

AN ROINN OIDEACHAIS  
INTERMEDIATE CERTIFICATE EXAMINATION 1991

M.53(b)

Examination Number

**I.S.C.I.P. EXAMINATION PAPER**

(for candidates who have followed the Integrated Science Curriculum Innovation Project)

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**A**

**SCIENCE - SYLLABUS A**

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**TUESDAY 11 JUNE - MORNING, 9.30 to 12.00**

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Section A is the same for all candidates and is on a separate sheet. It should be returned with Section B.

**Section B**

**Answer 4 questions.**

OVER

1 A Tick the correct answer.

The melting point of a substance is  $5^{\circ}\text{C}$  and its boiling point is  $80^{\circ}\text{C}$ . In what state does it exist when its temperature is  $70^{\circ}\text{C}$ ?

- (a) solid
- (b) liquid
- (c) ice
- (d) gas
- (e) alloy

B In what state (solid, liquid or gas) are these elements at room temperature ( $20^{\circ}\text{C}$ )?

Element	State
sulphur	_____
mercury	_____
chlorine	_____

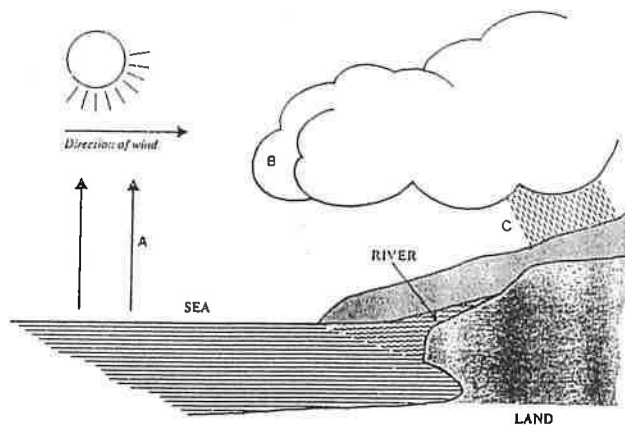
C A beaker containing some cubes of ice is heated. The ice cubes melt.

(i) The change of state is from \_\_\_\_\_ to \_\_\_\_\_

If the beaker of water is further heated, the water boils.

(ii) The change of state is from \_\_\_\_\_ to \_\_\_\_\_

The changes taking place in the diagram below make up the water cycle.



(ii) What processes take place at A, B and C?

A = \_\_\_\_\_

B = \_\_\_\_\_

C = \_\_\_\_\_

(iv) Name the piece of apparatus you would use in the laboratory to carry out process B.

\_\_\_\_\_

(v) Why is the word cycle used? \_\_\_\_\_

\_\_\_\_\_

2 A Tick the correct answer.

Which of the following is a pair of magnetic elements ?

- (a) calcium and copper
- (b) cobalt and iron
- (c) gold and copper
- (d) iron and iodine
- (e) sodium and cobalt

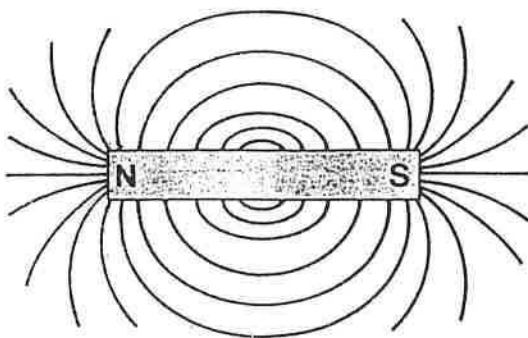
B Complete the following:

A compass shows which direction it is pointing in because it contains a magnet.

This is because the \_\_\_\_\_ acts as a giant magnet.

Like poles always \_\_\_\_\_ while unlike poles \_\_\_\_\_.

C



(i) The diagram shows the lines of force around a bar magnet. Indicate with arrows the **direction** of the lines of force.

(ii) Describe **two** ways in which you could make a magnet from a large nail.

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

(iii) What is a magnetic field? \_\_\_\_\_

\_\_\_\_\_

(iv) What is the difference between a bar magnet and an electromagnet? \_\_\_\_\_

\_\_\_\_\_

**3 A** Tick the correct answer.

Bases are substances which:

- (a) are elements
- (b) donate  $H^+$  (a proton)
- (c) are metals
- (d) turn blue litmus red
- (e) accept  $H^+$  (a proton)

**B** Match the word or phrase in Box X with the most suitable word or phrase in Box Y.

Box X	Box Y	Answer
1 acid	A sodium chloride	1 &
2 metal	B ammonia	2 &
3 base	C vinegar	3 &
4 salt	D mercury	4 &
	E water	

**C** (i) Use the correct words to complete the following sentences:

Pure water has a pH of \_\_\_\_\_.

When sodium is added to water it reacts with it to form \_\_\_\_\_

and \_\_\_\_\_.

The pH of the solution formed in this reaction is \_\_\_\_\_.

(ii) Write a balanced chemical equation for the reaction of sodium and water.

\_\_\_\_\_

4

**A** Tick the correct answer.

The water supply to our homes is purified by:

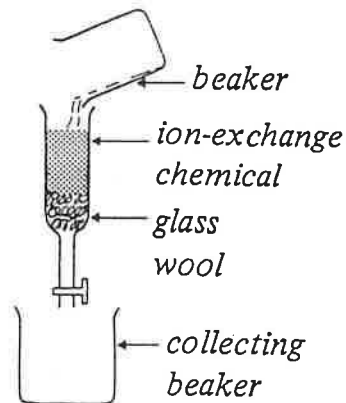
- (a) adding acid
- (b) adding chlorine
- (c) centrifuging
- (d) adding fluoride
- (e) sublimation

**B** Complete the table below, using formulas from this list:

ammonia, chlorine, hydrogen, sodium hydroxide, water.

Formula	Substance
H <sub>2</sub>	
H <sub>2</sub> O	
NH <sub>3</sub>	
NaOH	

**C** The diagram shows an ion-exchanger.



(i) What is hard water? \_\_\_\_\_

\_\_\_\_\_

(ii) Name two kinds of metal ions that may be present in hard water.

1 \_\_\_\_\_ 2 \_\_\_\_\_

(iii) The ion-exchange chemical contains ions of what metal? \_\_\_\_\_

(iv) How does the ion-exchanger work? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

OVER

**5 A** Tick the correct answer.

The gas which makes up approximately 20% of air is:

- (a) argon
- (b) carbon dioxide
- (c) nitrogen
- (d) oxygen
- (e) water vapour

**B** Complete the following:

Hydrogen gas is produced when \_\_\_\_\_ is poured on to a metal such as zinc or magnesium.

The test for hydrogen gas is \_\_\_\_\_.

This gas is much \_\_\_\_\_ than air, so a balloon filled with it will float very high in the air.

**C** Air is a mixture mainly composed of the following gases:

**nitrogen, oxygen, carbon dioxide, water vapour, helium, argon**

(i) Name two elements from the list above.

\_\_\_\_\_  
\_\_\_\_\_

(ii) Which two gases from the list above are compounds?

\_\_\_\_\_  
\_\_\_\_\_

(iii) Which two gases from the list above are noble (rare) gases?

\_\_\_\_\_  
\_\_\_\_\_

(iii) What percentage of air is made up of nitrogen? Underline the correct answer in this list:

**1%    20%    55%    79%**

(iv) When coal is burned, name two substances that are produced which cause air pollution.

1 \_\_\_\_\_  
2 \_\_\_\_\_

6 A Tick the correct answer.

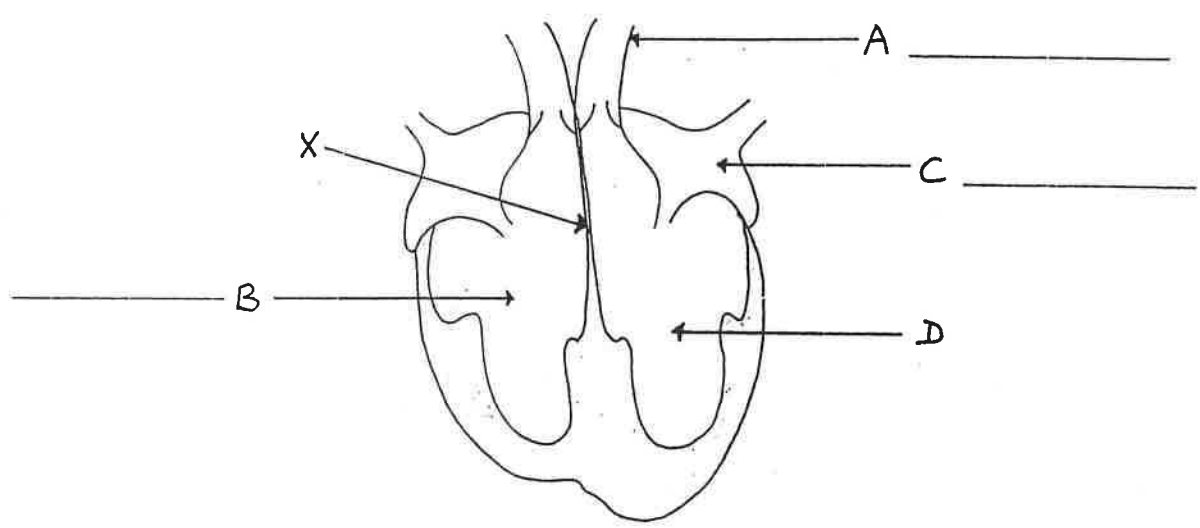
The red colour in blood is:

- (a) chlorophyll
- (b) platelets
- (c) plasma
- (d) haemoglobin
- (e) glucose

B Match each word or phrase in Box X with the most suitable word or phrase in Box Y.

Box X	Box Y	Answer
1 right auricle	A receives blood from the body	1 &
2 artery	B pumps blood to the body	2 &
3 capillary	C carries blood from the heart	3 &
4 left ventricle	D carries blood from the lungs	4 &
	E distributes blood to the cells	

C

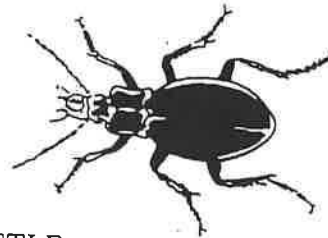


- (i) On the diagram of the heart fill in the names of the parts marked A, B and C. \_\_\_\_\_
- (ii) When the blood leaves B, what gas does it carry? \_\_\_\_\_
- (iii) When the blood leaves D, what gas does it carry? \_\_\_\_\_
- (iv) What is the name given to the part marked X? \_\_\_\_\_
- (v) If part X has a break in it, it is called a "hole in the heart". Why is this a dangerous condition?  
 \_\_\_\_\_  
 \_\_\_\_\_

7 A Tick the correct answer.

The animal shown in the diagram is a:

- (a) carnivore
- (b) herbivore
- (c) producer
- (d) parasite
- (e) decomposer



**GROUND BEETLE**

*Found* under logs, stones  
*Eats* small animals e.g. insect larvae  
*Eaten by* birds  
*Size* 10 - 15 mm

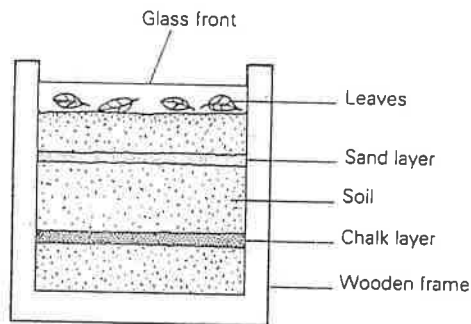
B Complete the table below, using words from this list:-

**mouth, Intestine, ring, nerve cord, skin**

Part of earthworm	What it does
	digests food
	takes in food
	helps in reproduction
	carries messages around the body

C The diagram shows a wormery which was set up to study the life of the earthworm.

Six earthworms were put in and one side was covered to keep out the light.  
 When the wormery was examined again, all the earthworms were on the dark side.



(i) Which two characteristics of living things does this show?

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(ii) Earthworms can move better on sandpaper than on glass.

What structure on their bodies helps them to do this? \_\_\_\_\_

(iii) When the earthworms had been in the wormery for a week, the layers of sand and soil were mixed up. How did this happen? \_\_\_\_\_

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(iv) Name one way earthworms useful in the soil. \_\_\_\_\_

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**8 A** Tick the correct answer.

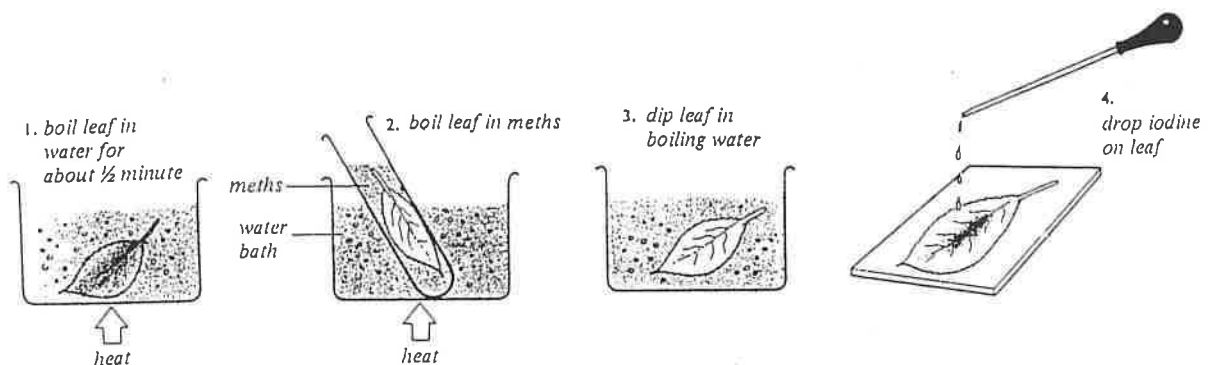
Only one of the following statements is true of **all** living things. Which is it?

- (a) they are carnivores
- (b) they have chlorophyll
- (c) they have legs
- (d) they can reproduce
- (e) they need light

**B** Match each word or phrase in Box X with the most suitable word or phrase in Box Y.

Box X	Box Y	Answer
1 lenticel	A takes in water for the plant	1 &
2 root hair	B stores starch	2 &
3 stoma	C allows exchange of gases in the leaf	3 &
4 cuticle	D allows oxygen into woody stems	4 &
	E waterproof layer on stems and leaves	

**C** A plant was left standing in the sunlight for several hours. A leaf was removed, dipped into boiling water for 1/2 minute. It was then placed in hot methylated spirits, put back into boiling water and then put into iodine solution.



(i) What colour is the leaf when it is removed from the methylated spirits (alcohol)?

\_\_\_\_\_

(ii) What substance has been removed from the leaf? \_\_\_\_\_

(iii) Why do we dip the leaf into boiling water at stage 3? \_\_\_\_\_

\_\_\_\_\_

(iv) What is iodine used to test for? \_\_\_\_\_

(v) What colour does the leaf go when dipped in iodine? \_\_\_\_\_