NAME:	SCIENCE TEACHER: (circle code)	10A

SCIENCE

Year 10 Examination 2013

10A – 40 marks

Make sure that you have answered all the questions in paper 10B before you start this paper.

Time allowed for both examinations: 2 hours

Answer all questions in the spaces provided on the paper.

Show all your working in calculations.

Give units for all answers (eg kg or m) unless they are already provided.

Check you have pages 1-11.

For Teacher Use

Question	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*Total*
Marks gained												
Marks available	*6*	*3*	*2*	*3*	*3*	*4*	*2*	*6*	*6*	*2*	*3*	*40*

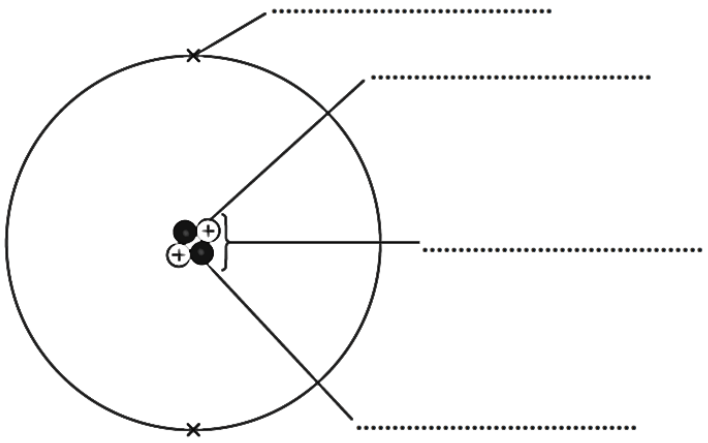
Question One [6 marks]

(a) Draw **one** line from each particle to the correct description of the particle.

Particle	Description
Electron	Has a negative electrical charge
Proton	Has two atoms mixed together
Molecule	Is found in the nucleus of an atom
	Has two or more atoms bonded together

(b) The diagram shows the model of an atom.
Use the correct answers from the box to label it.

Nucleus	electron	positron	neutron	proton



Here is some information about an atom of sodium.

23
Na
11

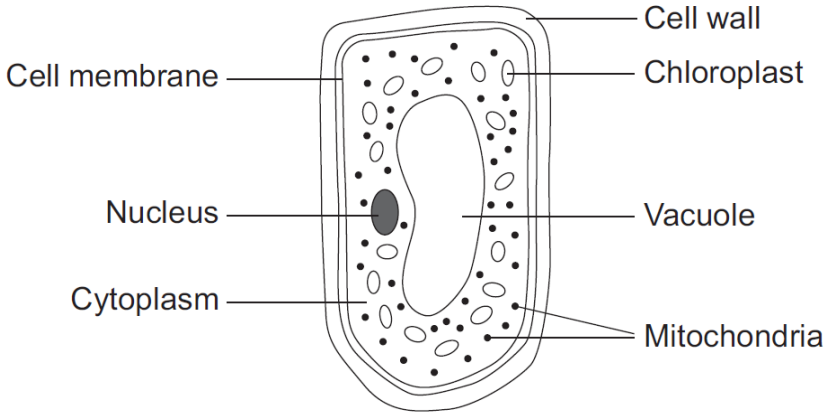
(c) What is the atomic number of sodium? _____

(d) What is the mass number of sodium? _____

(e) How many neutrons are there in a sodium atom? _____

Question Two [3 marks]

The diagram shows a cell from a plant leaf.



(a) Name the part of this cell that:

(i) controls the passage of substances in and out of the cell.

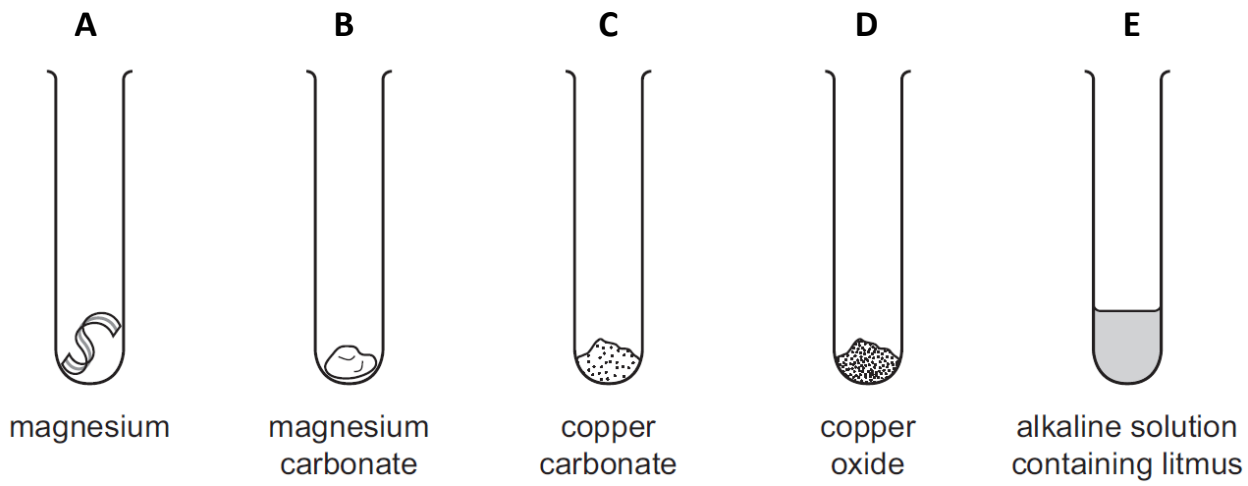
(ii) is filled with cell sap.

(b) Give the names of two parts of the leaf cell that would **not** be found in a human cheek cell.

1.
2.

Question Three [2 marks]

A student added a solution of the same dilute acid to each of the test-tubes P to T shown below.



Complete the table by matching the test-tubes, A, B, C, D and E, with the observations which are made when the dilute acid reacts with the contents.

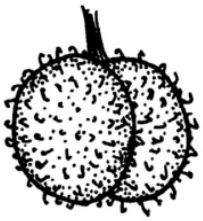
You may use each letter **once, more than once or not at all**.

Observations	Test tube (s)
The mixture turns red when a few millilitres of acid have been added	
A colourless gas is given off	
A blue solution is formed	
A colourless gas is given off which pops when ignited	

Question Four [3 marks]

The table below contains information about the flowers, fruits and seeds of some common plants.

The diagrams are not all the same scale.

Plant	Flowers		Fruit or seeds	
Bramble		scented white petals with nectar		juicy
Goosegrass		white petals with nectar		hooked
Sycamore		green petals and no scent or nectar		winged

Complete the following table to show the method of pollination and seed dispersal used by each plant.

Put a tick (✓) in the correct boxes.

	Method of pollination		Method of seed dispersal		
Plant	Wind	Insect	Wind	Animal (eats it)	Animal (sticks to fur)
Bramble					
Goosegrass					
Sycamore					

Question Five [3 marks]

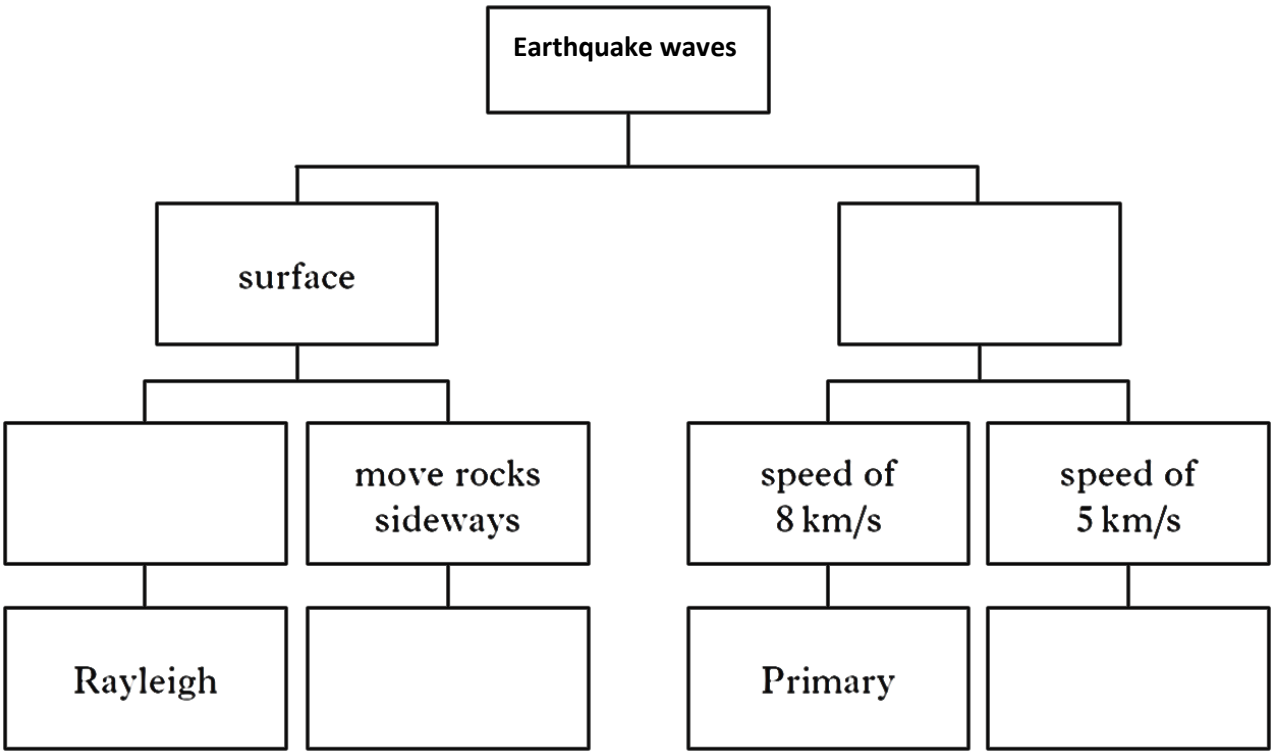
(a) Complete the following sentences. Choose from:

Richter ● boundary ● tectonic ● seismometer ● tidal

Volcanoes and earthquakes are caused by movement at the edge of _____ plates. Earthquakes are recorded on an instrument called a _____ . The size of earthquakes is measured on the _____ scale.

(b) Earthquakes cause different types of waves in rocks. These are either surface waves or body waves.

There are two types of surface waves. Rayleigh waves move rocks upwards and Love waves move rocks sideways. Body waves can be Primary or Secondary. Primary waves travel at a speed of 8 km/s but Secondary waves travel at a speed of 5 km/s. Use this information to complete the following key.



Question Six [4 marks]

Universal Indicator solution was shaken with four soil samples **A**, **B**, **C** and **D**.

The colour of Universal Indicator at different pH values is given below.

Colour	red	orange	yellow	light green	dark green	dark blue	purple
pH	1	3	5	7	9	11	13

(a) Use this information to complete the table below.

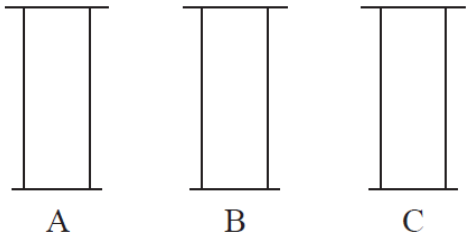
soil sample	colour	pH	acidic, alkaline or neutral
A		3	
B	dark blue		alkaline
C		7	
D	yellow		acidic

(b) Which soil sample (**A**, **B**, **C** or **D**) would be best for growing garlic which needs soil with pH 5? (Circle your answer).

A B C D

Question Seven [2 marks]

The gas jars A, B and C each contain a different gas.
A pupil carried out some tests on the gases in the gas jars A, B and C.
The gases were hydrogen, oxygen and carbon dioxide.



Complete the table below about the tests for these gases.

Gas jar	Test	Result	Name of gas
A	lighted splint		hydrogen
B		turns milky	
C	glowing splint	relights	

Question Eight [6 marks]

(a) Complete the word equation for photosynthesis.

water + _____ → glucose + _____

(b) Explain why plants need light for photosynthesis.

A student fixed a piece of black paper over a leaf, which was still attached to the plant.

He left the plant in the sun for two days.

He then removed the leaf from the plant and tested it for starch, after removing the black paper.

(c) Use the letters given to list the correct sequence of the steps he took.

A Add iodine solution to the leaf.

B Boil some water and then turn the Bunsen off.

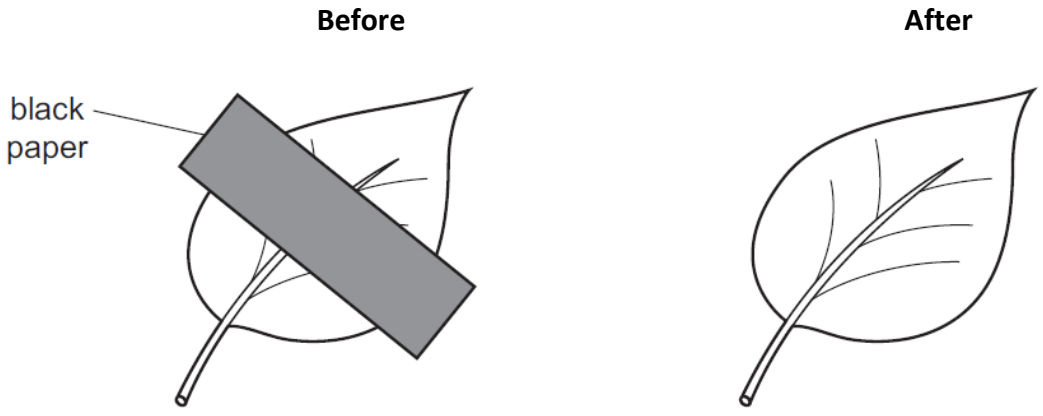
C Dip the leaf into boiling water to soften it.

D Place the leaf in hot ethanol.

E Spread the leaf on a white tile.

B → ☐ → ☐ → **E** → ☐

The diagram shows the leaf before and after he did the starch test.

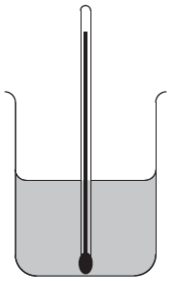


(d) Complete the diagram of the leaf **after testing**.

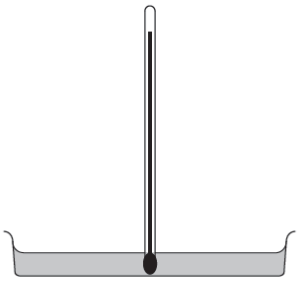
Use labels to show which parts would look orange-brown (contain no starch) and which parts would look blue-black (contain starch).

Question Nine [6 marks]

100 mL of boiling water was placed in each container at the same time.



BEAKER



DISH

The temperature of the water was taken every minute.

Here are the results.

Time in minutes	0	1	2	3	4	5
Temp of water in beaker (°C)	100	90	82	74	66	58
Temp of water in dish (°C)	100	85	72	61	52	46

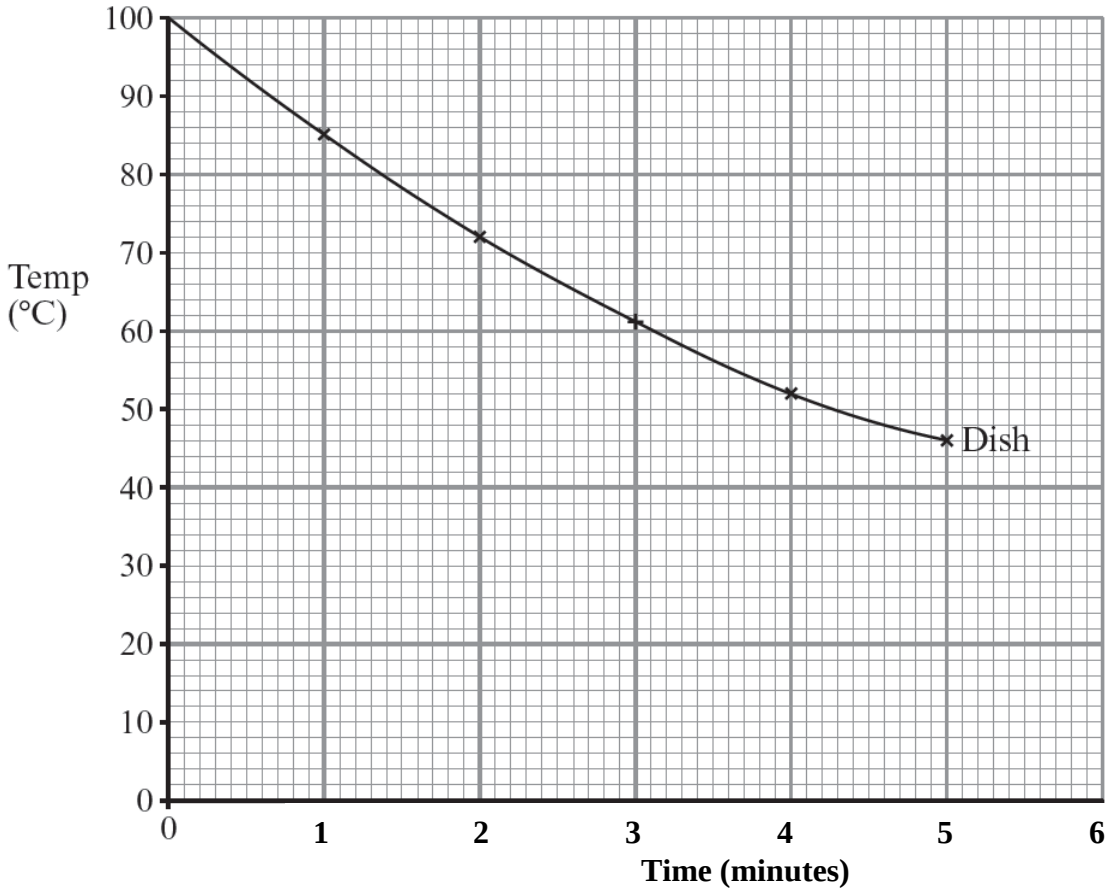
(a) What was the **temperature** of the water in the dish after **5 minutes**?

(b) What **two** things must be kept the same at the start of the experiment?

- ❑ shape of dish
- ❑ temperature of water
- ❑ volume of water
- ❑ thermometer

(c) How much did the temperature of the water in the beaker **go down** in 5 minutes?

(d) Draw a graph of the results for the **beaker**.
Remember to join the points together with a line. The graph of the results for the dish has been drawn for you.



(e) Which **cooled down more quickly**, the dish or the beaker?

Question Ten [2 marks]

Each small box contains a magnet. The magnets all different. Ella tests the strength of each by picking up tacks. The diagrams show her results:

(a) Which box contains the **strongest** magnet?

(b) Explain your answer.

Question Eleven [3 marks]

Rearrange these part sentences to make **three** true sentences about an **epicentre, seismometer** and a **focus**.

The first one has been done as an example.

Start	Middle	End
A fault …	is an instrument …	above the focus.
The epicentre …	is the point on the Earth's surface …	used to measure earthquakes.
The focus …	is the scale used to measure …	where the movement starts.
The Richter scale…	is the place in the Earth's crust	**caused by an earthquake.**
A seismometer …	**is a break in the Earth's crust …**	the strength of the earthquake.

EXAMPLE: *A fault is a break in the Earth's surface caused by an earthquake.*

(a) The epicentre

(b) The focus

(c) A seismometer

END OF EXAMINATION