuric acid may be prepared from it.

Mention two important industrial uses of sulphuric acid.

[66 marks.]

7. Starting from the appropriate metal in each case, describe how you would prepare (a) sodium chloride, (b) ferrous chloride, (c) stannic chloride.

Describe three chemical tests to distinguish chlorides from other salts and illustrate the reaction which takes place in each case by means of a chemical equation.

[67 marks.]

8. Describe, with the aid of a sketch of the apparatus, how you would prepare and collect reasonably pure nitric oxide. Give an account of its properties and describe how you would obtain from it (a) nitrogen, (b) nitric acid, (c) ammonia.

[67 marks.]

9. Explain the following terms :—

- (a) solubility of a substance in water,
- (b) water of crystallisation,
- (c) vapour density,
- (d) vapour pressure of a liquid.

Describe how you would measure the vapour pressure of a liquid (i) at room temperature, (ii) at a temperature above room temperature.

How is the vapour pressure of a liquid affected by change in temperature ?

[67 marks.]

10. Describe what may be observed when the following are heated :—

- (a) sodium bicarbonate,
- (b) a mixture of potassium nitrate and concentrated sulphuric acid,
- (c) cupric nitrate,
- (d) crystals of ferrous sulphate,
- (e) a solution containing ammonium chloride and sodium nitrite,
- (f) a mixture of phosphorus and diluted nitric acid.

In each case name the products formed and illustrate the reaction by means of a chemical equation.

[67 marks.]