

INTERMEDIATE CERTIFICATE EXAMINATION, 1963.

SCIENCE (Syllabus D).

FRIDAY, 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. Describe fully how you would measure the density of a given liquid.
A piece of metal weighs 15.4 gm. in air. If its density is 7.7 gm. per c.c., find
(i) its apparent weight in water, (ii) its apparent weight in a liquid of density 1.5 gm. per c.c.
(66 marks.)
 2. Give an account of two simple experiments which show that the atmosphere exerts pressure.
Describe the construction and use of a mercury barometer.
What reading on a glycerine barometer corresponds to a pressure of 30 inches of mercury?
(Sp. gr. of mercury = 13.6, sp. gr. of glycerine = 1.26.)
(66 marks.)
 3. Describe experiments, one in each case, to show the effect of heat on (i) a solid, (ii) a liquid, (iii) a gas.
Describe fully, with the aid of a sketch, a clinical thermometer and state how it is used.
What reading on the Fahrenheit scale corresponds to (i) 5°C., (ii) -5°C.?
(66 marks.)
 4. State what you understand by (i) specific heat, (ii) latent heat of fusion, (iii) latent heat of vaporization.
Describe a laboratory experiment in support of your answer in the case of (i) or (ii) or (iii).
Give two examples from everyday life to illustrate latent heat.
(67 marks.)
 5. In the case of each of any five of the following describe an experiment to show
(i) that the atmosphere contains water vapour,
(ii) that tap-water contains dissolved air,
(iii) that water is a poor conductor of heat,
(iv) that dissolved solids raise the boiling-point of water,
(v) that increased pressure raises the boiling-point of water,
(vi) that air is a poor conductor of heat,
(vii) that a black surface absorbs heat more readily than a white one.
(67 marks.)
- SECTION II.
6. Explain what you understand by (i) an acid, (ii) an alkali, (iii) a salt. Name two examples in each case.
Describe how you would prepare a reasonably pure sample of any one of the salts you have named, starting with an acid and an alkali.
(66 marks.)
 7. Describe fully, with the aid of a diagram, how you would prepare and collect carbon dioxide. Give an account of its properties and uses.
Mention any other method by which carbon dioxide may be prepared.
How would you show that (i) atmospheric air contains carbon dioxide, (ii) breathed air contains more carbon dioxide than atmospheric air?
(66 marks.)
 8. Give an account of the preparation and properties of hydrogen.
Describe, with the aid of a diagram, the apparatus you would use to prepare and burn dry hydrogen and to collect the product formed. How would you identify the product? Why should the hydrogen be dry?
(66 marks.)
 9. Give an account, with the aid of a sketch, of the circulation of the blood.
Describe the changes which the blood undergoes in passing through (i) the lungs, (ii) the kidneys, (iii) the liver.
(67 marks.)
 10. Describe, with the aid of a labelled diagram, the alimentary canal.
Give an account of the principal changes which food undergoes in the alimentary canal.
Describe a laboratory experiment to demonstrate the digestion of starch.
(67 marks.)