AN ROINN OIDEACHAIS

INTERMEDIATE CERTIFICATE EXAMINATION, 1968

SCIENCE (Syllabus B)

WEDNESDAY, 19th JUNE - Morning, 10 to 12.30

Six questions to be answered: two questions at least to be answered from each Section. Illustrate your answers wherever possible.

SECTION I

1. (i) What temperature readings correspond to the fixed points on a centigrade thermometer ?
   (ii) Given a centigrade thermometer, show diagrammatically how you would check that the lower and upper fixed points are correctly marked on it.
   (iii) Compare mercury with alcohol as a liquid for thermometers.
   (iv) Why has a clinical thermometer a constriction in the internal narrow tube ?
   (66 marks)

2. A see-saw is balanced about the centre when not in use. John, who weighs 70 kilograms, sits 2 metres from the centre at one side of the see-saw and Mary, who weighs 60 kilograms, sits on the other side. How far from the centre must Mary sit so that the see-saw will be balanced ?
   Given a metre rule and a 200 gram weight, how would you find the weight of the metre rule ?
   (66 marks)

3. (a) Distinguish between conduction, convection and radiation of heat, giving an example in each case.
   (b) When a party of children enter a school bus on a cold day, the windows become 'fogged' over. Explain how this happens.
   (c) How would you obtain a sample of pure water from sea water ? Draw a diagram of the apparatus, explaining what happens in each part of the apparatus.
   (66 marks)

4. How would you prepare and collect a few gas-jars of oxygen ? Give its properties.
   (i) If burning carbon is plunged into a jar of oxygen, what happens ? How would you identify the product formed ?
   (ii) What happens and what product is formed, if oxygen is mixed with hydrogen and a lighted splint is applied ?
   (67 marks)

5. (a) A colourless liquid was suspected of being an acid. Give an account of three different tests which might be applied to prove the suspicion.
   (b) Name a gas (apart from nitrogen and oxygen) which is present above a bunsen flame. Show how you would demonstrate that the gas in the blue cone of the bunsen flame is not being burnt. Draw a diagram of a bunsen flame used for strong heating and indicate the warmest part of the flame with an X.
   (67 marks)

SECTION II

6. Discuss the part played by water in each of the following:-
   (a) the germination of seeds,
   (b) the functioning of the skin,
   (c) the functioning of a plant stem.
   In the case of one of the above describe an experiment in support of your answer.
   (66 marks)

7. (a) What are the functions of roots ? Outline an experiment to illustrate one of these functions.
   (b) Give a brief account of vegetative reproduction.
   (66 marks)

8. Give an illustrated account of the general structure, position, and function of the kidneys. Mention one other way in which the body gets rid of waste products.
   (66 marks)

9. (a) Illustrate, by means of a labelled diagram, the structure of a green leaf. Show on the diagram, by means of arrows and names, what gases enter and leave the plant through the leaves.
   (b) A leafy shoot in a beaker of water and a lighting candle are placed under an airtight bell-jar. After a short time the candle is extinguished. If, however, the jar were placed in a sunny position, the candle would not be extinguished but would continue to burn. Suggest an explanation for the above.
   (67 marks)

10. (a) Describe the part played by the following:- (i) the mouth, (ii) the stomach, (iii) the small intestine, in the digestive process.
   (b) Describe a simple experiment to show that starch is transformed in the mouth.
   (c) For what purposes does the body require food ?
   (67 marks)