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(Department of Education)

INTERMEDIATE CERTIFICATE EXAMINATION, 1959.

SCIENCE (Syllabus D).

TUESDAY, 9th 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. What is meant by (i) lever, (ii) fulcrum ?
State the law of the lever and describe how you would demonstrate it.

Explain how you would use a lever to find the weight of a glass stopper, given a fifty gram weight.

[66 marks.]

2. State the law of flotation and describe an experiment in support of it.

Describe a hydrometer and explain how you would use it to measure the density of milk.

Explain how the density of milk would be affected by the addition of water.

[66 marks.]

3. Describe fully how to measure the weight of a litre of air at room temperature and pressure.

[66 marks.]

4. Give an account of how you would construct a mercury thermometer and how you would graduate it to read in degrees centigrade.

Describe the instrument you would use and how you would use it to measure (i) the temperature of the human body, (ii) the maximum and minimum temperature of the air over a period of twenty-four hours, (iii) the temperature of a hot bath.

[67 marks.]

5. Describe, with the aid of diagrams, how you would demonstrate the effect of (i) reduced pressure, (ii) increased pressure, on the boiling point of water.

Account for (i) the difference in taste between fresh water and water which has been boiled, (ii) the difference between the boiling point of water at sea-level and the boiling point of water on a high mountain.

[67 marks.]

SECTION II.

6. Give an account of the preparation and properties of oxygen.

Name the products formed when each of the following is burned in oxygen :— (*a*) carbon, (*b*) magnesium, (*c*) iron, (*d*) phosphorus, (*e*) sulphur. Mention the effect, if any, of the products on moist litmus.

[66 marks.]

7. Describe each of the following processes and give one example of each :— (*a*) evaporation, (*b*) filtration, (*c*) distillation, (*d*) sublimation, (*e*) decantation, (*f*) crystallisation.

[66 marks.]

8. What do you understand by hardness of water ? Give an account of what causes it and of how it may be removed.

Describe how you would compare the hardness of two samples of water.

What disadvantages are associated with the use of hard water ?

[66 marks.]

9. Discuss the circulation of the blood (i) to the lungs, (ii) to the kidneys, (iii) to the liver. Give an account of the changes which the blood undergoes in passing through these organs.

[67 marks.]

10. (*a*) Describe how heat is produced in the human body. Explain how the skin helps to regulate the temperature of the body.

(*b*) What first-aid treatment would you recommend in the case of (i) a fractured wrist, (ii) a badly scalded hand ?

[67 marks.]