

YEAR 10 PRACTICE EXAM 1: 2014




Question One [5 marks]

Hazard symbols are used instead of words to warn about the dangers of chemicals.

- (a) Give one reason why hazard symbols are used instead of words. [1]

Bottles of chemicals in the laboratory may be labelled with the name of the chemical, the hazard and the hazard symbol. Four labels are shown below.

- (b) Complete the labels by drawing the missing hazard symbol and filling in the missing words. The first label is done for you. [3]

 <i>Copper sulfate</i> Harmful	 <i>Meths</i>
 <i>Barium nitrate</i> Toxic	 <i>Nitric acid</i>

- (c) From the chemicals above name a chemical which can catch fire easily. [½]

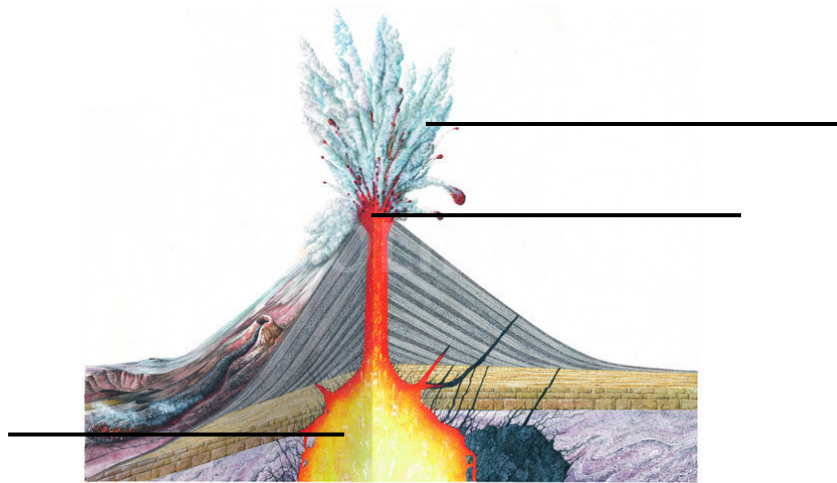
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- (d) Name a chemical from the ones above which may damage living tissue it touches. [½]

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Question Two [4 marks]

The diagram below shows a volcanic eruption



(a) Label the parts of the volcano shown above. [1 ½]

Choose from:

- cone ● dust and ash ● lava ● magma ● tectonic plate

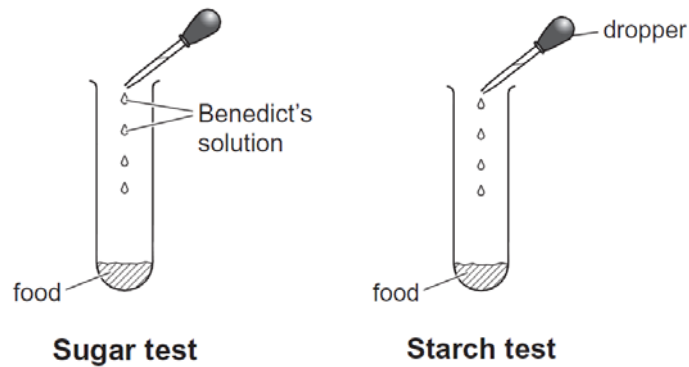
(b) Circle the type of rock formed after a volcanic eruption. [½]

- plutonic igneous ● metamorphic ● sedimentary ● volcanic igneous

(c) Describe fully what happens during an eruption and give one effect this will have on the surrounding area. [2]

Question Three [6 marks]

The diagrams below show two food tests.



(a) Name the solution used to test for **starch**. [1]

(b) What colour change with Benedict's solution shows that **sugar** is present? [1]

(c) What is done after adding the Benedict's solution to sugar to give this colour change? [1]

(d) Complete the table below. [3]

Food type	Job in the body
fats	
	growth & repair
fibre	

Question Four [5 marks]

Daffodils like to grow in soil which is slightly acidic.

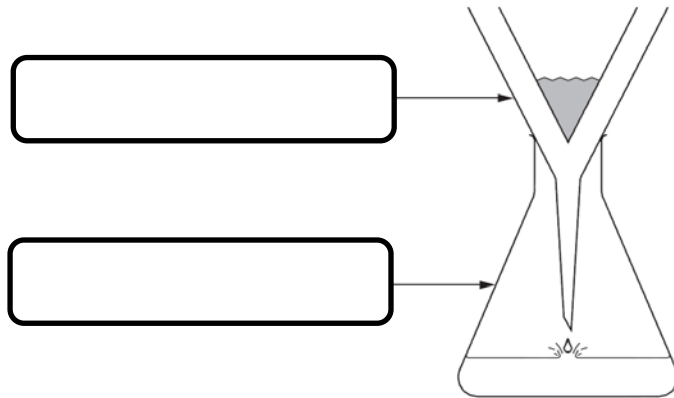
Ashley did an experiment to find out if a sample of soil was suitable for planting daffodils.

- She added the soil sample to water. Shake to mix.
- She filtered the soil from the soil and water mixture.



- She tested the filtrate with substance X.

(a) Label the diagram below, of the apparatus used to carry out Step 2. [2]



(b) On your diagram add an extra label line and label the filtrate. [1]

(c) Substance X was used to find out the pH of the soil sample. Which of the following substances could be substance X? Place a tick (✓) in the correct box. [1]

Blue litmus paper

Universal Indicator

Red litmus paper

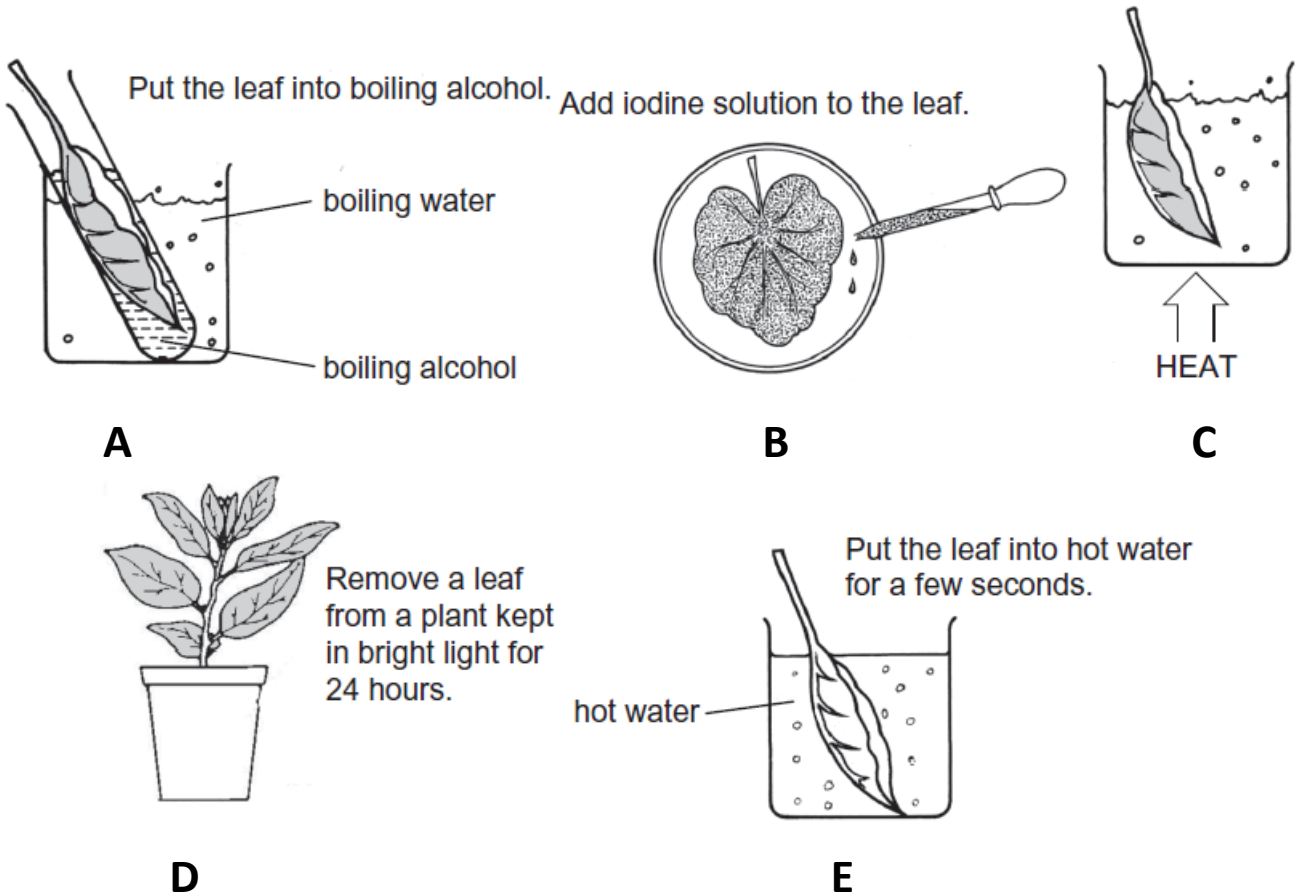
(d) The table below shows the pH range of 4 soil samples, A, B, C and D.

Soil sample	A	B	C	D
pH range	1-4	5-6	7-8	9-10

Which soil sample, A, B, C or D, is the most suitable for growing daffodils in? [1]

Question Five [5 marks]

The diagram shows the instructions for carrying out a starch test on a leaf. The pictures are NOT in the correct order.



(a) The correct order is: ___ ___ ___ ___ [1]

(b) Describe and explain what is happening at Step C. [2]

(c) Give the reason for Step A. [1]

(d) When iodine solution was added at Step B, what colour would the leaf turn if starch was present? [1]

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Question Six [6 marks]

Indicators can change colour in acid and alkaline solutions. Indicators can be made from plant material such as red cabbage.

The table below gives information about three different indicators. Use this information to answer the questions that follow.

Substance	pH range	Colour of UI paper	Colour of blue litmus paper	Colour of red cabbage solution
water	7	green	blue	purple
lemon juice	3-5	orange	red	pinky red
hydrochloric acid	1-2	red	red	red
sodium hydroxide	12-13	blue-purple	blue	green

(a) Why is blue litmus paper not a suitable indicator for testing pH? [1]

(b) Explain why red cabbage solution can be described as an indicator. [1]

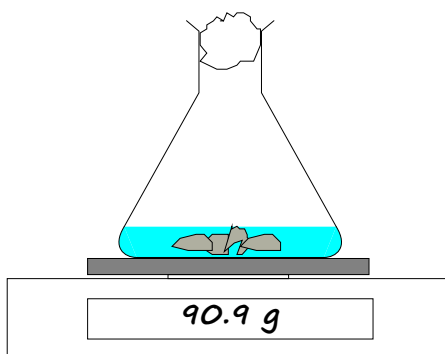
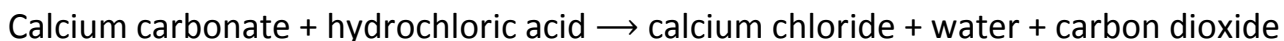
(c) Why is universal indicator a better indicator than red cabbage solution for testing acids? [1]

(d) Name another material you could have used in Science this year to make an indicator from. [1]

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Question Eight [7 marks]

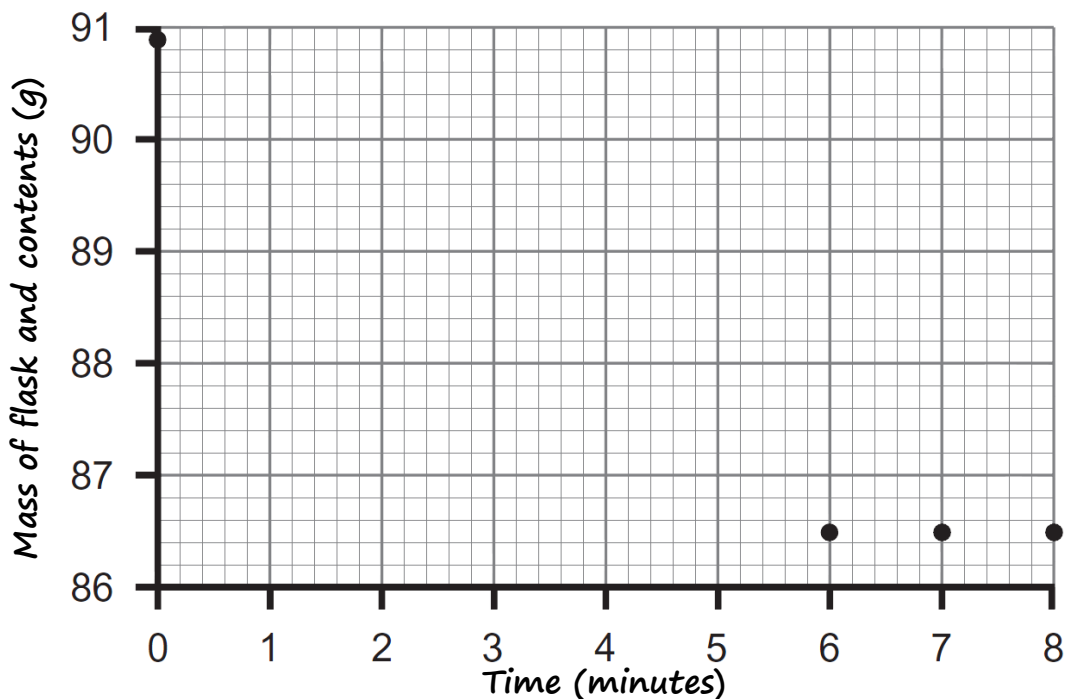
Israel investigated the reaction between dilute hydrochloric acid and calcium carbonate (marble chips). A piece of cotton wool was loosely placed in the mouth of the conical flask.



Israel measured the mass of the flask and its contents (total mass) every minute. His results are shown below.

Time (minutes)	0	1	2	3	4	5	6	7	8
Total mass of flask & contents (g)	90.9	89.2	87.8	87.1	86.8	86.6	86.5	86.5	86.5

(a) Complete the graph by plotting the remaining points and draw a line of best fit. [2]



(b) Describe the pattern shown by these results. [2]

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(c) Cotton wool was used instead of a rubber bung to plug the flask. Describe and explain what would have happened if a rubber bung had been used instead. [2]

(d) How do you know that the reaction stopped after 6 minutes? [1]

Question Nine [6 marks]

Kate and Jonty did the following controlled experiment to find out how the colour of an object affects its temperature.

Question: What is the effect of different lid colours on the air temperature inside a glass jar exposed to a lamp?

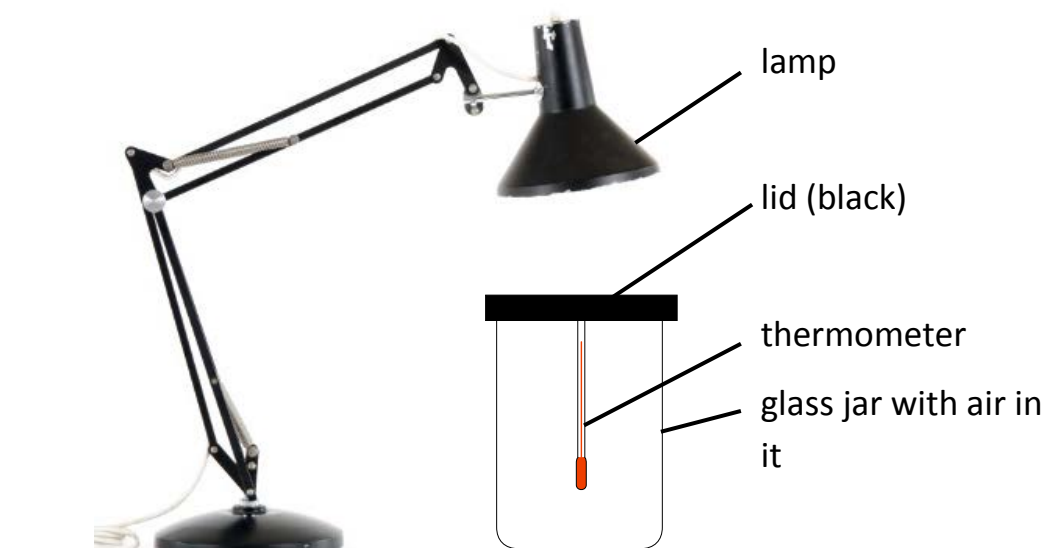
Hypothesis: The darker the lid colour, the greater the increase in air temperature in the glass jar, because darker colours absorb more energy.

Materials:

glass jar
lamp

different coloured lids
thermometer

metre ruler
stopwatch



Method:

1. Attach the thermometer to the black lid and place it on the jar.
2. Make sure the starting temperature inside the jar is 20° C.
3. Place lamp 5 centimeters away from the lid.
4. Switch the lamp on.
5. After 15 minutes, measure the air temperature inside the glass jar & record it (Test 1).
6. Turn off lamp and wait until the air in the jar returns to the starting temperature.
7. Repeat steps 3 to 6 for Tests 2 and 3.
8. Repeat the experiment for the dark grey, light grey, and white lids.
9. Calculate and record the average air temperature for each lid colour.

Results

Lid colour	Air temperature in the glass jar after 15 minutes (°C)			
	Test 1	Test 2	Test 3	Average
Black	54.0	52.0	54.0	53.3
Dark grey	48.0	48.0	48.0	48
Light grey	44.0	46.0	45.0	45
White	42.0	40.5	41.0	41.2

(a) What variable was the manipulated (independent) variable in this experiment? [1]

(b) What variable was the dependent variable in this experiment? [1]

(c) What was the purpose of waiting until the air in the jar returned to the starting temperature in Kate and Jonty’s experiment? Tick one box. [1]

- To have the same time between trials
- To keep a variable the same for every trial
- To allow the lamp to cool down after every trial
- To provide time to change the lid colour between trials

(d) Kate and Jonty were designing a dog kennel. Use the results from the experiment to describe the best paint colour for the roof of the dog kennel.

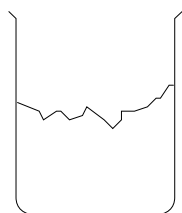
In your description, be sure to:

- Choose a paint colour.
- Describe how that colour might affect the inside of the doghouse.
- Use results from the experiment to support your description. [3]

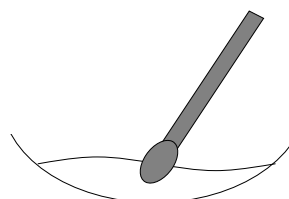
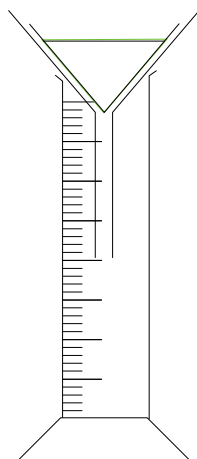


Question Ten [6 marks]

Fruit juice is normally obtained from fruit pulp. The fruit is squeezed to obtain the pulp. To get the maximum amount of juice from the cells the pulp is then treated by adding an enzyme called pectinase. Pectinase breaks down pectin in the walls of fruit cells to allow the fruit juice to be released from the cells.



Beaker of fruit pulp



pectinase powder & spatula

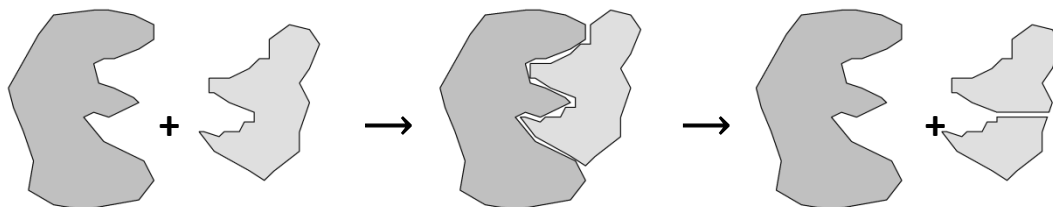


The diagram shows some of the apparatus you may need.

- (a) Describe how you would carry out an investigation to compare how quickly fruit juice is released from fruit pulp with and without pectinase. [4]

The diagram below shows how an enzyme works. Enzymes speed up chemical reactions. They act on the substrate. In this experiment the **pectin** was the substrate.

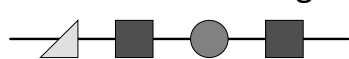
- (b) Label the diagram below with letters: E for enzyme, S for substrate, P for product [1]



- (c) Using the information in the diagram, describe what happens to the substrate molecule during the reaction. [1]

Enzymes are very important. They also speed up digestion in the body.

- (d) (i) Complete the diagram by drawing the products produced when protein is broken down in the digestive system. [1]



protein molecule



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products

- (ii) Name the enzyme that carries out this reaction in the stomach. [1]

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