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(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1943.

SCIENCE (Syllabus D).

WEDNESDAY, 16th JUNE.—MORNING, 10 to 12.

[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. All questions are of equal value.]

SECTION I.

1. What is meant by specific gravity ?

Describe fully how the specific gravity of milk may be determined without using a hydrometer.

2. How may it be shown that the air (a) has weight, (b) exerts a pressure, (c) contains water vapour ? How is the pressure of the air affected by (i) change of temperature, (ii) the amount of water vapour present ?

3. What is a lever ?

State the principle of the lever.

Describe (a) how you would use a lever and a known weight to find the weight of a given object, (b) how you would use a lever, a one pound weight, and a 200 gm. weight to find the number of grms. in a pound.

4. When using metal vessels in cooking, the following precautions should be observed in order to economise fuel :—(a) the bottom of the vessel should be clean, (b) the lid should be kept on, and (c) the sides should be polished. Explain as fully as you can how these precautions ensure economy. Describe briefly laboratory experiments in support of your answers.

5. Explain (a) why a vessel filled with water overflows when heated, (b) why the bottom of a kettle containing boiling water does not get red hot over a strong fire, (c) why loosely woven clothes are warmer than tightly woven ones. Describe a simple laboratory experiment in support of your answer to (c) above.

SECTION II.

6. Describe fully how you would prepare and burn dry hydrogen in the air. Sketch the apparatus, and give two tests to identify the product obtained.

7. What is the effect, if any, of (a) water, (b) heat on each of the following substances:—washing soda, sugar, chalk, common salt, quicklime?

8. Give a brief description, with the aid of a diagram, of the chief divisions of the brain and state their functions. How is the brain protected from injury?

9. Under what conditions does iron rust?

Describe fully an experiment to find out how the composition of ordinary air is affected by allowing iron to rust in it. Mention any method by which the rusting of iron may be retarded.

10. Draw a diagram of the interior of the heart to explain how the blood is kept in circulation.

In what respects is the blood in the right side of the heart different from the blood in the left side?