

INTERMEDIATE CERTIFICATE EXAMINATION, 1967

SCIENCE (Syllabus D)

THURSDAY, 15th JUNE - Morning, 10 to 12.30

(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 (i) the law of the lever, (ii) the law of the spiral spring.
Draw a labelled diagram of a laboratory balance and describe fully how you would use it to find the weight of a glass stopper.
Show how the weight of the glass stopper may be found using a spiral spring and a known weight. (66 marks)
2. Describe how you would measure the density of (i) a liquid by means of a density bottle, (ii) a piece of cork or wax.
An object weighs 20 gm. in air and 12 gm. in water. What is the volume of the object? If the object weighs 13.6 gm. in a liquid calculate the density of this liquid. (66 marks)
3. Describe any two experiments to show that the atmosphere exerts pressure. Mention any one reason for the variation in atmospheric pressure.
Explain, with the aid of a diagram, how a simple siphon works. (66 marks)
4. Give an account of how you would construct and graduate a mercury thermometer to read from 0°C. to 100°C.
Indicate how the temperature of each of the following may be measured: (i) a hot bath, (ii) fat for frying, (iii) the human body.
How does the skin help to regulate the temperature of the body? (67 marks)
5. (a) Describe how any two of the following may be demonstrated experimentally:
(i) that water is a poor conductor of heat, (ii) the expansion of water on freezing, (iii) that a black body absorbs heat more readily than a white body.
(b) State the principle involved when potatoes are cooked by (i) boiling, (ii) steaming, (iii) roasting. Comment on their relative merits as modes of cooking. (67 marks)

SECTION II

6. Give an account of an experiment to show that air contains approximately one-fifth of its volume of oxygen.
Mention a laboratory method for the preparation of oxygen and state the principal properties of the gas.
Write a brief note on the rusting of iron. (66 marks)
7. Describe, with the aid of a diagram, an experiment to demonstrate the effect of heat on fuel e.g. coal or wood or turf, in the absence of air. Name the products formed and state the properties of any two of them. (66 marks)
8. What is (i) an acid, (ii) an alkali, (iii) a salt?
Give two examples in the case of each.
Describe how a reasonably pure sample of a salt may be obtained from an acid and an alkali. Name the salt obtained and give the principal properties of the acid used in the experiment. (66 marks)
9. Draw a sketch of the human skeleton. Show and name the bones of the skull.
Give a brief account of the contents of the skull. (67 marks)
10. Write brief notes on each of any three of the following:
(a) household cleaning agents,
(b) the cause of hardness in water and its removal,
(c) the first aid treatment of a severe bleeding from the nose,
(d) the importance of cleanliness of the skin. (67 marks)