

# Year 7 Science End of Year Exam

## Academic year 2015-16

### Prepare

The exams are on Monday 6<sup>th</sup> and Wednesday the 8<sup>th</sup> June. You should use the time from now to then productively by spending **a half hour** or so at night (a couple of hours a day over the weekends) quietly in your room reading through your work, making notes and revising.

During the exams, be ready, have the right equipment. Have the right amount of sleep (8 hours). The more preparation you do now means the less worry you will have later.

Exam Materials – Include pens, pencils, ruler, and calculator.

### Science Exam Timetable:

Exam date	Exam type
6 <sup>th</sup> June	Progression Test paper 1
8 <sup>th</sup> June	Progression Test paper 2

### Topics to revise for the exam.

## **Unit 1A: 7.1 Living Things**

- The characteristics common to all living things, and their importance to survival of the organism.
- That all living things are made of cells, the structure and typical cells, how cells are adapted to their function.
- How cells are organised in tissues, organs and organ systems to efficiently carry out the functions of life.

Recommended Vocabulary for this unit:

Organism nutrition movement excretion growth reproduction sensitivity function microscope magnification cell nucleus cell membrane cell wall vacuole chloroplast tissue organ organ system.

## **Unit 1B: 7.2 Solids, Liquids and Gases**

The particle theory of matter and how this can explain the properties of solids, liquids and gases, including changes of state.

Recommended Vocabulary for this unit:

Melting boiling freezing condensing evaporating

## **Unit 1C: 7.3 Energy Transformations**

Different types of energy.

Energy as something that cannot be created or destroyed.

Energy transfers.

Recommended Vocabulary for this unit:

Transformation conservation, kinetic (moving) energy, potential(stored) energy

## **Unit 2A: 7.4 Microorganisms and Disease**

How some microorganisms can be useful to humans but others are harmful.

The use of microorganisms in food production.  
How microorganisms breakdown can cause decay.  
The work of Louis Pasteur and other scientists studying the human body.  
Discussing the importance of questions, evidence and explanations.

Recommended Vocabulary for this unit:

Microscope microscopic fungi bacteria virus pasteurisation

## Unit 2B: 7.5 The Earth and Beyond

The different type of rocks and soils.  
Simple models of the internal structure of the Earth.  
Fossils and the fossil record as a guide to estimating the age of the Earth.  
How the movement of the Earth causes the apparent daily and annual movement of the Sun and the stars.  
The relative positions and movement of the planets and the Sun in the solar system.  
The impact of the ideas and discoveries of Copernicus, Galileo and more recent scientists.  
The Sun and other stars as sources of light, and that planets and other bodies are seen by reflected light.

Recommended Vocabulary for this unit:

Fossil core mantle crust sedimentary igneous, metamorphic orbit planet star moon solar system eclipse

## Unit 2C: 7.6 Putting Things into Groups

Metals and non-metals.  
Everyday materials and their physical properties.  
Classify animals and plants into major groups, using some locally occurring examples.  
Understand what is meant by a species.  
Investigate variation within a species.

Recommended Vocabulary for this unit:

Property absorbent transparent opaque brittle high / low density malleable flexible ductile sonorous, melting point boiling point hardness strength species vertebrates invertebrates microbes fungi bacteria arthropods.

## Unit 3A: 7.7 Habitats and Environment

Where organisms live.  
How organisms interact with each other and the environment.  
The influences humans have on the natural environment.

Recommended Vocabulary for this unit:

Habitat adaptation predator prey producer consumer herbivore omnivore carnivore ecosystem ozone depletion greenhouse effect renewable non-renewable.

## **Unit 3B: 7.8 Acids and Bases**

How to tell if a solution is an acid or an alkali.

Using a pH scale.

Neutralisation and some of its applications.

Recommended Vocabulary for this unit:

Acid acidic alkali alkaline base neutral indicator pH scale.

## **Unit 3C: 7.9 Forces and their Effects**

The effects of forces on movement, including friction and air resistance.

The effects of gravity on objects.

Recommended Vocabulary for this unit:

Force motion gravity friction air resistance.

## **ALL TOPICS WILL INCLUDE AN ASPECT OF SCIENTIFIC ENQUIRY**

Scientific Enquiry work focuses on:

Suggesting ideas that may be tested.

Outlining plans to carry out investigations, considering the variables to control, change or observe.

Making predictions referring to previous scientific knowledge and understanding.

Identifying appropriate evidence to collect and suitable methods of collection.

Choosing appropriate apparatus and use it correctly.

Making careful observations including measurements.

Presenting results in the form of tables, bar charts and line graphs.

Considering explanations for predictions using scientific knowledge and understanding and communicate these.

Presenting conclusions using different methods.

## **Answers**

No matter how good your grades were, you can always do better. When reading the question, make sure you read it properly. Re-read it, and make sure you've understood it. Pick out the key words and take a moment to think about your answer and make sure it is actually answering the question.

In low scoring questions, worth 1 mark, you are expected to write a brief answer, if one word will do use it; if it needs a sentence write a *short* sentence. With medium scoring questions (2 to 4 marks) you need to give your answer making one valid point per mark (so for a 3 mark Q you must make 3 good statements etc

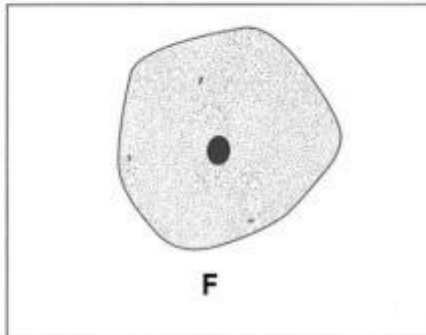
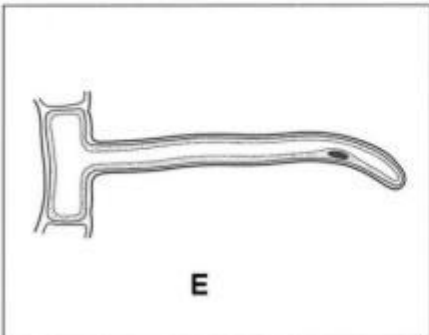
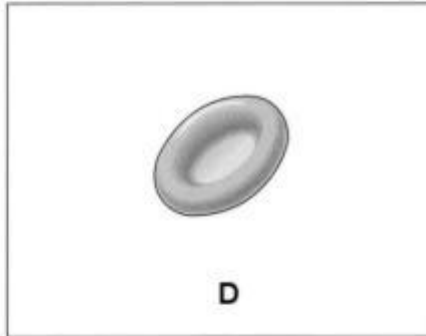
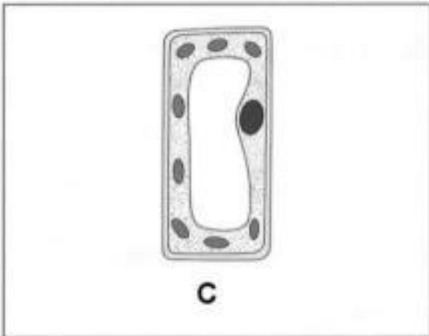
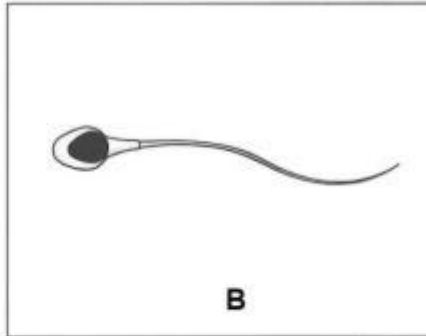
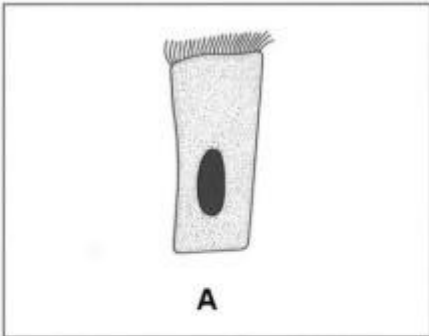
When you have written your answer STOP! Go back and re-read the question and ask yourself, "**does my answer actually answer all of that question?**"

**I would also recommend spending some time looking over the tests you have completed during the academic year.**

**See the next few pages for some practice questions and markschemes.**

# Sample Questions and Mark schemes

Q1. The diagram below shows six cells.



(a) (i) Give the letters of the **two** plant cells in the diagrams.

..... and .....

1 mark

(ii) Which **one** of these plant cells contains chloroplasts?  
Give the letter.

.....

1 mark

(iii) Give the function of chloroplasts.

.....  
.....

1 mark

(b) (i) Give the letter of the ciliated cell.

.....

1 mark

(ii) In which part of the body are ciliated cells found?

.....

1 mark

(iii) What is the function of ciliated cells in this part of the body?

.....  
.....

1 mark

(c) Give the letter of the cell which transfers genetic information from father to offspring.

.....

1 mark  
maximum 7 marks

**Q2.** Michelle added some universal indicator solution to four liquids.

Michelle uses the pH chart to fill in her table of results.

**pH chart**

<b>pH</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>colour</b>	red		orange			green		blue			purple			

(a) The table below shows some of Michelle's results.

Complete Michelle's table of results below.  
Use the pH chart to help you.

liquid	colour of universal indicator solution	pH
milk	green	
rain water		5
hydrochloric acid	red	
bleach		11

2 marks

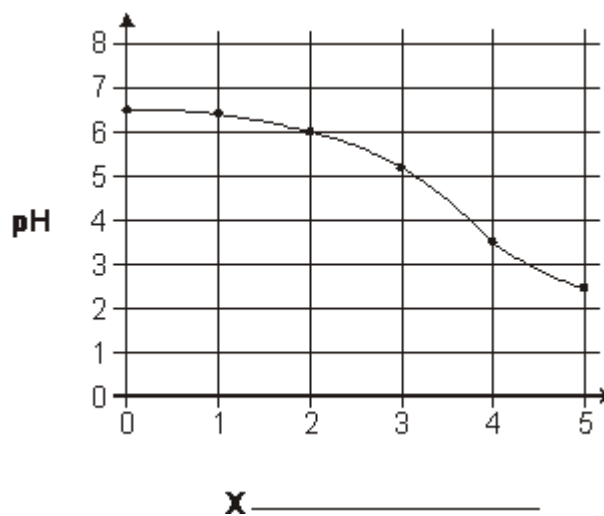
(b) Explain why using acids can be dangerous.

.....  
.....

1 mark

(c) Michelle measured the pH of some milk stored at room temperature for five days.

The graph of Michelle's results is shown below.  
One of the axes has been labelled.



1 mark

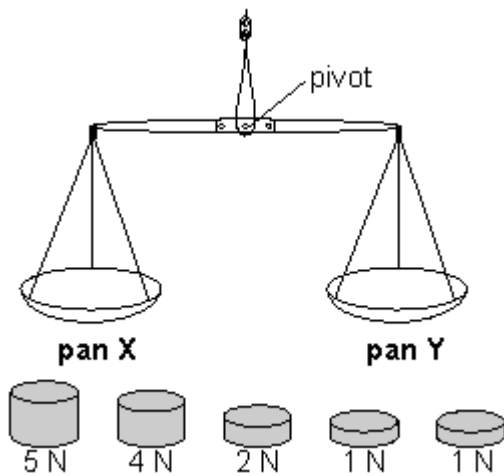
(i) Write the axis label for the graph at X.

(ii) Use the graph. How does the pH of the milk change over the five days?

.....

1 mark  
maximum 5 marks

**Q3.** Ellie has a set of scales and some weights as shown below.



Ellie puts two weights in pan X and one weight in pan Y. The scales balance.

(a) Which weights could be in pans X and Y?

pan X: ..... and .....

pan Y: .....

1 mark

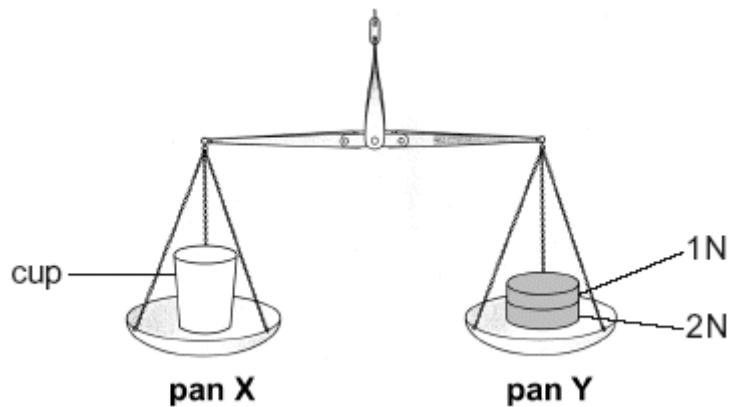
(b) Ellie removes all the weights from the scales. She then puts a cup on pan X. In which direction will pan Y move?

.....

1 mark

(c) She puts weights into pan Y so the scales balance.



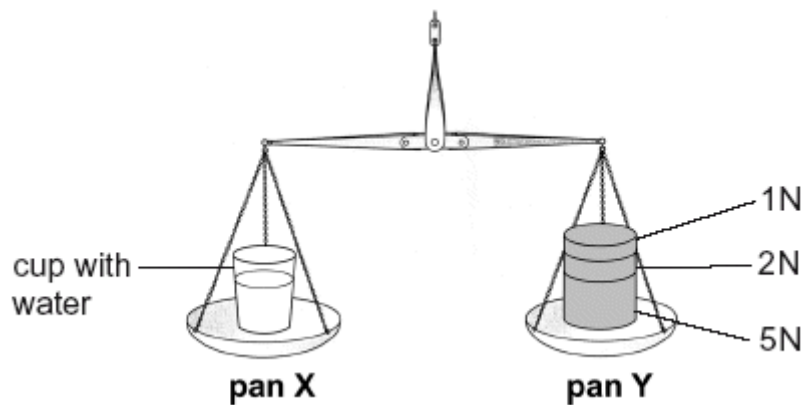


How much does the cup weigh?

..... N

1 mark

- (d) Ellie puts some water in the cup.  
She then adds some more weights to pan Y to make the scales balance.



- (i) How much do the cup **and** water weigh?

..... N

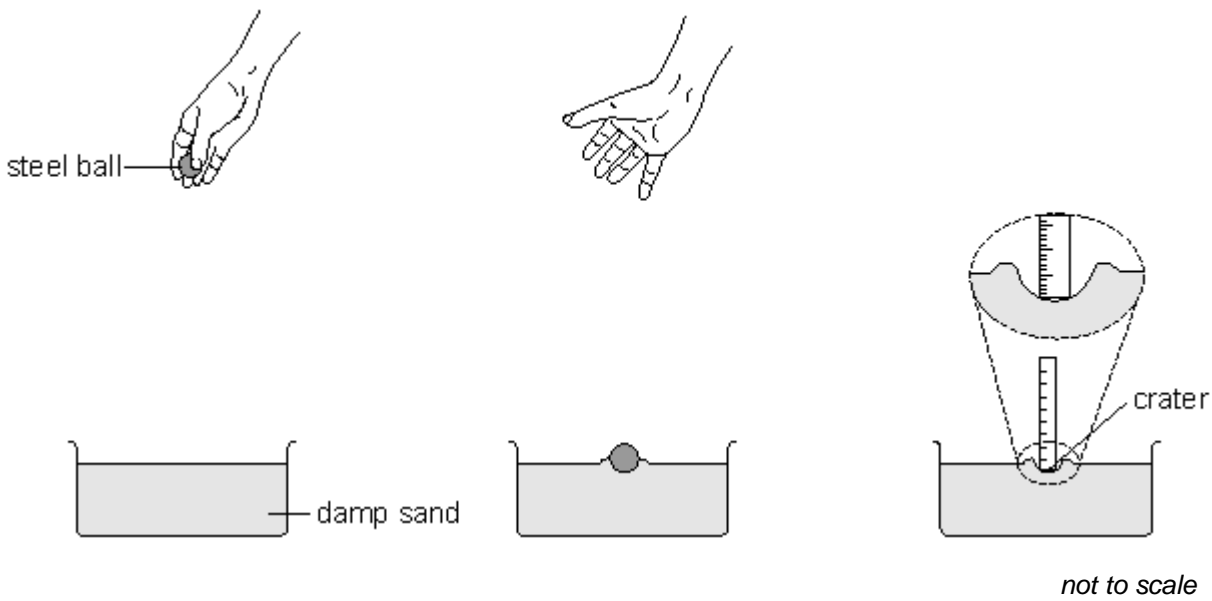
1 mark

- (ii) How much does the water weigh?

..... N

1 mark  
maximum 5 marks

**Q4.** Jack and Aneesa dropped a steel ball into trays of damp sand. They measured the depth of the craters made by the steel ball.



Their results are shown in the table below.

height the ball was dropped from (cm)	depth of crater (cm)		
	Jack's results		Aneesa's results
10	1.1	1.2	0.8
20	1.4	1.5	1.4
30	1.6	1.6	1.5
40	1.8	1.7	1.8
50	2.0	2.1	2.1

(a) Use information in the table to answer the questions below.

(i) What was the independent variable that Jack and Aneesa changed in their investigation?

.....

1 mark

(ii) Why was Jack's investigation better than Aneesa's?

.....

1 mark

(b) Look at the results in the table.  
What is the relationship between the height the ball was dropped from and the depth of the crater?

.....  
.....

1 mark

(c) Aneesa said that they made sure the investigation was fair.

Suggest **two** variables they must have kept the same to make their investigation fair.

1 .....

2 .....

2 marks

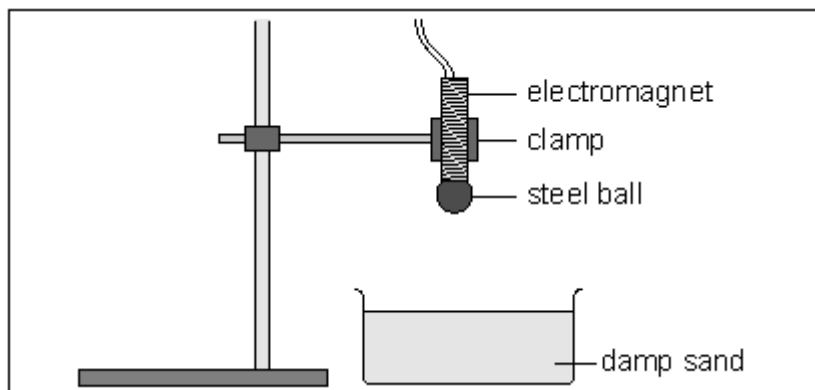
(d) (i) Jack removed the steel ball using his fingers. Then he measured the depth of the crater.  
Aneesa said he should use a magnet instead of his fingers.

Explain why using a magnet to remove the ball would improve the investigation.

.....  
.....

1 mark

(ii) Jack said that the ball could be dropped using an electromagnet instead of dropping it by hand.



Explain why this would improve the investigation.

.....  
.....  
1 mark  
maximum 7 marks

- M1.** (a) (i) C and E  
*answers may be in any order*  
*both answers are required for the mark* 1 (L6)
- (ii) C 1 (L6)
- (iii) any **one** from  
to trap **or** absorb light photosynthesis  
*accept 'to make glucose **or** sugar*  
***or** starch **or** carbohydrate **or** food'* 1 (L6)
- (b) (i) A 1 (L6)
- (ii) any **one** from
- windpipe
  - trachea
  - airways
  - bronchus
  - bronchiole
  - oviduct **or** fallopian tube  
*accept 'lungs'*
- 1 (L6)
- (iii) to remove mucus  
*accept 'to remove bacteria'*  
*accept 'to move mucus along'*  
*accept 'to move **or** remove bacteria **or** dust particles'*  
*'it is a self cleaning mechanism' is insufficient*  
*do **not** accept 'they clean dust **or** bacteria out of the lungs*  
*'accept 'to move an ovum **or** egg along' if the oviduct*  
***or** fallopian tube is given as the answer to part ii*
- 1 (L6)

(c) B

1 (L6)

[7]

M2. (a) • 7

- orange
- an answer in the range 1–3      *accept '1–3'*
- purple

*for all four rows correct, award two marks  
for any two or three rows correct, award one mark  
answers must be in the correct column and row in the table*

2 (L3)

(b) any **one** from

- they are corrosive
- they burn **or** irritate  
*accept 'they can damage your skin or eyes'  
'in case it touches your skin' is insufficient  
it is harmful **or** poisonous' is insufficient  
'it can kill you' is insufficient  
'wear gloves' is insufficient  
do **not** accept 'it is flammable'*

1 (L4)

(c) (i) • time, in days

*accept 'time'  
accept 'days'  
do **not** accept 'hours' or 'minutes'*

1 (L4)

(ii) it goes down or decreases

*accept 'it becomes acidic'  
'it goes red' is insufficient  
accept 'it goes from 6.5 to 2.5'  
accept 'the acid gets stronger'  
'it goes sour' is insufficient  
if the label for X is incorrect in part (ci),  
do not penalise again in part (cii)*

1 (L4)

[5]

**M3.** (a) **either**

- *pan X: 1N and 1N*  
*pan Y: 2N*

**or**

- *pan X: 4N and 1N*  
*pan Y: 5N*

**1 (L3)**

*three weights are required for the mark  
units are not required for the mark  
the weights in pan X can be in either order*

(b) • up

*accept '↑'*  
*'X will go down' is insufficient*

**1 (L3)**

(c) • 3 N

**1 (L3)**

(d) (i) • 8 N

**1 (L3)**

- 5 N

*accept the answer to (di) minus the answer to (c)*  
*accept '8-3'*

**1 (L4)**

**[5]**

**M4.** (a) (i) • the height the ball was dropped from

*accept 'height'*  
*do **not** accept 'depth'*  
*accept 'height in cm'*  
*'cm' is insufficient*

**1 (L5)**

(ii) any **one** from

- he repeated it  
*accept 'he got more results'*  
*accept 'he did it twice'*

*'it was a fair test' is insufficient*

- he could get an average  
*accept 'he would notice odd results'*
- it was more reliable  
*accept 'more accurate'*

1 (L5)

- (b) • the greater the height, the deeper the crater  
*accept the converse*  
*accept 'there is a positive correlation (between the variables)'*  
*accept 'bigger' for 'deeper' only when it refers to the crater size*  
*a comparative answer is required for the mark*  
*'when the ball was dropped from a high height, a larger crater formed' is insufficient*  
*'the bigger, the deeper' is insufficient as 'bigger' is ambiguous*

1 (L5)

(c) any **two** from

- (use the same) ball  
*accept 'the size or mass or weight or volume or material of the ball'*  
*do not accept 'density of ball'*
- depth of sand  
*accept 'same amount of sand' or 'the (same) sand'*
- the conditions of the sand  
*accept 'how damp the sand was' or 'the type of sand'*  
*accept 'how flat the sand surface is'*  
*'the sand tray' is insufficient*
- where or how the depth is measured  
*accept 'keep the ruler in the same position'*  
*'use the same ruler' is insufficient*
- the way the ball is released  
*accept 'release the ball with the same force'*  
*'same person' is insufficient*

2 (L5)

- (d) (i) • there is less disturbance to the sand  
*accept 'he might push the ball further in'*  
*accept 'your finger could push it further in, but the magnet lifts it'*  
*'it would be more accurate' is insufficient*  
*accept 'it lifts the ball out cleanly'*  
*'it lifts the ball out' is insufficient*

1 (L5)

(ii) any **one** from

- less chance of human error  
*accept 'the ball would fall the same way each time'*

do **not** accept *'there is less chance of something going wrong'*

- the electromagnet would drop it cleanly  
*accept 'the ball would not be dropped differently'*  
*'it lands in the same place' is insufficient*  
*accept 'it drops at the same angle'*  
*'it is easier to adjust height' is insufficient*  
*accept 'the ball would be released from the same height each time'*
- the height would be more accurate  
*'it is more accurate' is insufficient*  
*'so it is a fair test' is insufficient*  
*accept 'they could push the ball (slightly) if they use their hands'*  
*do **not** accept 'he can change the force of the electromagnet'*  
*'it stays steady' is insufficient*

1 (L6)

[7]