

Science

Test B answers

2006

0 min

0 marks

1. (a) Award **ONE** mark for: 1
- | | | | | |
|----------|-------------------------------------|--|--------------------------|--|
| | <input type="checkbox"/> | | <input type="checkbox"/> | |
| movement | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | |
- (b) Award **ONE** mark for an indication that the bones are lighter: 1
- the bones are not as heavy;
 - they do not need as much effort to lift them.
- Do not** give credit for an insufficient response that gives information from the question/stem:*
- *it makes it easier for the birds to fly;*
 - *it has a lot of air inside.*
- Do not** give credit for an insufficient response where no comparison is implied:*
- *because they are light;*
 - *they are not weighing them down.*
- (c) Award **ONE** mark for: 1
- | | | | | |
|--|--------------------------|-----------------|-------------------------------------|--|
| | <input type="checkbox"/> | | <input type="checkbox"/> | |
| | <input type="checkbox"/> | a balanced diet | <input checked="" type="checkbox"/> | |

(d) Award **ONE** mark for an indication that humans should exercise or not smoke: 1

- they should play football/go running (regularly);
 - they should keep fit;
 - they should not smoke/start smoking.
- ◆ **Give credit** for a correct response that goes beyond the key stage 2 programme of study:
- they should not drink too much caffeine/coffee/tea;
 - they should take mineral(s) (supplements of calcium/phosphorus/sodium/ potassium);
 - they should have vitamin (D/C/K) tablets.

ONE mark may be awarded for a response which elaborates on the types of food which improve/reduce bone strength:

- *they should drink/eat milk/cheese.*

Do not give credit for an insufficient response:

- *eat different types of food;*
- *eat five portions of fruit and vegetables a day;*
- *eat healthy food;*
- *eat a balanced diet [given];*
- *do not drink alcohol [moderate amounts can improve bone strength];*
- *drink lots of water [too much fluoride can decrease bone strength];*
- *eat protein [can have a negative or positive effect on bone strength].*

[4]

2. (a) Award **ONE** mark for both rows of the table completed correctly: 1

Material/Object	Flexible	Hard	Transparent
aluminium foil	✓	✗	✗
wax candle	✗	✗	✗
wooden rolling pin	✗	✓	✗
plastic food wrap	✓	✗	✓
glass	✗	✓	✓

(b) Award **ONE** mark for describing a use of foil that requires it to be flexible: 1

- wrapping up food;
- to bend it around food.

ONE mark may be awarded for describing a use of foil where the need for it to be flexible is implied:

- to cook a chicken in it;
- to put your sandwiches in;
- to seal take-away cartons;
- covering oven dishes.

Do not give credit for an insufficient property that gives a use unrelated to being flexible:

- it does not burn in the oven.

(c) Award **TWO** marks for all three correct boxes ticked: 2

cooling water	<input checked="" type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>	freezing water into ice	<input checked="" type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>
dissolving salt in water	<input checked="" type="checkbox"/>		

or

If you are unable to award two marks, award **ONE** mark for ticking any two of the correct boxes. 1

(d) (i) Award **ONE** mark for: 1

- condensation.

(ii) Award **ONE** mark for a response indicating that the water inside the pan evaporates: 1

- the water evaporates;
- the water inside the pan turns to water vapour (when the water boils);
- it changes to a gas.

ONE mark may be awarded for an observation implying the water evaporates:

- the water turns to steam.

Do not give credit for a response that includes incorrect science indicating the gas will disappear:

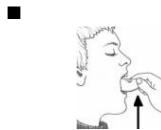
- the water will turn to water vapour which disappears.

Do not give credit for an insufficient response:

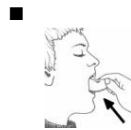
- *the water disappears;*
- *the water boils;*
- *the pan goes/boils dry;*
- *steam;*
- *it will turn into condensation;*
- *water vapour.*

[6]

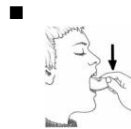
3. (a) (i) Award **ONE** mark for an arrow pointing upwards anywhere on the picture: 1



ONE mark may be awarded for any arrow pointing up that is within 45° of the vertical:



Do not give credit for a response that includes incorrect science showing an arrow pointing down:



Do not give credit for an insufficient response where a line rather than an arrow is drawn.

- (ii) Award **ONE** mark for labelling the tooth as an incisor. 1
- (b) Award **ONE** mark for a response that identifies one way of preventing tooth decay. 1
- brush/clean teeth (regularly);
 - use dental floss;
 - use a mouth wash;
 - chew sugar free gum;
 - avoid fizzy drinks;
 - do not eat lots of sugary/acidic foods;
 - get a new toothbrush every couple of months;
 - drink milk/eat calcium-rich foods.

ONE mark may be awarded for:

- drink lots of water (containing fluoride);
- eat a balanced diet;
- do not smoke.

Do not give credit for an insufficient response:

- visit the dentist regularly [given];
- eat healthy food [not specific to food that affects teeth];
- chew gum.

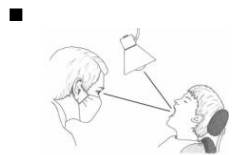
(c) Award **ONE** mark for:

1

glass

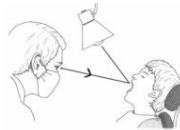
(d) (i) Award **ONE** mark for **two** lines (with or without correct arrowheads) showing the correct path of light. The lines must go from the lamp to Jon (between his nose and chin) and from Jon to the dentist (between his hairline and nose):

1



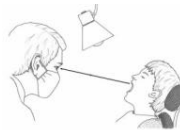
ONE mark may be awarded for one continuous reflected line even where the arrowhead is incorrect or missing:

■

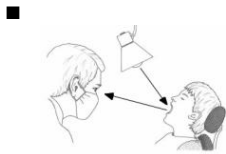


Do not give credit for an insufficient response where only one line is drawn:

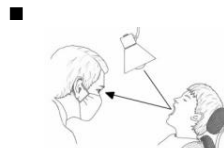
■



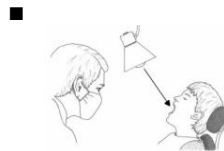
- (ii) Award **ONE** mark for **two** arrowheads showing the direction of light travel from the lamp to Jon (between his nose and chin) and from Jon to the dentist (between his hairline and nose): 1



ONE mark may be awarded for a correct arrowhead on a continuous reflected line:



Do not give credit for an insufficient response where the direction of travel is shown only by one non-reflected arrow:



[6]

4. (a) Award **ONE** mark for correctly completing **all four** rows of the table: 1

Solid	Beaker
<i>soil</i>	B
<i>vitamin tablet</i>	D
<i>plastic beads</i>	A
<i>salt</i>	C

- (b) Award **ONE** mark for a response indicating the solid dissolved: 1
- salt/it dissolved;
 - it formed a solution.

ONE mark may be awarded for a response stating that the vitamin tablet dissolved if the pupil has identified that the vitamin tablet is in beaker C in part a).

Do not give credit for an insufficient response that does not explain what happened to the solid:

- *it disappeared.*

Do not give credit for an insufficient response:

- *it mixed with the water.*

(c) Award **ONE** mark for:

1

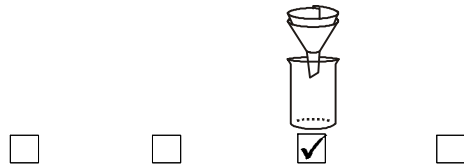
- Beaker D.

ONE mark may be awarded for:

- *vitamin tablet.*

(d) Award **ONE** mark for:

1



(e) Award **ONE** mark for an indication that Safara should evaporate the water:

1

- evaporate the water;
- by evaporation.

ONE mark may be awarded for a response explaining the beaker should be moved to a warmer place and/or left to dry:

- *move the beaker on to a (sunny/warm) window sill;*
- *put the beaker on a radiator;*
- *by heating it.*

Do not give credit for an insufficient response where it is ambiguous what is evaporating:

- *evaporate the mixture;*
- *evaporate it [it refers to the salt].*

Do not give credit for an insufficient response:

- *filter the solution.*

[5]

5. (a) Award **ONE** mark for:

1

yes

AND

an indication that the soil would have an effect on the investigation **or** that only one variable is changed in a fair test:

- the soil will make a difference/have an effect on the results;
- otherwise you could not compare (the growth of the plants);
- using different soils will make the conclusion wrong;
- you can only change the seeds/one thing in this investigation;
- all the bean seeds will be in the same conditions.

*Award **ONE** mark for:*

• yes

AND

a description of a difference between two soils:

- *chalk may be dry and clay wet;*
- *one soil may have more nutrients or moisture than others;*
- *one soil might be better than another;*
- *one might be richer/finer/rougher.*

***ONE** mark may be awarded if neither box is ticked but the creditworthy explanation indicates that using the same type of soil helps to make the test fair.*

***Do not** give credit if the 'no' box is ticked.*

***Do not** give credit for an insufficient response:*

• yes

AND

- *keep everything the same;*
- *if you had different soils it would be unfair;*
- *it may be a different type of soil.*

(b) Award **ONE** mark for:

1

no

AND

an indication that the results will not be affected if the colour of the can is changed or that there are other control variables which have a greater effect:

- you only need to control factors that affect the test, (the colour does not);
- you will be able to compare the results for the different seeds even if you change the colour of the can;
- as long as she uses the same amount of water, the test will be fair;
- it does not matter about colour so long as the material is the same;
- the amount of water has a greater effect.

Award **ONE** mark for:

no

AND

- *the colour makes no difference;*
- *it has no effect;*
- *the (amount/type of) water is the same;*
- *the colour will not change the test;*
- *the water makes a difference.*

***ONE** mark may be awarded if neither box is ticked but the creditworthy explanation indicates that using the same colour watering can does **not** affect the fairness of the test.*

***ONE** mark may be awarded if 'yes' is ticked **AND** there is an explicit explanation of how the watering can's colour may affect the temperature of any water stored.*

***Do not** give credit for an insufficient response:*

no

AND

- *the size/shape of the watering can affects the plants [size/shape does not affect the amount of water you give it];*
- *it would not be fair if she uses the same coloured watering can [restates information given via the tick box].*

***Do not** give credit for an insufficient response:*

• yes

AND

- *you should only change one variable/ factor in a fair test.*

(c) Award **TWO** marks for **all four** factors correctly classified:

2

Factor	Factor to be changed	Factor to be kept the same	Result to be measured
the type of been seed	✓		
the time taken for the seed to germinate			✓
the place where the seeds are left		✓	
the type of pot the seed is grown in		✓	

or

If you are unable to award two marks, award **ONE** mark for any three factors correctly classified. 1

(d) Award **ONE** mark for an indication that reliability is increased: 1

- to make results more reliable;
- some seeds may not germinate/grow;
- to help ensure she gets a result;
- there is more chance of germination;
- she will have more evidence/results;
- to check/confirm results;
- to get an average.

ONE mark may be awarded for a response which suggests that the same type of bean should grow similarly:

- *to see if the same type of seed always germinates more quickly;*
- *to see if they germinate at the same rate;*
- *she can compare her results/them.*

ONE mark may be awarded for a response which refers to accuracy:

- *to be more accurate.*

Do not give credit for an insufficient response:

- *to get the correct/right results/answer [implies that there is a predetermined correct answer];*
- *so she can see which is best;*
- *to see which (type of seed) germinates quickest [focuses on comparing different types of beans rather than beans of the same type];*
- *so you have lots of plants to check;*
- *so the test was fair/right/correct.*

[5]

6. (a) Award **ONE** mark for identifying vibrations: 1

- they vibrate;
- vibrations.

ONE mark may be awarded for an appropriate description of vibrations:

- *it moves up and down quickly.*

Do not give credit for an insufficient response:

- *they move up and down;*
- *they wobble/shake;*
- *they are hit [given].*

(b) Award **ONE** mark for identifying that the sound made by the tuning fork will become louder/last longer: 1

- it will produce a louder sound;
- it will go on for longer.

ONE mark may be awarded for:

- *the volume is higher;*
- *it made a loud/long sound.*

Do not give credit for a response that includes incorrect science referring to pitch:

- *it/the pitch is higher;*
- *it produces a higher sound.*

Do not give credit for an insufficient response for which the meaning is ambiguous:

- *the sound gets harder;*
- *it will vibrate more.*

(c) Award **ONE** mark for ticking the **two** correct boxes as shown:

1

What does the sound travel through when...	desk	air	both
...the tuning fork is not touching the desk?		✓	
...the tuning fork is touching the desk?			✓

ONE mark may be awarded if both 'desk' and 'air' boxes (with or without the 'both' box) are ticked in the bottom row of the table.

[3]

7. (a) Award **ONE** mark for an indication that the neck is long and/or flexible:

1

- it is (long and) bendy;
- it is flexible;
- it is long;
- it can reach out (to find food).

ONE mark may be awarded for:

- the length (of the neck);
- (it bends) to allow the beak to get in the correct position to feed;
- it can stretch;
- it is curly/bent.

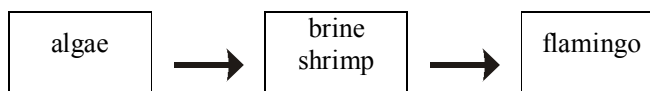
ONE mark may be awarded for a response that indicates that food passes from the mouth to the stomach, via the neck.

Do not give credit for an insufficient response which does not describe a property of the neck:

- they do not have to bend over;
- it is easier to feed;
- they can put their head in the water.

(b) Award **ONE** mark for **all three** organisms in the correct order:

1



ONE mark may be awarded for a food chain in which 'green plants' replace 'algae'.

Do not give credit for an insufficient response naming 'bird' in place of 'flamingo'.

Do not give credit for an insufficient response naming an organism from a different habitat.

- (c) Award **ONE** mark for an understanding of the role of the eggs in the life cycle of the brine shrimp or a response relating to the survival of the population, rather than of the individual: 1

- (if the eggs do not die), they can still hatch (when the lake fills with water);
- (new) brine shrimps can still develop from the eggs (when the lake fills up);
- it might prevent the species dying out/becoming extinct;
- the brine shrimp population/species will survive;
- if the eggs die, there will not be any brine shrimps (to reproduce).

ONE mark may be awarded for:

- *it will not die out [‘die out’ implies extinction of the population];*
- *to carry on the life cycle;*
- *more brine shrimps will grow (if the water dries up);*
- *more brine shrimps will be produced/ can be born;*
- *they can reproduce.*

Do not give credit for an insufficient response implying the adult brine shrimp, rather than the population, continues to live or reproduce:

- *it helps the brine shrimps to live longer;*
- *it can stay alive and live for a long time.*

Do not give credit for an insufficient response which describes, without qualification, what happens if the eggs do die:

- *the brine shrimp will become extinct.*

Do not give credit for an insufficient response that repeats given information without further explanation:

- *the adult dies but the eggs do not;*
- *because the shrimp eggs can live in dried up water/on land;*
- *because the lake will fill up again;*
- *brine shrimp eggs do not dry up.*

[3]

8. (a) Award **ONE** mark for any acceptable factor that describes the independent variable (IV): 1

- the type of material;
- number of layers of material;
- the insulators.

ONE mark may be awarded for:

- *type of cup.*

- (b) Award **ONE** mark for any acceptable control variable: 1

- volume/amount of liquid;
- shape of container;
- the place where the cups are put;
- starting temperature;
- same type of drink;
- the time the drinks are left.

ONE mark may be awarded for:

- *the cups;*
- *drink;*
- *how hot or cold the room is.*

Do not give credit for a control variable that is inconsistent with, or repeats, the IV or DV offered in parts a) and c) respectively.

*If neither an IV nor a DV are offered, the control variable may gain credit, provided it is consistent with the context of the investigation presented in the introduction. If **both** the IV **and** DV are insufficient or incorrect, the control variable cannot gain credit.*

(c) Award **ONE** mark for any acceptable dependent variable (DV) identified, eg:

1

- time to reach a particular temperature;
- time taken for this drink to cool;
- time the drink stays warm;
- which drink stayed hotter for longest;
- rate of cooling/temperature change over time;
- temperature decrease in a given time;
- temperature (of the drink);
- how hot or cold it is.

ONE mark may be awarded for:

- *heat (of the drink).*

ONE mark may be awarded for naming the appropriate equipment needed to measure the DV:

- *thermometer;*
- *timer.*

- (d) Award **ONE** mark for any acceptable new IV: 1
- the material the cup is made of;
 - cups with and without lids;
 - the amount/type of drink or liquid;
 - the number of cups into which a drink is placed;
 - the place where the drink is left;
 - the thickness of the material/cup.

ONE mark may be awarded for:

- *number of layers of materials;*
- *with and without a thermos flask;*
- *the temperature of liquid;*
- *heat (of the drink).*

Do not give credit for an insufficient response naming the IV given in part 8a:

- *insulators;*
- *material.*

[4]

9. (a) Award **ONE** mark for an indication that the yeast makes the dough/bread rise: 1
- it causes the dough/bread to rise;
 - without the yeast, the bread stays flat.
 - ◆ **Give credit** for a correct response that goes beyond the key stage 2 programme of study:
 - it produces carbon dioxide.

ONE mark may be awarded for indication that the bread increases in volume or that gas is produced:

- *it makes the bread grow/bigger;*
- *the bread has more/bigger holes;*
- *it rises;*
- *it makes gas.*

Do not give credit for a response that includes incorrect science:

- *it makes air/oxygen;*
- *the bread becomes harder.*

Do not give credit for a response that includes incorrect science describing an increase in the mass/weight of the bread:

- *it makes the bread heavier.*

Do not give credit for an insufficient response:

- *it affects the taste of the bread;*
- *it changes the height of the bread [does not necessarily imply an increase].*

(b) Award **ONE** mark for **all** ticks in the right place according to **either** set of answers: 1

	<i>Mixture 1</i>	<i>Mixture 2</i>
<i>flour</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>yeast</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>sugar</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>warm water</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>cold water</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

OR

	<i>Mixture 1</i>	<i>Mixture 2</i>
<i>flour</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>yeast</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>sugar</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>warm water</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>cold water</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(c) Award **TWO** marks for **all four** statements correctly classified: 2

Micro-organisms...

<i>are very small.</i>	True
or <i>cannot reproduce.</i>	False
<i>need nutrients.</i>	True
<i>can grow.</i>	True

If you are unable to award two marks, award **ONE** mark for **any two** or **three** statements correctly classified. 1

[4]