

## INTERMEDIATE CERTIFICATE EXAMINATION, 1966

## SCIENCE (Syllabus D)

WEDNESDAY, 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. Describe any two methods by which the density of a liquid may be measured. An object weighs 12.5 gm. in air and 7.5 gm. in water. Find (i) the volume, (ii) the density, of the object. (66 marks)
2. (a) Explain, with the aid of a diagram, how a common water pump works.  
(b) Given a piece of rubber tubing show how you would use it to transfer water from a stopped kitchen sink to a bucket on the floor. State the principle on which your method is based. (66 marks)
3. With regard to each of any three of the following, describe an experiment to show
  - (a) that the extension of a spiral spring varies with the load which produces the extension,
  - (b) that the atmosphere contains water-vapour,
  - (c) the effect of dissolved solids on the boiling point of water,
  - (d) that ice absorbs heat on melting. (66 marks)
4. What are the effects of heat on a liquid? Describe an experiment to illustrate your answer.  
Given an ungraduated mercury thermometer show, with the aid of diagrams, how you would graduate it to read in degrees Centigrade. State how this thermometer differs from a clinical thermometer. (67 marks)
5. (a) Explain the terms: conduction, convection and radiation, as applied to heat. Give one everyday example in each case.  
(b) Describe briefly how a living room should be ventilated. Comment on the importance of adequate ventilation. (67 marks)

## SECTION II

6. Describe the preparation and properties of hydrogen.  
Sketch the apparatus you would use to burn dry hydrogen in air. Name the product formed and state how you would identify it. (66 marks)
7. In the case of any six of the following describe what happens when
  - (i) sal ammoniac is heated,
  - (ii) potassium chlorate is heated,
  - (iii) iron is exposed to moist air for a long period of time,
  - (iv) phosphorus is burned in an enclosed volume of air,
  - (v) a mixture of common salt and concentrated sulphuric acid is heated,
  - (vi) a solution of caustic soda is neutralised with a solution of hydrochloric acid,
  - (vii) washing soda is added to hard water. (66 marks)
8. Give an account of the properties of (i) tartaric acid, (ii) baking soda.  
What gaseous product is formed when a moist mixture of tartaric acid and baking soda is heated gently? Outline the chief properties of this product. (66 marks)
9. Name and show by means of a diagram the various parts of the alimentary canal.  
Explain what is meant by digestion. Describe the principal digestive changes that food undergoes in the alimentary canal. (67 marks)
10. (a) State the functions of the blood or skin.  
(b) Describe an experiment to illustrate the difference between inspired and expired air.  
(c) What first-aid treatment would you give in the case of a compound fracture of the femur? (67 marks)