

AN ROINN OIDEACHAIS

006826

INTERMEDIATE CERTIFICATE EXAMINATION, 1985

SCIENCE—SYLLABUS E

TUESDAY, 18 JUNE—MORNING, 9.30 to 12.00

Answer question 1 and five other questions.
All questions carry equal marks.

1. (a) Diamond and graphite are allotropes of what element?
- (b) Name two stages in the life-cycle of the Cabbage White Butterfly.
- (c) What scientific principle is being demonstrated in the diagram Fig. 1?

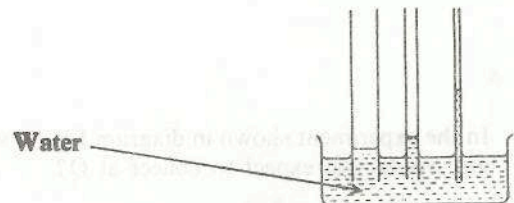


Fig. 1

- (d) When copper sulphate crystals are heated as shown in diagram Fig. 2, what liquid would you expect to collect at Z?

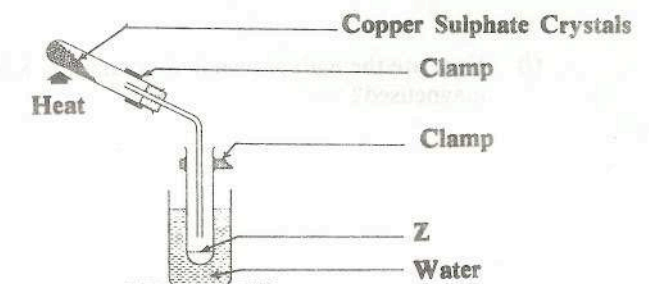


Fig. 2

- (e) Which of the leaves X or Y in the diagram Fig. 3 is from a monocotyledon plant?



Fig. 3

- (f) Name the parts of the tooth marked P and Q as shown in the diagram Fig. 4.

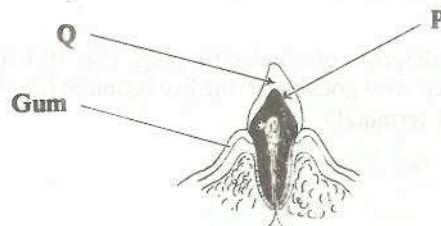


Fig. 4

- (g) What happens when a charged rod is brought near the top of a gold leaf electroscope?

- (h) What is the instrument shown in diagram Fig. 5, and for what is it used?

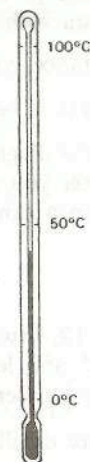


Fig. 5



(i) In the diagram Fig. 6. what will happen when air is withdrawn from the bell jar?

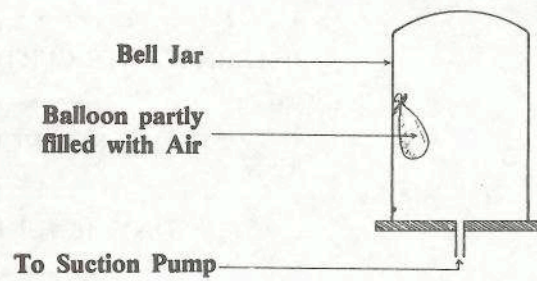


Fig. 6

(j) Which of the following is essential for germination to take place: soil; light; water; carbon dioxide; darkness?

(k) In the experiment shown in diagram Fig. 7. what gas would you expect to collect at Q?

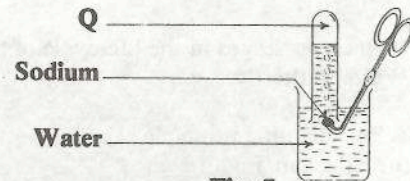


Fig. 7

(l) How are the nails shown in diagram Fig. 8. being magnetised?

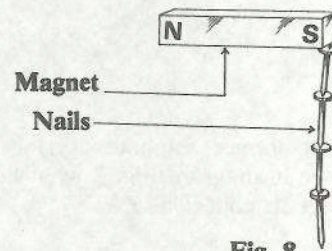


Fig. 8

(m) Study the diagram Fig. 9.

(i) What type of food would you associate with bird A?

(ii) In what type of habitat would you expect to find bird B?



Fig. 9

(n) If the offspring of a cross between two plants were all tall (Tt) in the F₁ generation, what were the genotypes of each of the parents?

(o) In the diagram of an electric plug, Fig. 10. what coloured wire goes to (i) the live terminal (ii) the neutral terminal?

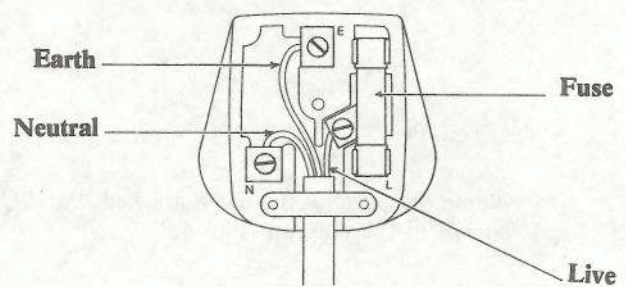


Fig. 10

2. (a) In the diagram Fig. 11. ammonium chloride is heated in a basin with a funnel inverted over it.

(i) What substance collects at Z?

(ii) What process is being demonstrated?

(b) With the aid of a diagram describe how using a Liebig condenser you would obtain a sample of pure water from a sample of sea water.

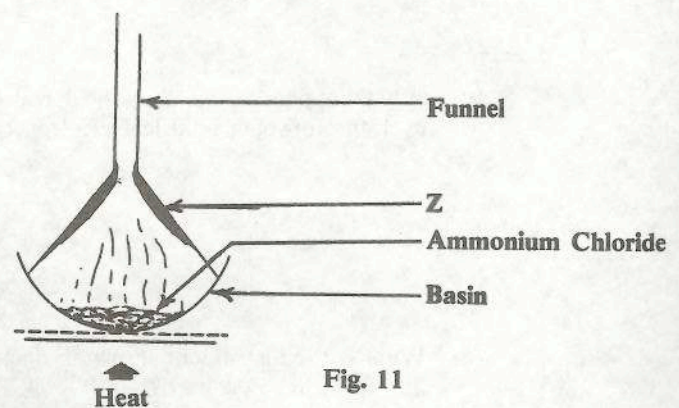


Fig. 11

(c) In the diagram Fig. 12. if two wires are connected at points X and Y and led into a liquid in a beaker, what would happen when:-

(i) the liquid is pure distilled water?

(ii) the liquid is water and dilute sulphuric acid?

Explain your answer.

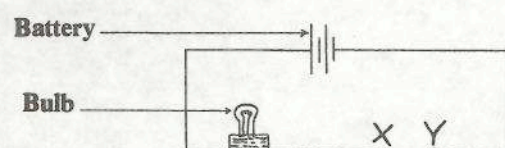


Fig. 12

3. (a) (i) Give one example of a common fungus.
 (ii) How does a fungus reproduce?
 (b) Use a labelled diagram to show the parts of a flower.
 (c) From a named habitat you have studied, give the names of:-
 (i) four species of plants;
 (ii) two carnivores;
 (iii) two herbivores;
 (iv) and arrange four of the species you name into a simple food chain.

4. (a) What is Phototropism?
 (b) Describe an experiment to demonstrate the dispersion of white light by a glass prism.
 (c) (i) Name any five parts of the human eye marked A, B, C, D, E, F, G, H, in the diagram Fig. 13.
 (ii) Explain the effect of light on woodlice.

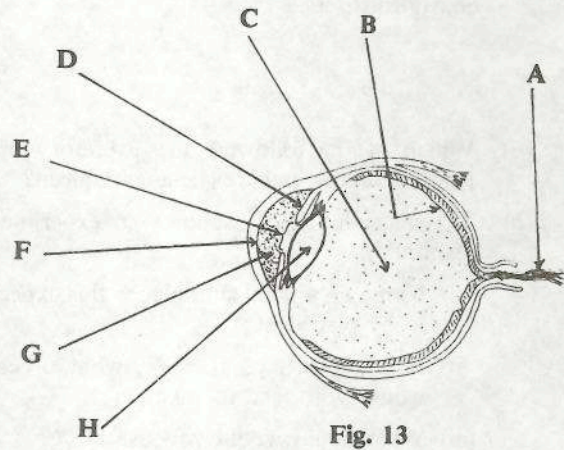


Fig. 13

5. (a) Which four of the following substances contain oxygen:- carbon dioxide, mercury, sugar, copper sulphate, ammonia, sulphuric acid?
 (b) Study the diagram Fig. 14.
 (i) Name the pieces of the apparatus labelled L, M, N, P, Q.
 (ii) What gas collects at Y?
 (iii) What substance is produced when this gas combines with magnesium?
 (iv) What is a catalyst?

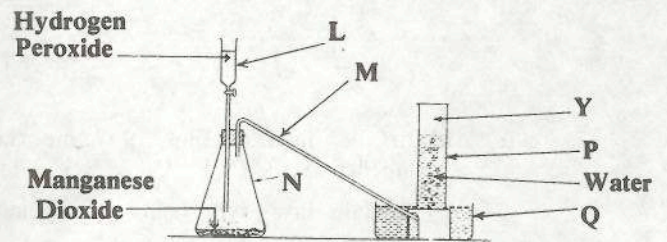


Fig. 14

- (c) The diagram Fig. 15 shows an investigation into the causes of rusting. State what will happen in each test tube and why.

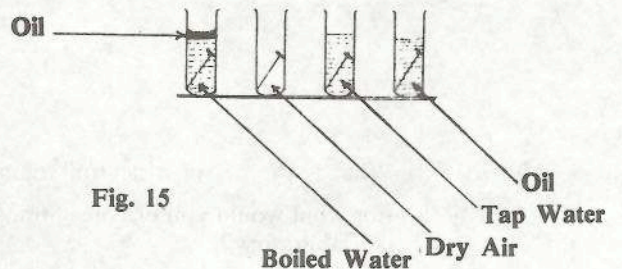


Fig. 15

6. (a) A lever with two suspended objects is set up as shown in the diagram Fig. 16.
 (i) Which of the two objects X or Y is the heavier?
 (ii) If the object at X weighs 30g, what is the mass of the object at Y?
 (b) (i) State Hookes Law.
 (ii) Describe the apparatus and method you would use to prove the Law.
 (iii) Draw a graph of the expected result.
 (c) (i) Name two methods you would use to find the specific gravity of alcohol.
 (ii) Carefully describe, with the aid of diagrams, any one of the methods you mention.

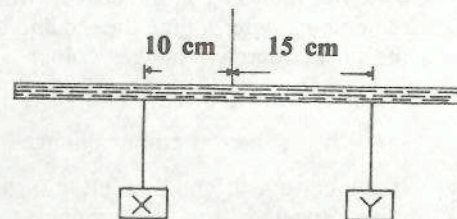


Fig. 16

7. (a) Name two gases transported by the blood in the human body.
 (b) Make a labelled diagram of the mammalian heart and show with arrows the course of the blood through this organ.
 (c) (i) Give two differences between red and white corpuscles.
 (ii) Name two substances from the following list that you would find dissolved in blood plasma:- sodium chloride, starch, protein, urea, haemoglobin.

8. (a) What is an anticyclone and what type of weather do you associate with it?
- (b) The diagram Fig. 17. shows a mercury barometer.
- What would be the approximate value of 'h' under normal atmospheric conditions at sea level?
 - What would happen if an air bubble were introduced through the mouth of the tube?
- (c) Explain the occurrence of land and sea breezes in coastal districts.



Fig. 17

9. (a) Which of the following are excretory organs: heart; kidneys; pancreas; lungs; spleen?
- (b) The diagram Fig. 18. shows an experiment on respiration.
- Name an animal suitable for this experiment to be placed at Y.
 - If you put a plant at Y, what precaution would you need to take?
 - What liquid would you use at X?
 - What is the function of the potassium hydroxide?

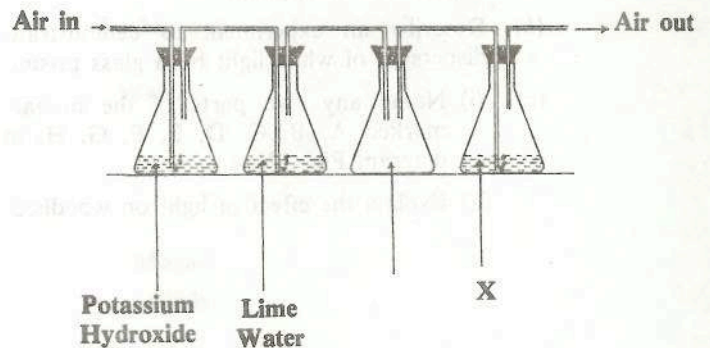


Fig. 18

- (c) (i) In the diagram Fig. 19 name the parts labelled A, B, C, D, E.
- (ii) Explain how skin helps to regulate body temperature.

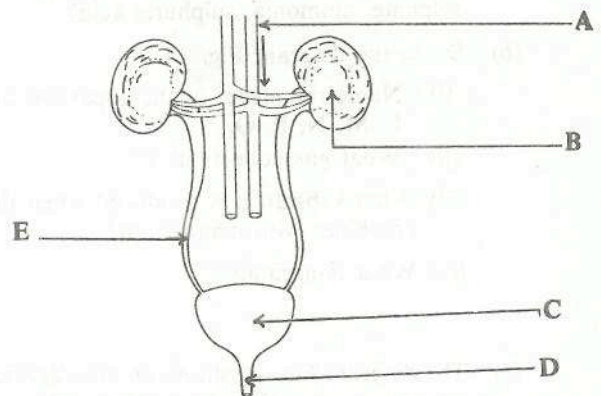


Fig. 19

10. (a) (i) What is the pH of a neutral solution?
- (ii) For what would you use blue litmus paper in the laboratory?
- (b) A flask is filled with ammonia gas and set up as in the diagram Fig. 20. Acid and indicator are added to the water in the beaker, which gives it a red colour. After a time the red liquid rushes into the flask where it changes colour.
- Why does the red liquid rush up?
 - Why is there a colour change?
- (c) If sulphuric acid and a solution of ammonia are mixed together and the product evaporated, a white crystalline substance remains. This substance is soluble in water and is used as a fertiliser.
- Name the substance.
 - Name one major element for plant growth in this substance.
 - Give one effect of calcium in the soil.
 - Why is it important for a fertilizer to be soluble in water?

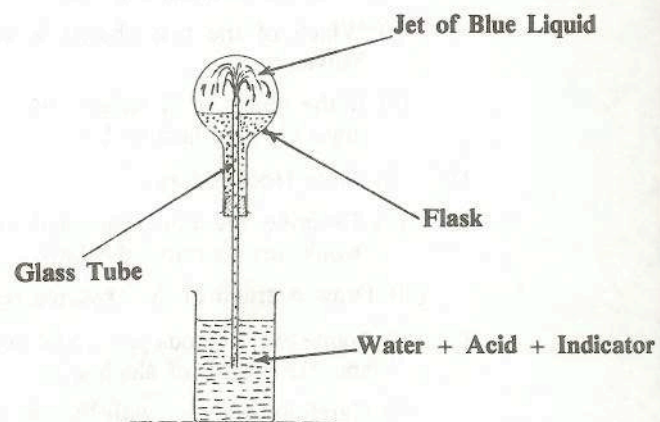


Fig. 20