

AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1957.

SCIENCE (Syllabus D).

WEDNESDAY, 12th JUNE.—EVENING, 3 TO 5.30.

[Not more than *six* questions to be attempted, of which *three* must be taken from Section I, and *three* from Section II. Illustrate your answers wherever possible.]

SECTION I.

1. Describe, with the aid of a sketch, a burette and explain how you would use it (a) to deliver 30 c.c. of a liquid into a beaker, (b) to measure the volume of an object which is too large to be put into the burette.

[66 marks.]

2. State the Principle of Archimedes and describe an experiment to demonstrate it in the case of a liquid other than water.

Find the volume and density of an object which weighs 20 gms. in air and 16.5 gms. in water.

[66 marks.]

3. Describe, with the aid of a sketch, the structure of the vacuum flask and explain how it helps to keep a hot liquid hot and a cold liquid cold.

[66 marks.]

4. Describe, mentioning the precautions you would take, how you would construct a mercury barometer and how you would use it to measure the pressure of the atmosphere.

If you were given a rubber tube, describe how you would use it to transfer water from a stopped kitchen sink to a bucket on the floor. Explain the scientific principle applied.

[67 marks.]

5. Explain each of the following phenomena :—

(a) the pipes of a water system sometimes leak after severe frost,

(b) on a wet road, wide shallow pools of water dry up more quickly than narrow deep ones,

(c) the temperature of a hot liquid may be lowered by blowing air across its surface.

Describe experiments, one in each case, in support of your explanation of (a) and (c).

[67 marks.]

SECTION II.

6. Describe, with the aid of a sketch of the apparatus, how you would prepare and collect oxygen, and give an account of its properties.

What was this gas called when it was discovered? Who gave it the name, oxygen, and why was it given that name?

[66 marks.]

7. Give an account of the properties of (a) sulphuric acid, (b) caustic soda.

Describe fully how you would use those substances to prepare a salt in crystalline form. Give the chemical name and, also, the common name of the salt.

[66 marks.]

8. Describe what may be noticed and name the products formed when

- (a) a piece of sodium is put into water,
- (b) zinc is added to hydrochloric acid,
- (c) magnesium is burned in a gas jar filled with carbon dioxide,
- (d) baking soda is heated,
- (e) phosphorus is left suspended in a gas jar which is filled with air and inverted in a trough of water,
- (f) sugar is heated strongly.

[66 marks.]

9. Name the bones of the human skull and show by means of a diagram their relative positions.

Give a brief account of the contents of the skull.

[67 marks.]

10. Describe the digestion of starch as it passes through the alimentary canal, stating where the digestion takes place and how it is brought about. What happens the product of digestion?

Describe a laboratory experiment to demonstrate the digestion of starch.

[67 marks.]