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(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1942.

SCIENCE (Syllabus B).

FRIDAY, 12th JUNE.—AFTERNOON, 4 TO 6.

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

SECTION I.

1. State what happens

- (a) when phosphorus is burned in a closed vessel containing air,
- (b) when potassium chlorate is heated,
- (c) when crystalline copper sulphate is heated.

Describe, as fully as you can, the properties of the different products in each case.

Draw a diagram of the apparatus used in the case of (a).

2. Describe a method of preparing carbon dioxide in the laboratory. State the properties of the gas.

Of what elements is the gas composed, and what happens when the gas is passed through lime water?

3. Explain, giving examples, (a) physical change, (b) chemical change.

Describe an experiment you would perform to investigate the change in weight when a piece of copper is heated in the air. State the result you would expect to obtain.

Describe, with the aid of a diagram, how you would reconvert the product formed into copper.

4. What instrument would you use and how would you use it to measure each of the following :—

- (a) 25 c.c of water,
- (b) the volume of a small stone,
- (c) the internal diameter of the neck of a bottle,
- (d) the average thickness of a penny.

Draw a diagram of the instrument used and state what precautions should be taken to obtain a good measurement in each case.

5. Explain the principle of the lever.

A uniform metre stick is suspended at its centre of gravity. A pebble suspended at the 73 cm. mark balances a 50 gram weight suspended at the 30 cm. mark. When the pebble is completely immersed in water the 50 gram weight must be moved to the 38 cm. mark so that the lever may hang horizontally again. Calculate (a) the weight of the pebble, (b) its specific gravity.

6. Describe how you would show (i) that the air has weight, (ii) that the air exerts pressure.

How do changes in the pressure of the air affect (a) the boiling point of water, (b) the freezing point of water ?

SECTION II.

7. Describe, with the aid of labelled diagrams, (a) the structure of any dicotyledonous seed that you have studied, and (b) the stages in its growth until the young plant appears above ground.

Describe the experiments you would perform to show that (i) water, (ii) air are necessary for germination.

8. Explain what is meant by transpiration and state why it is necessary for most plants.

Describe one experiment to show that plants transpire, and mention the factors which influence transpiration.

9. Draw carefully the longitudinal section of any flower that you have examined.

Label the parts you have drawn and state the function of each part. Name the flower.

10. Name the constituents of the blood. State the functions of the blood and describe with the aid of a diagram the circulation of the blood in the human body.

11. Write short notes on the function in the human body of any five of the following :—(a) saliva, (b) bile, (c) pancreatic juice, (d) villi, (e) red bone marrow, (f) the skin.

12. Draw labelled diagrams to show the arrangement of the bones in (a) the left arm, (b) the left leg.