Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
November 2011

Science B — SCB1FP

Unit 1 My World

Written Paper

F

Tuesday 8 November 2011 1.30 pm to 2.30 pm

For this paper you must have:
- a ruler.

You may use a calculator.

Time allowed
- 1 hour

Instructions
- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You are reminded of the need for good English and clear presentation in your answers.
- Question 4(b) should be answered in continuous prose. In this question you will be marked on your ability to:
  – use good English
  – organise information clearly
  – use specialist vocabulary where appropriate.

Advice
- In all calculations, show clearly how you work out your answer.

Answer **all** questions in the spaces provided.

1 Many useful substances are extracted from the Earth.

1 (a) Draw a line from each substance to the correct description of the substance.

Substance	**Description**
Iron	A mixture
Salt	A compound
Crude oil	An ion
	An element

(3 marks)

1 (b) Which **one** of the metals in the list below can be used straight from the ground?

Draw a ring around **one** answer.

calcium **gold** **magnesium** **sodium**

(1 mark)

1 (c) Use words from the box to complete the sentences.

reduction	**electrolysis**	**carbon**	**mining**
oxygen	**oxidation**	**recycling**	

Before metal ores are processed, the metal ores are extracted from the ground by ..... .

When iron ore is heated with ..... , iron is obtained.

Reactions that remove metals from metal ores are called ..... reactions.

(3 marks)

7

Turn over for the next question

2 The Earth's crust is made of several large pieces.

These pieces are called tectonic plates.

Tectonic plates move very slowly.

2 (a) Which effects can the movement of tectonic plates cause?

Tick (✓) **one** box.

earthquakes **and** tornadoes ☐

earthquakes **and** global warming ☐

earthquakes **and** volcanoes ☐

(1 mark)

2 (b) The following sentences are about the beginnings of Earth's atmosphere.

Draw a ring around the correct answer in each box to complete each sentence.

During the first [billion / million / thousand] years on Earth there was a lot of volcanic activity.

The main gas released because of volcanic activity was [carbon dioxide. / nitrogen. / oxygen.]

Oceans were formed when [carbon dioxide / methane / water] condensed.

(3 marks)

2 (c) The percentages of gases in the atmosphere have changed since the Earth formed.

Complete the sentences.

Since the Earth formed, the percentage of carbon dioxide

has ..... and the percentage of oxygen

has ..... .

The changes to carbon dioxide and oxygen percentages have been caused

by a process called ..... .

(3 marks)

2 (d) An earthquake under the sea can produce a large wave called a tsunami. A lot of damage can be caused when a tsunami reaches the land.

It is easier to predict a tsunami than it is to predict an earthquake.

Suggest **two** reasons why.

.....

.....

.....

.....

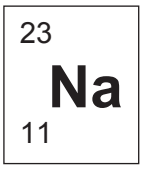
(2 marks)

9

Turn over for the next question

3 The periodic table shows all the known elements.

3 (a) The diagram shows some information about an element in the periodic table.



3 (a) (i) Name the element in the diagram.

.....

(1 mark)

3 (a) (ii) How many neutrons does the element in the diagram have?

Draw a ring around the correct answer.

11 **12** **23**

(1 mark)

3 (a) (iii) How many protons does the element in the diagram have?

Draw a ring around the correct answer.

11 **12** **23**

(1 mark)

3 (b) What is the meaning of the *mass number* of an element?

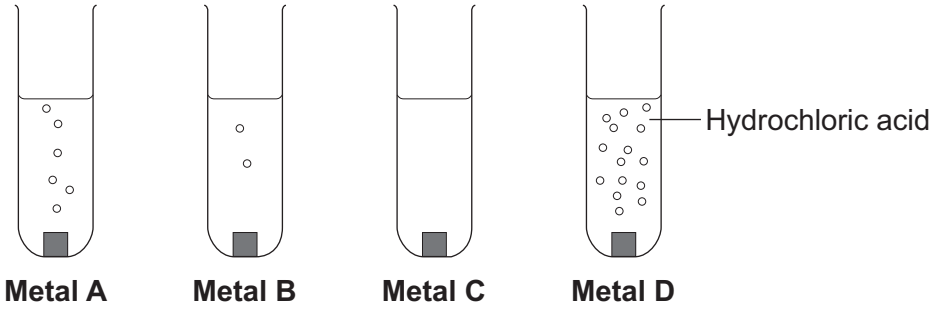
.....

.....

(1 mark)

3 (c) A student tested the reactivity of four different metals, **A**, **B**, **C** and **D**. The student put a piece of each metal into hydrochloric acid.

The results are shown in the diagram.



3 (c) (i) Name **two** variables that the student should keep the same in the experiment.

.....

.....

(2 marks)

3 (c) (ii) Put metals **A**, **B**, **C** and **D** in order of reactivity, starting with the **most** reactive metal.

Most reactive .....

.....

.....

Least reactive .....

(2 marks)

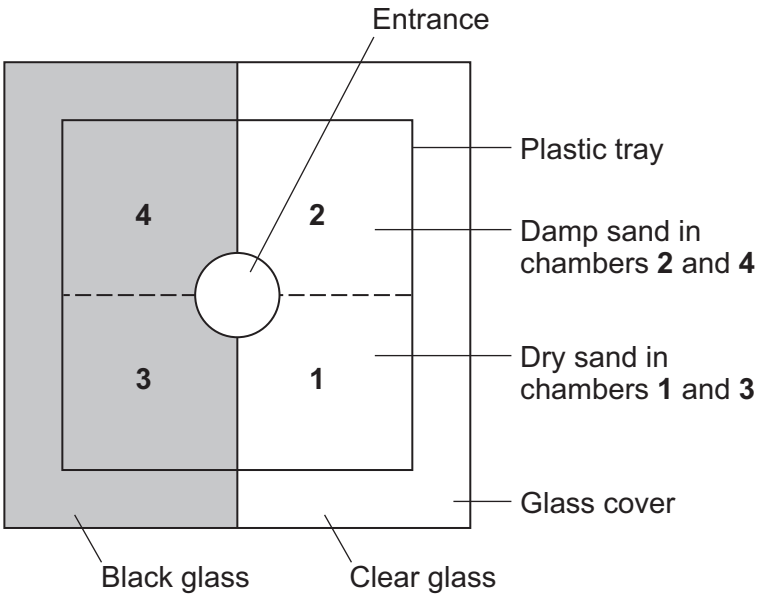
8

Turn over for the next question

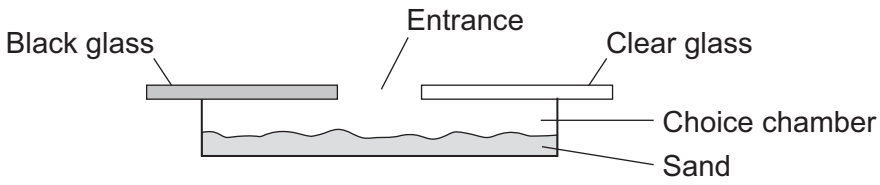
4 (a) Woodlice are often used in experiments to find out about the conditions that organisms like to live in.

4 (a) (i) A student did an experiment using a choice chamber to find out what conditions woodlice like to live in.

View from above



View from the side



Sentences **A**, **B**, **C** and **D** show the stages in the experiment. They are not in the correct order.

A The number of woodlice in each section was recorded.

B 100 woodlice were collected from the school grounds.

C The choice chamber was put in the light and left for 30 minutes.

D The woodlice were put into the choice chamber.

Put the sentences **A**, **B**, **C** and **D** in the correct order in the boxes below.

(2 marks)

4 (a) (ii) The student did the experiment three times. His results are shown in the table.

Chamber number	Condition in chamber	Number of woodlice in chamber			
		Experiment 1	Experiment 2	Experiment 3	Mean
1	Light, dry	0	0	1	0
2	Light, damp	1	0	2	1
3	Dark, dry	4	3	3	3
4	Dark, damp	95	97	94	

Calculate the mean number of woodlice found in chamber **4**.

.....

.....

Mean = ...

(1 mark)

4 (a) (iii) Use the results to suggest the conditions that woodlice prefer to live in.

.....

.....

(1 mark)

Question 4 continues on the next page

4 (b) *In this question you will be assessed on using good English, organising information clearly and using scientific terms where appropriate.*

The photographs show an Arctic fox and a Desert fox.

The Arctic fox has white fur and lives in the Arctic. The Desert fox is sand coloured and lives near the equator.

Arctic fox
Height 25–30 cm
Length 75–115 cm
Weight 3–8 kg

Desert fox
Height 18–22 cm
Length 40–70 cm
Weight 1–1.5 kg

Each fox is adapted to survive in its own environment.

Use the information to explain how.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

10

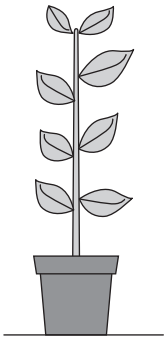
Turn over for the next question

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

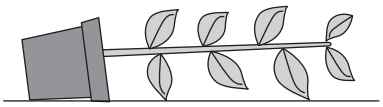
5 A student wanted to investigate what happens to plants when their growing conditions are changed.

The student grew two plants in pots.

She then put the plants in the dark for two days. She left one pot upright and put the other one on its side, as shown in the diagram.

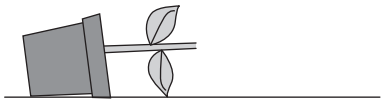


Plant A
Pot left upright



Plant B
Pot put on its side

5 (a) Complete the diagram below to show what you would expect Plant **B** to look like after two days in the dark.



(2 marks)

5 (b) Explain why Plant **B** responded in the way that you have drawn.

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

5 (c) What is this response called?

.....

(1 mark)

5 (d) Suggest why the student put the plants in the dark.

.....

.....

(1 mark)

8

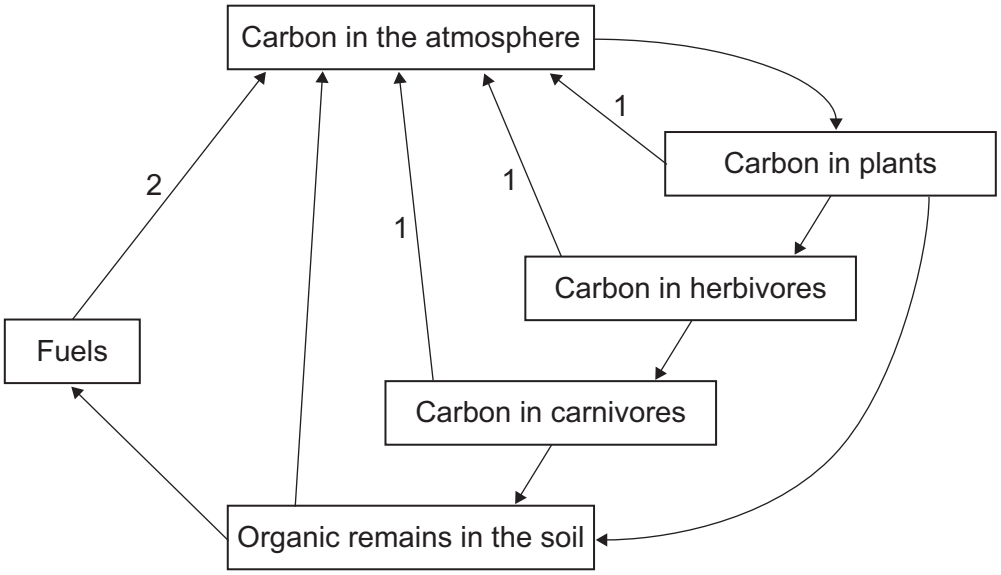
Turn over for the next question

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

6 Carbon is an essential element in all living organisms. Carbon is found in many compounds.

6 (a) The diagram shows the carbon cycle.



6 (a) (i) Name process 1.

.....

(1 mark)

6 (a) (ii) Name process 2.

.....

(1 mark)

6 (a) (iii) Name a group of organisms that break down organic remains in the soil.

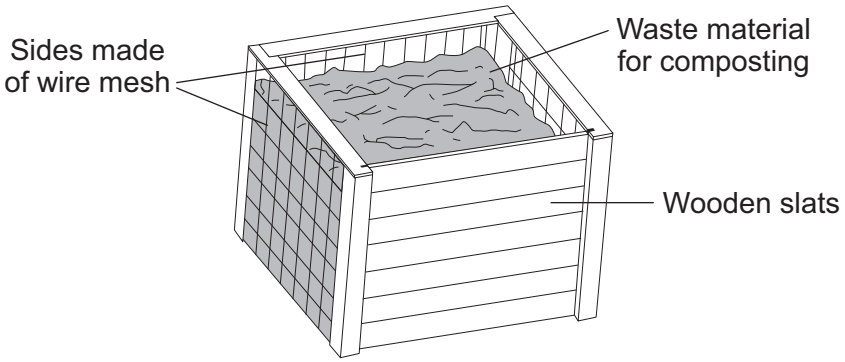
.....

(1 mark)

Question 6 continues on the next page

6 (b) Household waste can be made into compost. The compost is used in gardens.

The diagram shows a compost heap.



What conditions must the waste be kept in to make sure that it breaks down into compost?

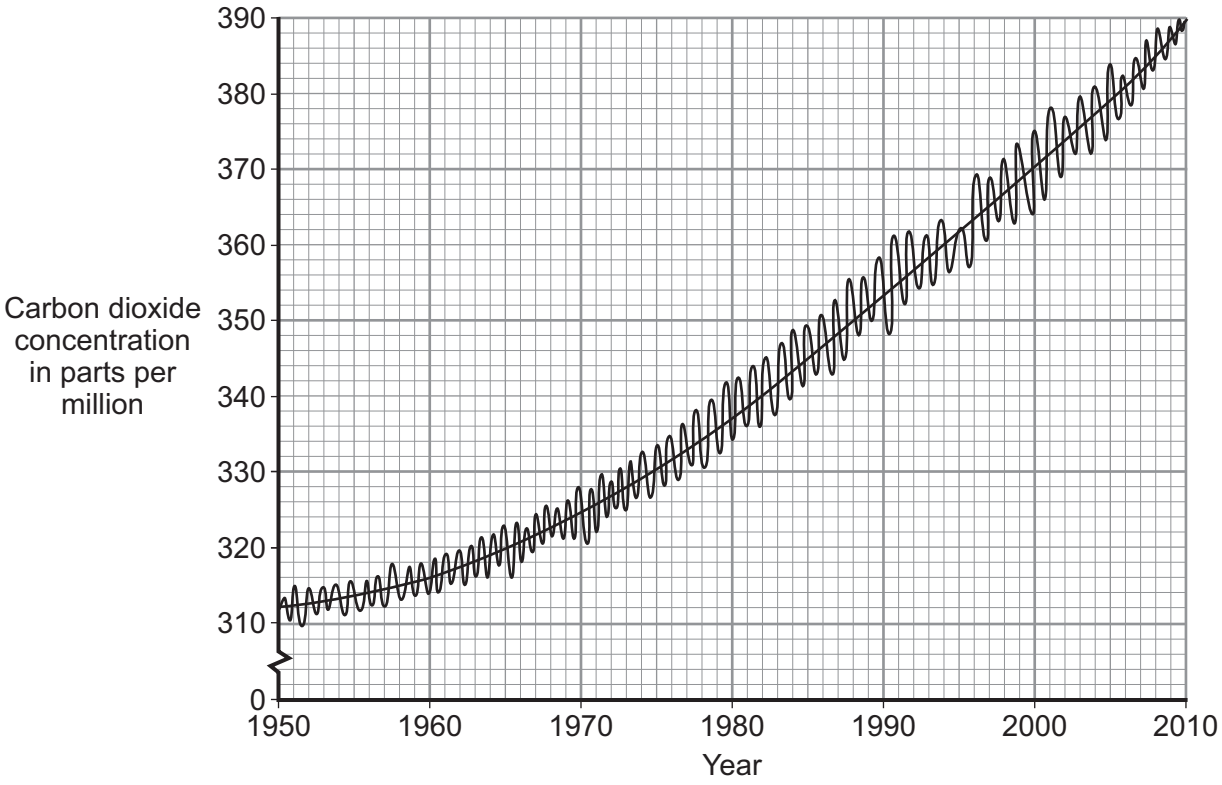
.....

.....

.....

(3 marks)

6 (c) The graph shows the changes in atmospheric carbon dioxide concentration measured at Mauna Loa, Hawaii, between 1950 and 2010.



Some scientists believe that increased carbon dioxide concentration in the atmosphere is linked to global warming.

Suggest why other scientists think that the evidence in the graph is not enough to support a link between carbon dioxide concentration and global warming.

.....

.....

.....

.....

.....

.....

(3 marks)

9

7 Astronomers study objects in the night sky.

7 (a) Use your knowledge of the universe to complete the sentences.

The nearest star to the Earth is called the ..... .

The nearest natural object to the Earth in space is the..... .

The Solar System includes the ..... and

the ..... .

The Solar System is part of the Milky Way. The Milky Way is a ..... .

(5 marks)

7 (b) Astronomers study light waves from stars using telescopes.

The Doppler effect occurs when the source of a wave moves away from the observer.

Describe the Doppler effect.

.....

.....

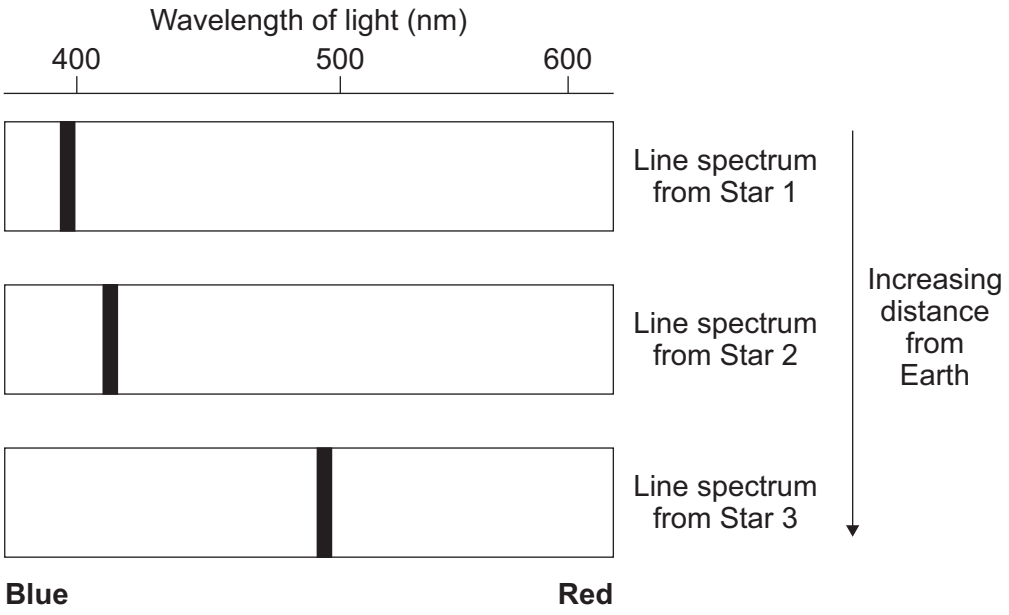
.....

.....

(2 marks)

7 (c) The visible part of the electromagnetic spectrum from a star includes a dark line. This line is at a specific wavelength.

The diagram shows the position of the dark line in the spectra from three stars.



How does the evidence in these spectra support the theory that the universe is expanding?

.....

.....

.....

.....

.....

(2 marks)

9

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Question 4: Photographs Thinkstock.com