* 766358901 *

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge Checkpoint

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

* 8 6 9 5 2 1 9 5 1 7 *

SCIENCE **1113/01**

Paper 1 **April/May 2009**

45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

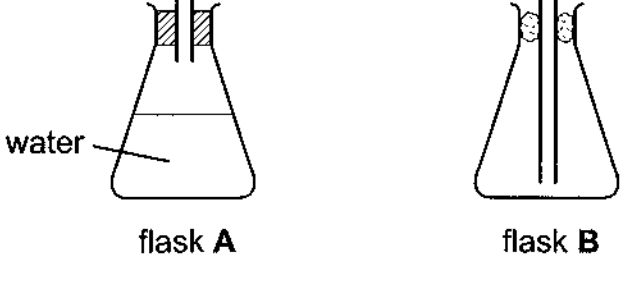
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
You should show all your working in the booklet.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

This document consists of **13** printed pages and **3** blank pages.

1 The diagram shows some apparatus.



Flask **A** is kept at 40°C and flask **B** is kept at 5°C.

After some time, water forms in flask **B**.

Complete the sentences to explain why this happens using some of the following words.

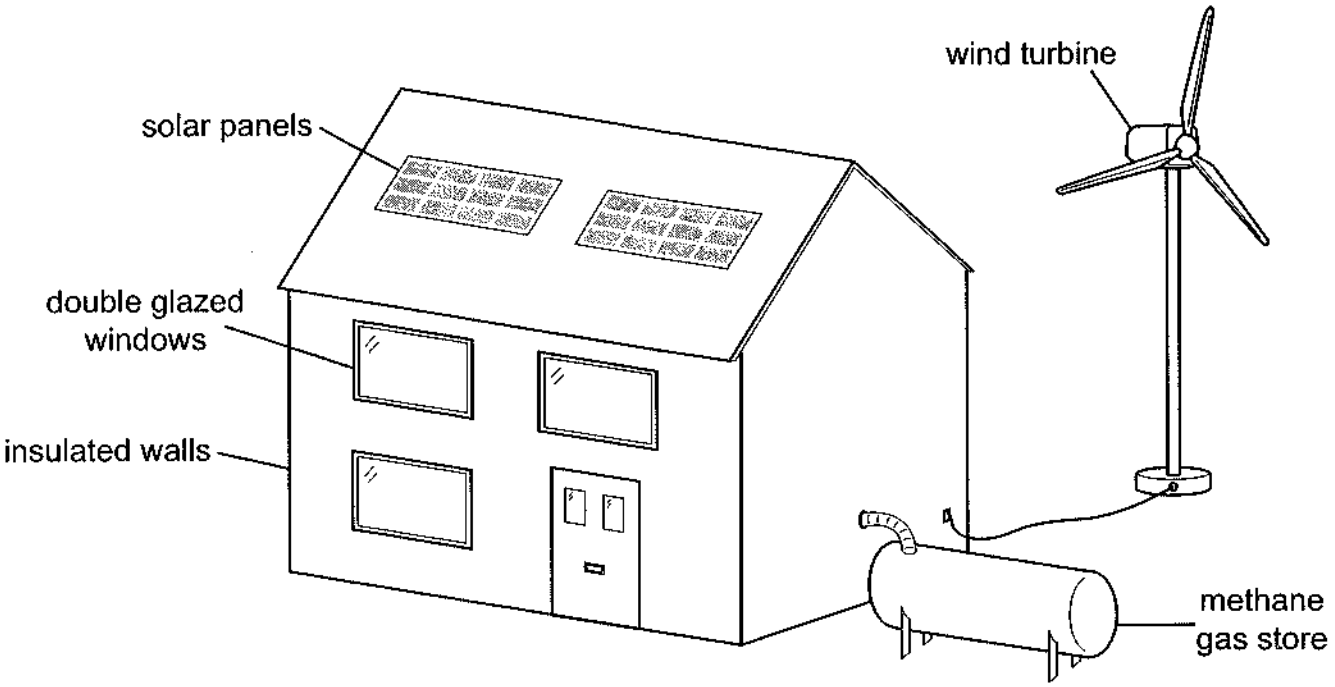
condenses **boils** **diffuse** **evaporates** **freezes** **melts**

In flask **A**, water ..... . Water molecules .....

from flask **A** to flask **B**. The water ..... in flask **B**.

[3]

2 **(a)** The diagram shows a house that uses renewable and non-renewable sources of energy.



Name two labelled parts that use renewable (alternative) sources of energy.

1 .....

2 ..... [2]

(b) Much of the electricity we use is generated by burning coal, which is a fossil fuel.

(i) What is a fossil fuel?

.....

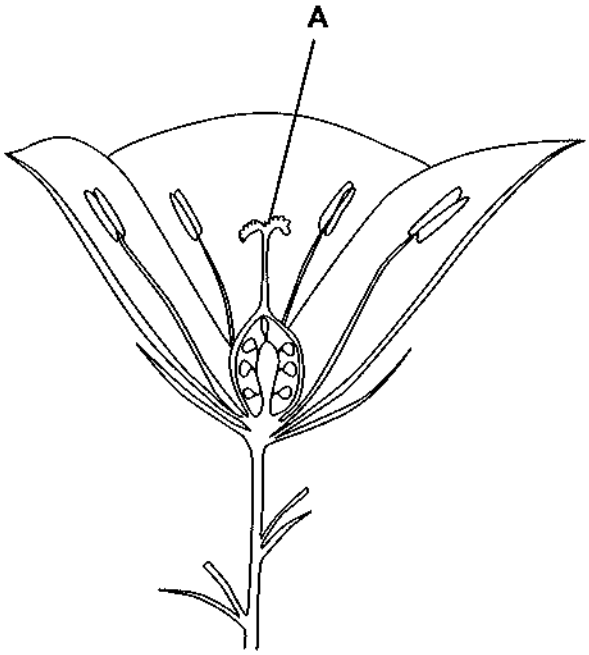
..... [1]

(ii) Explain why it is important that we find alternative sources of energy rather than rely on coal.

.....

..... [1]

3 The diagram shows a section of a flower.



(a) Name the part labelled **A**.

..... [1]

(b) Explain what is meant by pollination.

.....

..... [2]

(c) Tick the boxes that show the features of insect pollinated flowers.

Feathery anthers	☐
Sticky pollen	☐
Contain nectar	☐
Small petals	☐
Brightly coloured flowers	☐

[2]

4 **(a)** Use lines to join up the boxes containing the words, element, compound and mixture, to a box containing an example of each.

compound	gold
element	steel
mixture	water

[2]

(b) From the list of chemical symbols, select the correct one for each of the elements shown.

C **Ca** **Cl** **Co** **Cr**

chlorine .....

calcium .....

carbon .....

[2]

5 **(a)** One use for copper is electrical wiring.
Place a tick next to the statement which is **not** a property of copper.

good conductor of electricity ☐

has a high melting point ☐

can be bent into a fixed shape ☐

poor conductor of heat ☐

[1]

(b) A compound has the formula $MgSO_4$.
Name the elements contained in it.

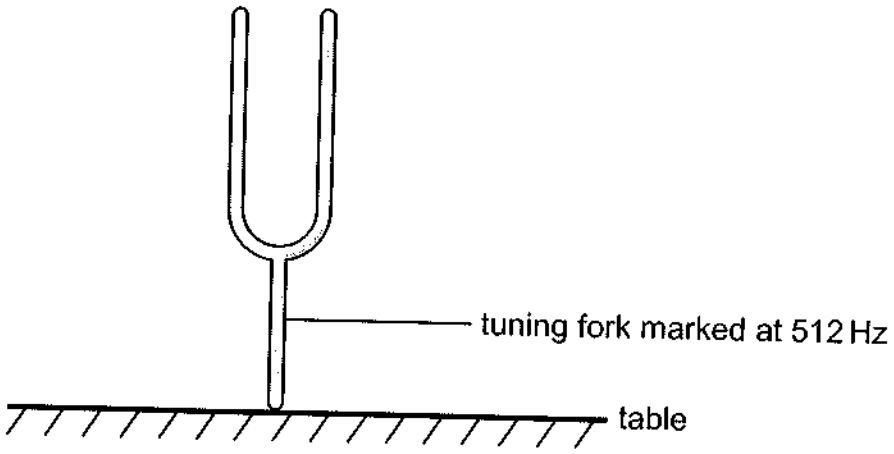
.....

.....

..... [1]

6 The diagram shows a tuning fork which emits a single tone when it is sounded.

The tuning fork was sounded by banging the prongs and then putting the base on a table top as shown.



(a) What does the tuning fork do to produce a sound wave in the air near the fork?

.....

[1]

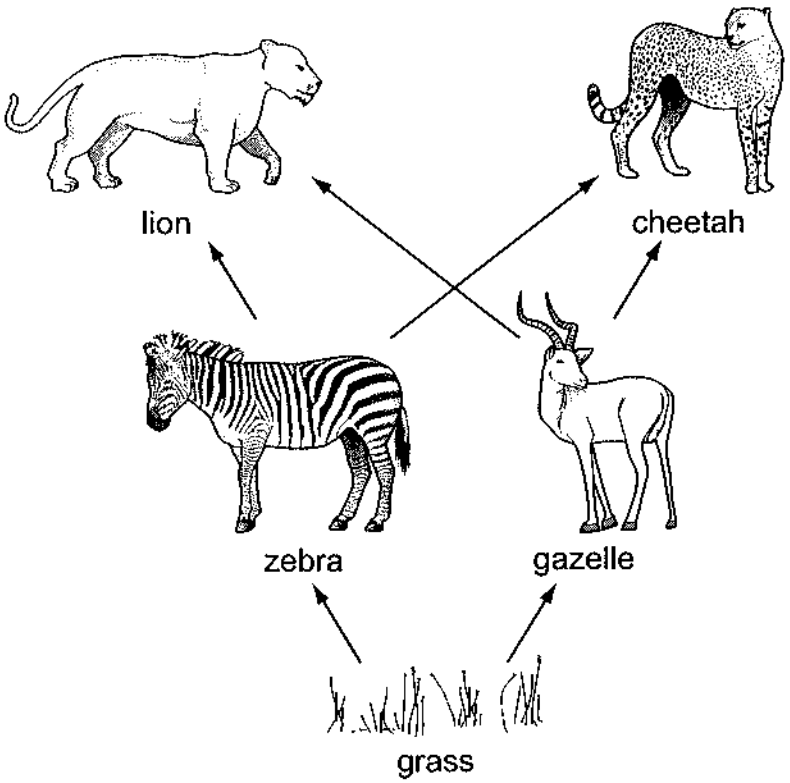
(b) Complete the following sentences by using words from the list.

amplitude **frequency** **loudness** **pitch**

The fork has a ..... of 512 Hz and the tone produced has a ..... of C.

When the fork is hit harder this increases the ..... of the wave produced and increases the ..... of the sound. [4]

7 The diagram shows part of an African food web.



(a) (i) What do the arrows on a food web show?

.....

[1]

(ii) Which of the organisms in this web compete for grass?

.....

[1]

(iii) Which of the organisms in this web are predators?

.....

[1]

(b) Hyenas are scavengers.
They eat the parts of dead zebras and gazelles which other animals have not eaten.

Use this information to add hyenas into the food web above.

[1]

8 The following materials were used to determine the order of reactivity of copper, magnesium and zinc.

Materials supplied:

copper	-	pink-brown powder
magnesium	-	grey ribbon
zinc	-	grey powder
copper sulphate solution	-	blue
magnesium sulphate solution	-	colourless
zinc sulphate solution	-	colourless

Each metal was added to each solution.

Three of the results are shown in the table.

mixture	results
zinc + copper sulphate	pink-brown solid formed, colourless solution
copper + magnesium sulphate	pink-brown solid remains, colourless solution
magnesium + zinc sulphate	grey powder formed, colourless solution

(a) Put copper, magnesium and zinc in order of reactivity.

most reactive .... least reactive ..... [1]

(b) What type of chemical reaction is taking place in these experiments?

..... [1]

(c) The relative reactivity of metals can also be determined by putting the metals into dilute acid.

Which metal or metals listed above will **not** react with dilute hydrochloric acid?

..... [1]

9 **(a)** The diagram shows a magnet being brought close to a piece of steel.

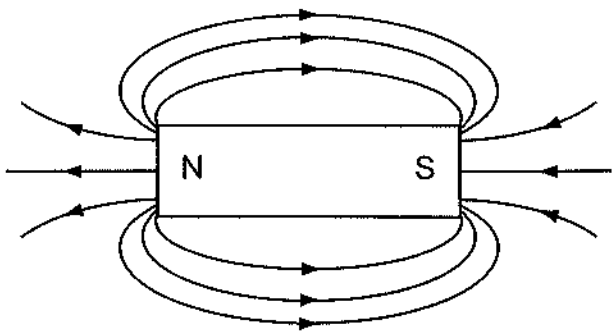
The piece of steel is repelled by the magnet.

Is this piece of steel a magnet?
Explain your answer.

.....

..... [2]

(b) The diagram shows the magnetic field pattern around a magnet.



Complete the diagram by drawing the magnetic field pattern between the two magnets.

[2]

10 A student is investigating one of the seven characteristics of living organisms.
She uses a drinking straw to bubble some of her breath through limewater.

(a) The limewater turns from clear to cloudy.

(i) Name the gas in the student's breath which causes the limewater to change.

..... [1]

(ii) Name the process which produces this gas in living cells.

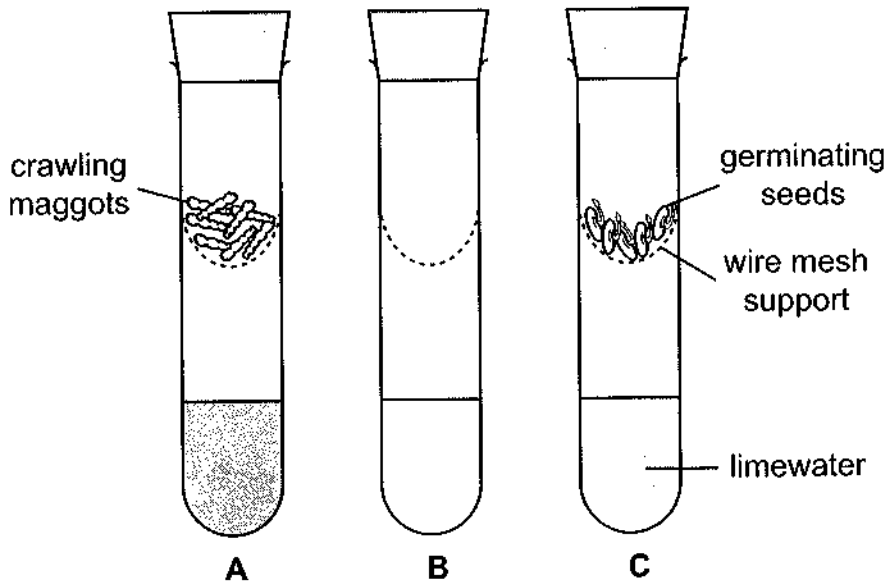
..... [1]

The student decides to investigate the same process in some other living things.
She uses maggots and germinating seeds.

The student puts the same amount of clear limewater in three test tubes **A**, **B** and **C**.
She puts 20 crawling maggots in tube **A**.
She does not put any living things in tube **B**.
She puts 20 germinating seeds in tube **C**.

She seals the three tubes using rubber bungs.
The tubes are left in the lab until the end of the day.

The diagram shows the results of the student's experiment.



(b) (i) How does the limewater in tube **A** differ from the limewater in tube **C**? Suggest a reason for this difference.

Difference .....

Reason .....

..... [2]

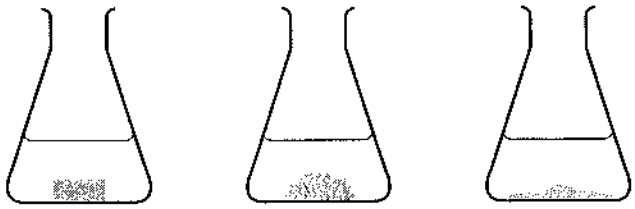
(ii) What was the purpose of tube **B**?

..... [1]

(iii) Describe one thing which the student did to make this a fair test.

..... [1]

11 The chemical name for marble is calcium carbonate.
Equal masses of marble, marble chips and powdered marble are added to equal volumes of dilute hydrochloric acid as shown in the diagram below.



(a) (i) Which of them reacts the fastest?

..... [1]

(ii) Give a reason for your answer.

..... [1]

(b) Complete the word equation for the reaction of dilute hydrochloric acid and calcium carbonate.

hydrochloric acid	+	calcium carbonate	→		+		+	

[2]

12 A student investigates the density of different metals. The pieces of metal are all the same size.
To find out the density he needs to measure the mass and the volume.

(a) What equipment could he use to measure these?

Mass: ..... [1]

Volume: ..... [1]

He places one of the metals in a very hot oven for a few hours. When the metal is very hot, he carefully measures the mass and volume again.

(b) What has happened to his readings?
Tick one box in each row.

	Increase	Decrease	Stay the same
Mass			
Volume			

[2]

(c) As the metal is heated up, the particles inside it change their behaviour.
What happens to the particles as they get hotter?

..... [2]

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