

NAME:	SCIENCE TEACHER: (circle code)	10A
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SCIENCE

Year 10 Examination 2012

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; marks are awarded for it.

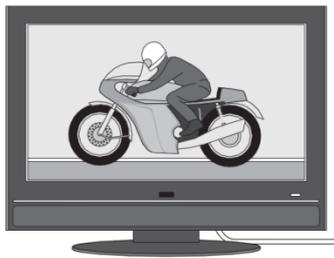
Give units for all answers (eg kg or m) unless they are already provided.

For Teacher Use

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

Question One: Energy [2 marks]

The drawing shows a television set.



Use these words to complete the sentences below.

electrical ● heat ● light ● sound

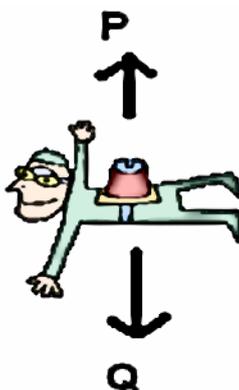
The television is designed to transform (convert) _____ energy into _____ energy at the screen.

The loudspeaker transforms kinetic energy into _____ energy.

Some energy is wasted as _____ .

Question Two: Forces [5 marks]

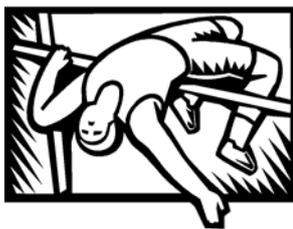
(a) Alice goes skydiving. This diagram shows two forces acting on her as she falls.



Which statement is correct? (Tick one)

- force P is gravity and force Q is air resistance
- force P is air resistance and force Q is gravity
- force P is gravity and force Q is acceleration
- force P is acceleration and force Q is air resistance

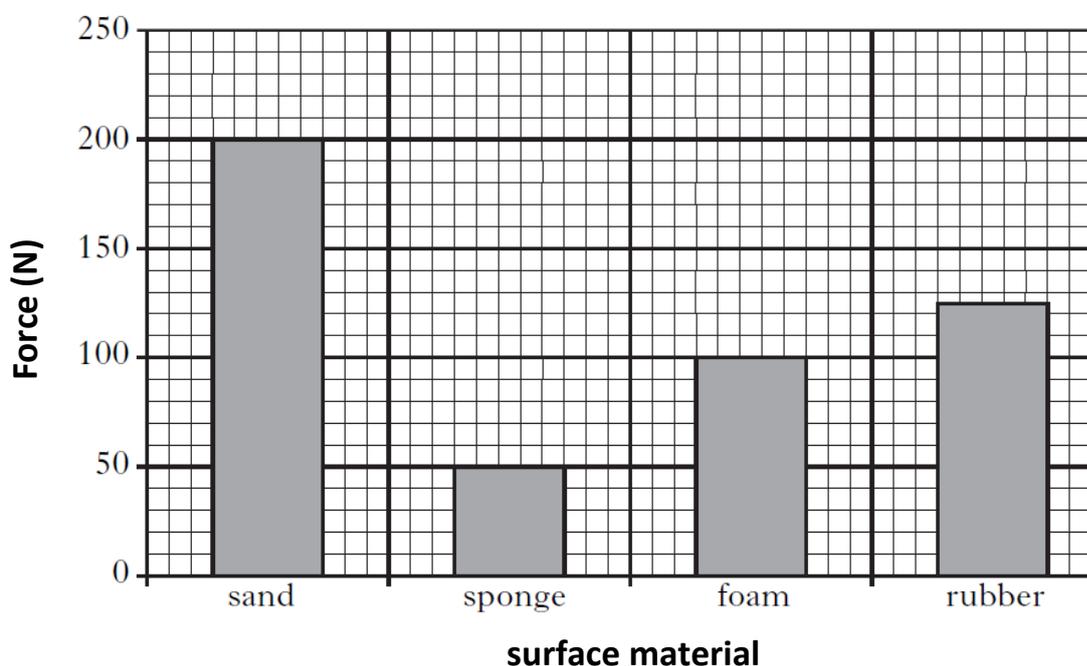
(c) A pole vaulter wants to find out which material is best for making a landing surface.



Four materials are tested in a lab.

- A dummy body is dropped onto each surface.
- It is dropped from the same height each time.
- The maximum force on the dummy is measured for each surface.

The graph shows the maximum force exerted by the different surfaces.



(i) Which material should be used for the landing surface?

Explain your answer.

(ii) Why is the height kept the same each time?

The experiment is repeated with a lighter dummy.

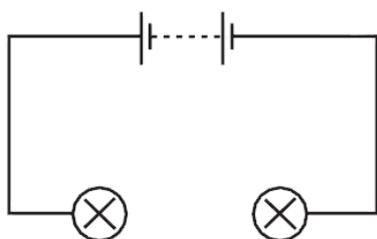
- (iii) Will the maximum force on the dummy increase, decrease or stay the same?
Circle your answer.

increase ● decrease ● stay the same

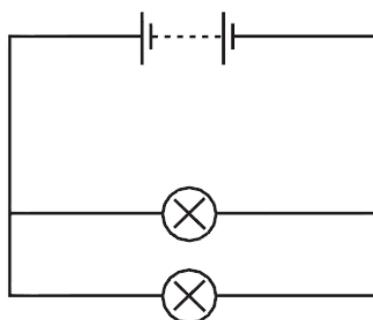
Explain your answer.

Question Three: Electricity and magnetism [5 marks]

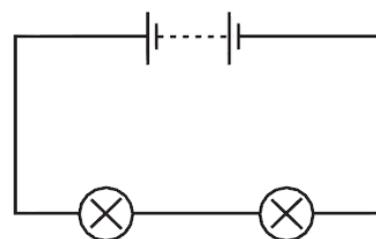
- (a) Here are three simple circuit diagrams.



A



B



C

Which circuit (A, B or C):

- (i) will have the brightest bulbs? _____

- (ii) does not allow the bulbs to light? _____

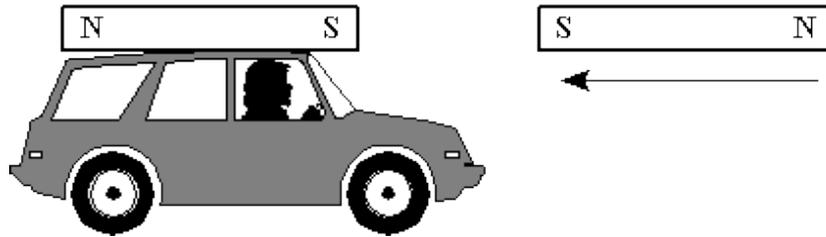
- (b) If one bulb goes out in circuit B, what will happen to the other bulb?

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- (c) Modern Christmas tree lights are usually connected in parallel.
Explain how this is an advantage.



(d) A bar magnet has been glued to the top of the toy plastic car.



(i) What would happen if another bar magnet was moved towards it, as shown in the diagram? The toy car would (tick one)

- Stay where it is
- Move forwards (right)
- Move backwards (left)
- Turn around

(ii) Why was a plastic car used in this experiment and not a metal car?

Question Four: Crime Lab [4 marks]

Finger prints are often left at a crime scene.

(a) Fingerprints can be sorted into three types.

Draw a straight line from the fingerprint to its correct type.

fingerprint



type

- Loop
- Arch
- Whorl

(c) Finish the sentences by choosing the best word from the list.

dust ● fats ● oils ● nails ● wipe

Fingerprints can get onto surfaces when _____ from the skin are left.
Special powder can be used to _____ for fingerprints.

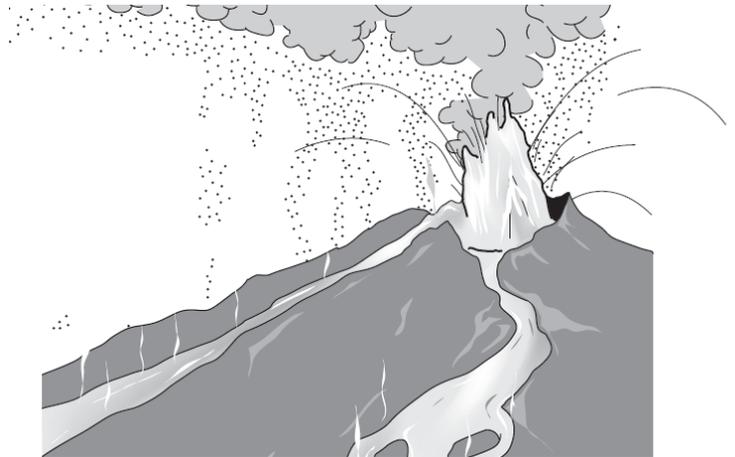
(d) What two things you must do to make a record of your fingerprints? Put ticks in the boxes next to the **two** correct statements.

- Dip your finger in salt crystals
- Push your finger onto an ink pad
- Roll your finger onto white paper
- Wrap filter paper around your finger

(e) At the crime scene, the police take fingerprints from innocent people. Why do you think this is done?

Question Five: Earth Science [2 marks]

This picture shows an active volcano.
The liquid rock from the mantle is erupting from the volcano.
It is causing a lot of damage.



(a) What is the name given to liquid rock that erupts out of a volcano?

Choose from: **crust ● lava ● metamorphic ●**

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(c) Liquid rock that erupts out of a volcano cools down to make a **type** of rock. What type of rock?

Choose from: **igneous ● metamorphic ● sedimentary**

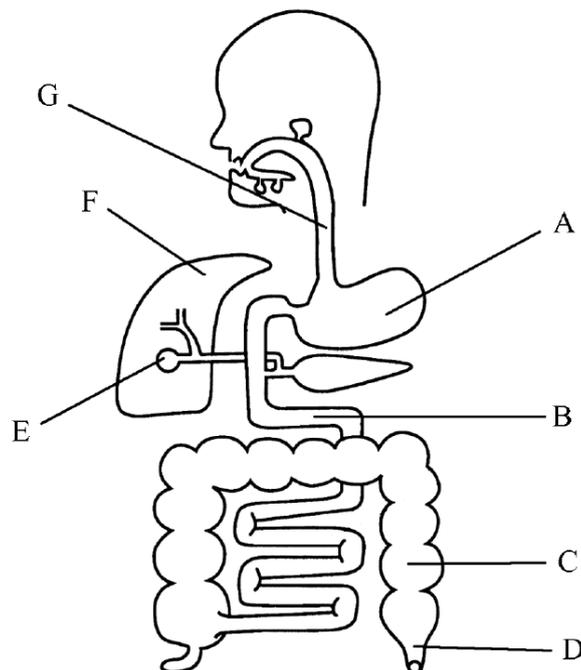
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(d) Some people live near to active volcanoes. It is dangerous to live near an active volcano.

Write down one reason why some people still want to live near an active volcano.

Question Six: Earth Science [3 marks]

The diagram shows the digestive system and some organs.



(a) Explain why it is important that food is digested.

(b) Complete the table by adding the letter of the structure to match the process.

Process	Structure (give the letter)
Stores bile	
Stores faeces	
Connects mouth to stomach	

(c) Where does protein digestion begin? (circle one)

A C F G

Question Seven: Chemistry [4 marks]

The word equation below shows the reaction that takes place when iron rusts. Use the equation to answer the questions.



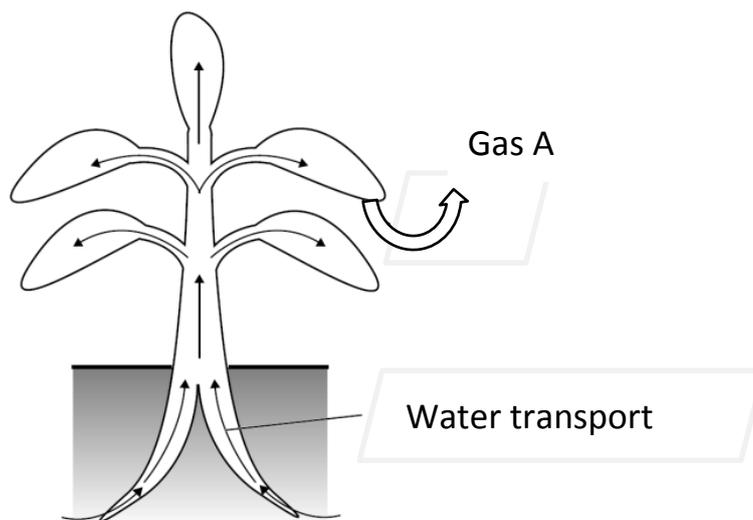
(a) Write down the name of one product from this reaction.

(b) Write down the name of one reactant from this reaction.

(c) Is this a chemical or physical change? Why?

chemical / physical (circle answer)
Explanation:

Question Eight: Plants [5 marks]



(a) Name gas A that is released from plant leaves at night (when it is dark).

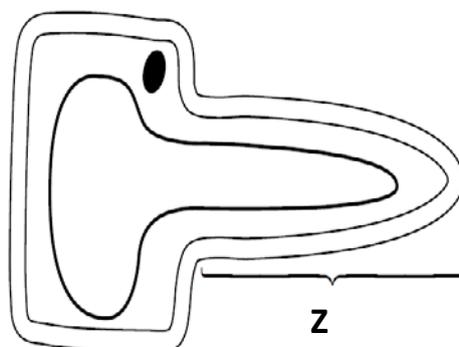
(b) Give two ways in which the water taken up by the roots is used by the cells of the plant.

1.	2.
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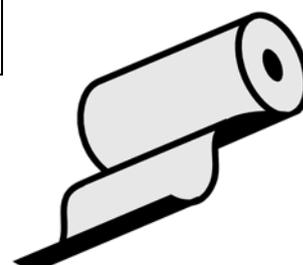
(c) Name the tissue (cell types) that transports water through the plant.

(d) The diagram below shows a specialised plant cell.

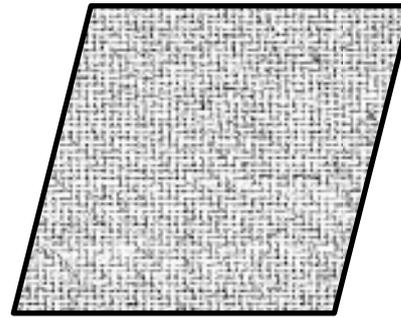
Name structure Z.



Question Nine: Fair testing [4 marks]



Some students investigated how effective three different devices were at drying things. They added water to a paper towel until the mass of the paper towel was 45.6 g. They then hung the paper towel in front of one of the devices.



After five minutes, they measured the mass of the paper towel again. The test was carried out three times and the average mass calculated. The whole experiment was repeated with the other devices, using identical paper towels. Their results are shown below.

Device used	Mass at start in grams	Mass after 5 minutes (g)			
		Test 1	Test 2	Test 3	Average
No device	45.6	45.5	45.4	45.6	45.5
Hair dryer	45.6	41.2	41.0	41.1	41.1
Hand held mini fan	45.6	45.4	45.2	45.3	45.3
Desk fan	45.6	43.7	43.6	43.8	43.7

(a) What was the mass of the paper towel in test 3, when the hair dryer was used?

(b) What three things would need to be kept the same ?

- the size of the paper towels,
- their mass at the start and
- _____

(c) The tests are repeated to . . . (tick one)

- check for errors.
- improve the reliability of the experiment.
- improve the accuracy of the results

(d) The results show that the device that dried the paper towels best was . . . (tick one)

- the hair dryer because the average mass of water lost after five minutes was highest.
- the hair dryer because it produces hot air.
- the desk fan because it had the largest fan blades.
- the hand held mini fan because the average mass of water lost after five minutes was lowest.

Question Ten: Chemistry [3 marks]

The pH of a substance indicates whether it is acidic, basic, or neutral

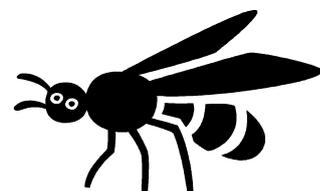
- Acidic substances have a pH of less than 7.
- Neutral substances have a pH of 7.
- Basic substances have a pH greater than 7

Substance	pH
lemon juice	2
vinegar	3
milk	7
tap water	7
baking soda	9
milk of magnesia	11

Using the table of pH values, answer the following questions

(a) Wasp stings are basic.

(i) Name one substance from the table you would apply to a wasp sting to make it less painful. (Wasp stings are basic.)



(ii) Why did you choose this?

- (b) A white substance is found on some nails in the garage. You scrape a little bit off and find its pH to be 8.



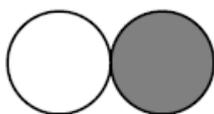
Name two substances from the table you could use to remove the white substance from the nails.

Question Eleven: Chemistry [3 marks]

A museum includes an activity area where elements and compounds can be built from model atoms made of polystyrene. The diagrams below represent four different substances: carbon dioxide (CO_2) methane (CH_4), nitrogen monoxide (NO) and oxygen, (O_2), but not necessarily in that order.



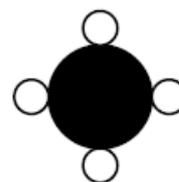
A



B



C



D

- (a) (i) Which diagram represents an element? (circle your choice).

A B C D

- (ii) Give the reason for your choice.

- (b) What is the chemical formula of compound D?

Choose from: CO_2 ● CH_4 ● NO ● O_2

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