

AN ROINN OIDEACHAIS

(Department of Education)

LEAVING CERTIFICATE EXAMINATION, 1959.

CHEMISTRY.—PASS.

FRIDAY, 12th JUNE.—MORNING, 10 TO 12.30.

Not more than six questions may be attempted.

Atomic weights : C=12 ; O=16 ; Na=23 ; Cl=35.5.
Gram-molecular volume=22.4 litres.

1. Describe, with the aid of a sketch of the apparatus, how you would prepare and collect hydrogen sulphide.

Give an account of its properties and tell how you would show that it contains hydrogen.

[66 marks.]

2. What is meant by chemical equivalent ?

Describe fully how you would measure the chemical equivalent of sodium.

[66 marks.]

3. Describe how you would prepare nitrous oxide and how you would measure its relative density.

A litre of a gas, measured at 15°C. and at a pressure of 760 mm. of mercury, weighs 1.88 gm. Calculate the molecular weight of the gas.

[66 marks.]

4. Write a note on each of the following :

- (a) atomic weight, (b) atomic number, (c) electron, (d) proton,
(e) neutron.

The atomic weight of an element is 23 and its atomic number is 11. Describe the structure of its atom.

[66 marks.]

5. Describe, with the aid of a sketch of the apparatus, how you would prepare a sample of nitric acid.

Give an account of its properties and describe how you would obtain from it (a) oxygen, (b) nitric oxide.

[66 marks.]

6. Starting from the appropriate metal, describe how you would prepare about 5 gm. of each of the following :

- (a) crystalline copper sulphate, (b) calcium carbonate,
(c) potassium nitrate.

Write chemical equations to illustrate the action of heat on these substances.

[66 marks.]

7. Describe, with the aid of a sketch of the apparatus, how you would prepare, dry and collect a sample of hydrogen chloride. Give an account of its properties.

What volume of chlorine, measured at 0°C. and at a pressure of 700 mm. of mercury, could be obtained by oxidising 2 gm. of hydrogen chloride by means of manganese dioxide ?

[67 marks.]

8. Describe the properties of yellow phosphorus and give an account of how it may be converted to red phosphorus.

Give the names and formulae for the phosphoric acids.

[67 marks.]

9. Describe what may be observed when

- (a) steam is passed over heated magnesium,
(b) lead nitrate is heated,
(c) dry ammonia is passed over heated cupric oxide,
(d) sulphur dioxide is passed into a solution of ferric chloride,
(e) carbon monoxide is passed over heated ferric oxide,
(f) a solution of potassium hydroxide is added slowly to a solution of zinc sulphate.

Illustrate the reactions which take place by chemical equations and name the products obtained.

[67 marks.]

10. What are carbonates and bicarbonates ? What products are obtained when sodium bicarbonate is heated and what weight of each of them could be obtained by heating 4 gm. of sodium bicarbonate ?

What volume of a solution containing 5 gm. of hydrogen chloride per litre would be required to neutralize 4 gm. of sodium bicarbonate ?

[67 marks.]