

INTERMEDIATE CERTIFICATE EXAMINATION, 1962.

SCIENCE (Syllabus D).

THURSDAY, 14th 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. State the law of flotation and describe an experiment to demonstrate it.
Describe, with the aid of a diagram, a hydrometer and explain how you would use it to measure the density of a liquid.
When an object floats in a liquid of density 1.2 gm. per c.c. threequarters of its volume is submerged. What fraction of its volume will be submerged when it floats in a liquid of density 1.5 gm. per c.c.?
(66 marks.)
2. What do you understand by (i) a lever, (ii) a fulcrum?
Give an account of an experiment to demonstrate the law of the lever.
Describe, with the aid of a diagram, a laboratory balance and state how you would use it to weigh a small object such as a glass stopper.
(66 marks.)
3. (i) Give a full account of how you would measure the weight of a litre of air.
(ii) Describe how a fire in an open grate helps to ventilate a room. What ill effects may result from poor ventilation in a living-room? Give reasons for your answer.
(66 marks.)
4. Describe how a mercury thermometer, reading from -5°C. to 105°C. , may be constructed and graduated.
Describe, with the aid of a diagram, how you would demonstrate the effect (i) of increased pressure, (ii) of dissolved solids, on the boiling-point of water.
(67 marks.)
5. Explain clearly what you understand by (i) conduction, (ii) convection, (iii) radiation of heat and mention how each of these is involved in the different modes of cooking.
(67 marks.)

SECTION II

6. Describe each of the following giving an example in each case:- (i) filtration, (ii) evaporation, (iii) sublimation, (iv) crystallisation.
Describe fully how you would obtain from a mixture of common salt, sand and sal-ammoniac, a reasonably pure sample of each of the constituents.
(66 marks.)
7. Give an account of the properties of (i) baking soda, (ii) tartaric acid.
Describe what happens when a damp mixture of these substances is warmed gently, name the gas evolved and give an account of its properties.
Explain the domestic use of the above mixture.
(66 marks.)
8. Give an account of the composition of the air.
Describe the properties of the two chief constituents of the air and describe how one of these may be prepared and collected in the laboratory.
(66 marks.)
9. Give a general description of the spinal chord and its attachments. Give a brief account of its functions.
Explain how a reflex action occurs.
(67 marks.)
10. Give an account, with the aid of diagrams, of the appearance of the following organs as seen in the rabbit:- (i) the lungs, (ii) the liver. Mention the functions of each.
In what way is the operation of the lungs associated with the pressure of the air? Describe an experiment to demonstrate your answer.
(67 marks.)