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INTERMEDIATE CERTIFICATE EXAMINATION, 1955.

SCIENCE (Syllabus D).

WEDNESDAY, 15th *JUNE*.—EVENING, 3 TO 5.

[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 diagram, how you would weigh an object in water.

An object weighs 12·53 gm. in air and 10·23 gm. in water. What is its volume and what would it weigh in a liquid of specific gravity 1·20 ?

[66 marks.]

2. Describe fully (a) how you would measure the weight of a litre of air, (b) two experiments to show that the atmosphere exerts a pressure.

[66 marks.]

3. Explain the following and in each case describe one laboratory experiment in support of your answer :—

(a) when touched by the hand, metal objects in a room feel colder than wooden ones,

(b) two garments are warmer than a single garment of the same material and having the same weight as the two combined,

(c) the boiler of a domestic hot water system is placed at the lowest point in the system.

[66 marks.]

4. Explain the following terms :—(a) evaporation, (b) condensation, (c) distillation.

Sketch the apparatus you would use, and explain how you would use it, to obtain from sea water a sample of pure water. In what respects would the sample thus obtained be different from well-water and what causes the differences ?

[67 marks.]

5. Describe, with the aid of a diagram, a Fahrenheit thermometer and explain how it works.

What reading on a centigrade thermometer corresponds to a reading of 14° on a Fahrenheit thermometer ?

A thermometer is put into a beaker containing ice and water. Heat is applied to the beaker and the thermometer is observed carefully. Explain (a) why the temperature remains constant until all the ice has melted, (b) why the temperature remains constant while the water is boiling.

[67 marks.]

SECTION II.

6. Describe how you would examine the effect of (i) heat, (ii) water, on each of the following and in each case state the result you would expect :—common salt, washing soda, sal-ammoniac.

Describe fully how you would obtain from a mixture of common salt, sal-ammoniac and sand, a reasonably pure sample of each of the constituents.

[66 marks.]

7. Name two acids and two alkalies which are commonly used in the kitchen. In the case of each describe its properties and explain any one of its uses.

Explain (a) the cause of the stain which often appears on a metal saucepan after fruit has been cooked in it. (b) how the stain may be removed.

[66 marks.]

8. Describe fully how you would make a sample of soap in the laboratory.

State the characteristics of a good soap and explain the action of soap (a) in laundry work, (b) when added to hard water.

[66 marks.]

9. Describe, with the aid of a sketch, the shape and structure of the alimentary canal between the mouth and the small intestine. Describe how food is passed along that part of it and give a brief account of the changes which the food undergoes on its way.

[67 marks.]

10. Describe, giving reasons, the first aid treatment you would apply in any three of the following cases :—

(a) a compound fracture of the femur,

(b) a burn on the hand and forearm from molten fat,

(c) a lacerated wound on the knee as a result of falling on a dirty road,

(d) arterial bleeding from a deep wound in the palm of the hand.

[67 marks.]