



KS3 Science

Health Issues

Mark Scheme

Time available: 32 minutes

Marks available: 46 marks

Mark schemes

1.

- (a) • being out of breath easily ✓
• heart disease ✓
• lung cancer ✓

*if **all three** answers are correct, award two marks
if **two** answers are correct, award one mark
if only **one** answer is correct, award no mark
if more than three boxes are ticked, deduct one mark for each incorrect tick*

2 (L3)

- (b) (i) • group A ✓

if more than one box is ticked, award no mark

1 (L3)

- (ii) • group A ✓
group B ✓

***both** boxes are required for the mark
if more than two boxes are ticked, award no mark*

1 (L4)

- (c) • they both breathe in smoke

*accept 'they spend time in smoky places'
accept 'they breathe in second-hand smoke'
accept 'they are passive smokers'
do **not** accept 'they both smoke'*

1 (L4)

- (d) • Peter ✓

if more than one box is ticked, award no mark

1 (L4)

[6]

2.

- (a) (i) • fewer bacteria

*accept 'bacteria have nowhere to breed'
or 'there are no bacteria'
or 'bacteria cannot live'
answers that just repeat
or restate the leaflet are insufficient*

- less acid (is produced)

*accept 'there is no acid' **or** 'no acid is produced'
accept, for two marks, 'there are less bacteria producing acid'*

2 (L6)

(ii) any **one** from

- it neutralises acid
accept 'to make the acid neutral'
'the alkali cancels out the acid' is insufficient
- it raises the pH of the mouth
accept 'it makes the mouth less acid'
'it reacts with the acid' is insufficient
*do **not** accept 'alkali gets rid of plaque **or** kills bacteria'*
references to brushing are insufficient

1 (L6)

(b) any **one** from

- it would show how effective brushing is in removing plaque
accept 'to see the effect'
'how clean their teeth have become' is insufficient
- to compare the amount of plaque before and after
accept 'to compare teeth before and after'
'to show how much plaque there is on the teeth' is insufficient
- to see how much plaque is removed
accept 'to see if there was a change in the amount of plaque or red'
'so they can see when the plaque is gone or removed' is insufficient
*do **not** accept 'to see how much decay is removed'*

1 (L6)

(c) (i) any **one** from

- it is more precise
'more reliable' is insufficient
- it is a better estimate
accept 'more accurate'
*'accurate **or** precise' is insufficient*
- to see exactly how much
accept 'there are more squares fully shaded
so you do not have to count as many fractions'
'to see more clearly or more easily' is insufficient
'it is more detailed' is insufficient

1 (L6)

(ii) • a number from 13 to 17 inclusive

1 (L6)

[6]

3.

(a) (i) any **one** from

- the pH is too low
'the milk goes off' is insufficient
- it is too acidic
accept 'acid is killing the bacteria'
'the bacteria were dying' is insufficient
accept 'the bacteria could be poisoned'
accept 'not enough nutrients or sugar'
'there is no sugar left' is insufficient

1 (L7)

(ii) the pH was still decreasing on day 5

- accept 'it was going down'*
- do **not** accept 'it has not reached 0'*
- accept 'the acidity was increasing'*
- 'it has not reached the bottom of the graph' is insufficient*
- 'the line continues' is insufficient*

1 (L7)

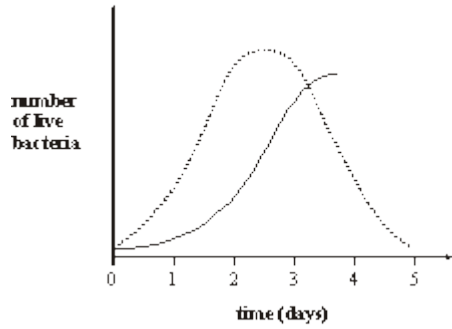
(b) (i) • a line that starts at pH 6.5 and then falls

1 (L6)

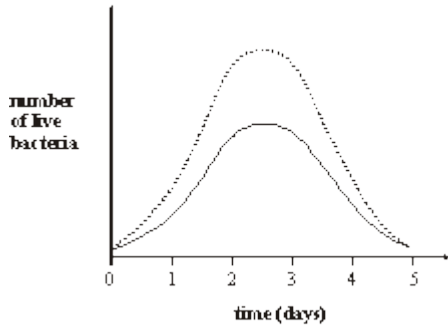
- a response that decreases less than 3.5 over 5 days

1 (L6)

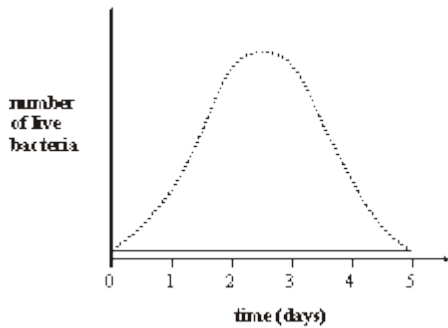
- (ii) a graph that indicates that the number of bacteria increases more slowly, starting at same point



accept a lower graph over the same line



*the line must be below the dotted line for the first 2.5 days
do **not** accept a horizontal line above the x axis as shown below*



1 (L7)

[5]

4.

(a) any **one** from

- the placenta provides **or** passes oxygen **or** food **or** gets rid of waste
accept responses that refer to a baby rather than a foetus
- the foetus needs oxygen **or** food **or** to remove waste
'the foetus needs blood from the placenta' is insufficient

1 (L7)

- as the foetus develops it needs more (food **or** oxygen from the placenta)
'it needs or provides more oxygen' is insufficient as the meaning is ambiguous
*accept, for two marks, 'the placenta provides more oxygen **or** food **or** waste removal'*
*accept, for two marks, 'the foetus needs **more** oxygen **or** food **or** waste removed as it grows'*
*a two mark answer must include one of the first two marking points and a reference to the foetus needing **more** food or oxygen from the placenta*

1 (L7)

(b) any **one** from

- the number **or** mass of red blood cells increases
accept 'they need (to make) more red blood cells'
'the mass of blood increases' is insufficient
- iron is needed for the formation of red blood cells
accept 'for haemoglobin'
'the number of blood cells increases' is insufficient
'for red blood cells' is insufficient

1 (L7)

(c) placenta
amniotic fluid

***both** answers are required for the mark*
'umbilical cord' is insufficient
answers may be in either order

1 (L7)

- (d) (i) • windpipe
lungs
mother's red blood cells
award a mark for 'windpipe' and 'lungs'
in the first places in the correct order
- placenta
umbilical cord
accept 'umbilical' or 'cord'
- blood of foetus
accept 'umbilical cord' and 'blood of foetus' in either order
award a mark for 'placenta', 'umbilical cord' and 'blood of foetus' in the last three places in an appropriate order
*all **five** answers are required for two marks*

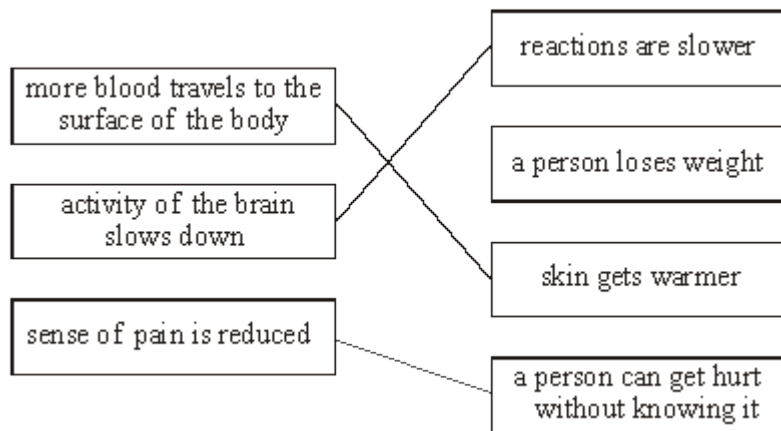
2 (L7)

- (ii) any **one** from
- less oxygen passes through the placenta
 - less oxygen in the foetus' blood
accept 'the foetus' heart beat rises'
or 'the foetus' blood pressure goes up'
 - smaller **or** brain damaged foetus
accept 'less oxygen in the mother's blood'
accept 'less oxygen for the foetus'
*do **not** accept 'no oxygen'*
 - baby may be premature
accept responses that refer to a baby rather than a foetus
accept 'the red blood cells of the foetus will contain carbon monoxide'
*do **not** accept 'only carbon monoxide passes through the placenta'*
'it passes to the foetus' blood' is insufficient
'it poisons the foetus' is insufficient

1 (L7)

[7]

5. (a) (i) •



award two marks for **all three** lines correct
award one mark for any **two** lines correct
if more than one line is drawn from any box,
do not credit either line

2 (L4)

- (ii) • reactions are slower
accept 'activity of the brain slows down'

1 (L4)

- (b) (i) • placenta
accept 'umbilical cord' or 'cord'

1 (L3)

- (ii) • amniotic fluid
accept 'fluid'
accept 'uterus'

1 (L4)

- (c) (i) • toxic

1 (L3)

- flammable
accept 'inflammable'
answers must be in the correct order

1 (L3)

(ii) any **one** from

- they can cause brain damage
- it makes you less co-ordinated
*accept 'it makes you dizzy **or** light-headed'*
accept 'you can hallucinate'
*accept 'they affect the brain **or** liver'*
- fumes stop you breathing **or** choke you
- they prevent you taking in oxygen
- you could become addicted
accept 'they damage your lungs'
accept 'it burns your throat'
*accept 'it is poisonous' **or** 'they can kill you'*
*'it damages **or** harms your body **or** makes you ill'*
are insufficient as they are equivalent to dangerous
'they are toxic' is insufficient
'it contains solvents' is insufficient
'they may dissolve chemicals in the body' is insufficient

1 (L3)

[8]

6.

(a) any **one** from

- he used 100 cm³ of each milk
*accept 'the same amount **or** mass'*
*do **not** accept 'he used the same milk'*
- he used the same volume

1 (L5)

(b) any **one** from

- cows' milk has less carbohydrate
accept 'carbohydrates'
- human milk **or** powdered milk has more carbohydrate
accept 'they have more carbohydrate'
*do **not** accept 'it has more vitamin C **or** iron'*
- sugar is a carbohydrate
accept 'they have more than 5 (g)'
accept 'they have 7.4 (g) and 7.2 (g)'

1 (L6)

(c) • for hard **or** strong bones **or** teeth
*accept 'for (healthy) bones **or** teeth'*
*do **not** accept 'for strong nails'*

1 (L5)

(d) (i) • baby-milk has more iron than cows' milk
accept 'baby-milk has more iron'
accept 'cows' milk only has 0.05 mg'
*do **not** accept 'baby-milk has more iron than cows' or human milk'*

1 (L5)

(ii) • to make blood **or** red blood cells
*accept 'for blood' **or** 'for red cells' **or** 'for blood cells'*
'to keep the blood flowing' is insufficient
*accept 'for haemoglobin' **or** 'haemoglobin contains iron'*
accept 'to prevent anaemia'
accept 'to replace iron lost in menstruation'
'for energy' is insufficient

1 (L6)

(e) any **one** from

• vitamin C is given in mg, protein is given in g
accept 'vitamin C is in mg'
accept 'the units are different'
accept 'one was measured in grams, the other in milligrams'

• mg are smaller than g
accept 'g are bigger than mg'

• 1.1 g is equal to 1100 mg

• 3.8 mg is equal to 0.0038 g

• 1.1 g is greater than 3.8 mg
accept '1.1 g of protein and 3.8 mg of vitamin C'

1 (L6)

[6]

7.

(a) **one conclusion should relate to the number of cigarettes and the other to the effect of age**

- the more cigarettes smoked, the greater the number **or** percentage that die
accept 'smoking 5 cigarettes a day is less harmful than smoking 20'

statements that do not make a generalisation, such as 'nearly 1% of men aged 55 – 64 who smoke 20 cigarettes a day will die of heart disease' are insufficient

1 (L7)

- the risk increases with age **or** is greater in older men
*accept statements such as '20 cigarettes a day is worse when you are 45 – 64 than under 45'
accept the converse*

1 (L7)

(b) any **three** from

- it causes a blood clot
- the arteries become narrower **or** blocked **or** less **or** no blood to heart (muscle)
accept 'fat clogs the arteries'
- less **or** no oxygen to the heart (muscle)
- less **or** no food **or** glucose **or** nutrients **or** minerals to the heart (muscle)
*accept, for one mark, 'the heart muscle needs oxygen **or** glucose to work properly' even though it does not include a comparison
'the heart muscle cannot work properly' is insufficient as it is given in the question*
- less **or** no carbon dioxide **or** waste removed
- may cause a heart attack
accept 'it may raise the blood pressure'
- cells cannot respire (properly)

3 (L7)

(c) (i) • *mucus* traps bacteria **or** dust **or** particles
'cell produces mucus' is insufficient

1 (L7)

- *cilia* move the mucus (towards the throat)
*accept 'cilia remove bacteria **or** dust **or** particles'*

1 (L7)

- (ii) • it paralyses them **or** they stop moving
accept 'it clogs the cilia'
accept 'they stick together'
*do **not** accept 'it kills **or** burns cilia'*
*'damages **or** removes cilia' is insufficient*

1 (L7)

[8]