

# AN ROINN OIDEACHAIS

(Department of Education).

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LEAVING CERTIFICATE EXAMINATION, 1955.

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## CHEMISTRY.—PASS.

WEDNESDAY, 15th JUNE.—AFTERNOON, 3 TO 5.

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Not more than *six* questions to be answered.

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

Atomic Weights :—H=1, O=16, Na=23, S=32.

Gram-molecular volume=22·4 litres.

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1. Define :—(a) element, (b) compound, (c) mixture.

Under these headings classify the following and in each case give evidence to justify the classification :—ordinary air, chlorine, water.

[66 marks.]

2. Give an account (a) of the atomic theory as enunciated by Dalton, (b) of the modifications made in the theory since Dalton's time.

[66 marks.]

3. Explain what is meant by (a) oxidation, (b) reduction.

Name three oxidising agents other than oxygen and three reducing agents other than hydrogen and in the case of each give one example to explain how it acts.

[66 marks.]

4. Describe, with the aid of a sketch of the apparatus, how you would prepare dry nitric oxide and how you would measure its volume composition.

[66 marks.]

5. Describe fully a method for measuring the chemical equivalent of sodium.

What is the relationship between the chemical equivalent of sodium and its atomic weight ?

[66 marks.]

6. Describe fully, with the aid of a sketch of the apparatus, how you would prepare pure dry ammonia and how you would measure its density.

[66 marks.]

7. Name an allotropic modification of sulphur and give an account of its properties.

Starting with sulphur, describe how you would prepare reasonably pure samples of sulphur dioxide and ferrous sulphide.

What weight of sulphur would be required to produce a litre of sulphur dioxide measured at  $15^{\circ}\text{C}$ . and at a pressure of 800 mm. of mercury?

[67 marks.]

8. What is meant by the following terms:—

(a) salt, (b) molecule, (c) water of crystallisation?

On analysis a crystalline salt was found to have the following gravimetric composition:—water of crystallisation 50.00%, sodium 18.25%, sulphur 12.70%, oxygen 19.05%. Find its simplest formula and state its name.

[67 marks.]

9. Starting with copper, describe how you would prepare a reasonably pure sample of each of the following:—cupric nitrate, cupric oxide, cuprous chloride.

Write the formula for each of those substances and give a brief account of their properties.

[67 marks.]

10. What is meant by (a) the vapour pressure of a liquid, (b) gaseous diffusion?

Describe (i) how you would measure the vapour pressure of a liquid at room temperature, (ii) how you would show that some gases diffuse more rapidly than others.

[67 marks.]