

INTERMEDIATE CERTIFICATE EXAMINATION, 1967

SCIENCE (Syllabus B)

THURSDAY, 15th JUNE - Morning, 10 to 12.30

(Not more than six questions are to be attempted. Two questions at least must be answered from each Section. Illustrate your answer wherever possible).

SECTION I

1. (a) Given a spiral spring and various known weights from 10 gm. to 100 gm., you are required to find the correct weight of a piece of lead, the weight of which is about 50 gms. Outline the steps you would take in doing this experiment and draw a labelled diagram of the apparatus.
(b) A piece of lead of volume 5 c.c. weighs 55 gm. in air. It is immersed in a graduated cylinder containing 20 c.c. of water.
Write down (i) the level of the water when the lead is immersed,
(ii) the weight of the lead when immersed in the water,
(iii) the density of the lead. (67 marks)
2. (a) How would you show experimentally that metals differ in their ability to conduct heat ?
(b) When a piece of copper wire is inserted in a beaker of boiling water, the top of the wire, which is not in the water, becomes hot. Explain how this occurs. What is the highest temperature likely to be reached by the wire ? Give a reason for your answer. (66 marks)
3. (a) Explain what is meant by saying that matter exists in three states. How do these states differ from one another ?
(b) Name four examples of a change of state. What always accompanies a change of state ?
(c) Describe how you would measure the boiling point of a given liquid. (66 marks)
4. (a) A few bright iron nails were placed in a stoppered test tube containing some water and air and the test tube was set aside. After a few days the nails were found to be rusted.
(i) Would you conclude from this experiment that both water and air are necessary for rusting to occur ? Explain your answer.
(ii) What other experiments would you perform to enable you to say definitely that water and air are both necessary ?
(b) Is rusting a physical or a chemical change ? Give reasons for your answer. If the test tube and contents in (a) above weighed 30 gm. at the beginning of the experiment, would they weigh 30 gm. at the end ? Explain your answer. (67 marks)
5. (a) When steam is passed over heated iron filings in a combustion tube a colourless gas is produced which is collected over water.
(i) Draw a labelled diagram of the apparatus you would use to do the above experiment.
(ii) What change takes place in the combustion tube ? Is this a physical or a chemical change ?
(iii) Name the gas produced and state some of its properties.
(b) Name any two other gases and briefly state how you would prepare one of them. (66 marks)

SECTION II

6. (a) List the functions of the green leaf.
(b) Describe fully an experiment which demonstrates one of these functions. (66 marks)
7. (a) Name five methods by which seeds and fruits are scattered. Give a named example of each method and show on a diagram how the seed or fruit named is suited to that particular method.
(b) Suggest one reason why it is beneficial that seeds and fruits are scattered from the parent plant. (67 marks)
8. (a) Draw a labelled diagram of the human heart, showing the structure of the heart and the vessels entering and leaving the heart.
(b) What are the main functions of the blood ? List its constituents. (66 marks)
9. Explain why (i) adequate ventilation, (ii) regular dental care and (iii) personal cleanliness are of such importance in safeguarding health. (66 marks)
10. (a) What is meant by respiration ? (Mention both animals and plants)
(b) Describe an experiment to illustrate one of the effects of respiration. (67 marks)