



KS3 Science

Cells and Cell Functions

Mark Scheme

Time available: 44 minutes

Marks available: 62 marks

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Mark schemes

1.

(a) (i) any **two** from

- one has spots
accept 'the spots' or 'it has different markings'
- one has upright **or** floppy **or** pointy ears
accept 'the ears'
- one has a straight **or** curvy or bent snout
accept '(longer) nose or snout or face'
accept 'shape of head'
- different shaped body
accept 'fatter' or 'thinner'
'different shaped' or 'bigger' are insufficient
- one is darker **or** lighter
accept 'they are different colours'
'skin' is insufficient
accept 'length of legs'

2 (L3)

(ii) • variations ✓

if more than one box is ticked, award no mark

1 (L3)

(b) any **one** from

- upright ears
accept 'the ears'
accept 'shape of head or body'
- its snout is longer
accept 'its snout'
- its legs are longer
accept 'its legs'
accept 'thinner' or 'it is thin'
'smaller' is insufficient

1 (L3)

(c) (i) • egg cell ✓

1 (L4)

• sperm cell ✓

1 (L4)

*if more than two boxes are ticked, deduct one mark
for each incorrect tick minimum mark zero*

- (ii) • fertilisation ✓
if more than one box is ticked, award no mark

1 (L4)

[7]

2.

(a) any **two** from

- it has a flagellum or tail to help it move
accept 'can move or swim'
accept 'it has a tail'
'whip' is insufficient
- it does not have a (cell) wall
accept 'it does not have a fixed shape' or 'it changes shape'
*do **not** accept 'it does not have a membrane'*
'it only has a cell membrane' is insufficient
- it does not have a vacuole
- it has a reservoir (for taking in food)
accept 'it takes in or eats food'
accept 'it has a mouth-like structure'
'it has a mouth' is insufficient

2 (L6)

(b) • it has chloroplasts

accept 'chlorophyll'
'it makes food' is insufficient

1 (L6)

(c) • water

accept 'H₂O'

1 (L6)

• oxygen

accept 'O₂'
answers must be in the correct order

1 (L6)

[5]

3.

(a) • leaf

accept 'stem' or 'stalk'

1 (L5)

- (b) (i) • it controls the cell **or** cell's activities
accept 'it tells the cell what to do'
'it is the brain of the cell' is insufficient
*accept 'it contains **or** passes on (genetic)*
*information **or** genes **or** DNA'*

1 (L5)

(ii) any **one** from

- absorbs light **or** Sun's energy
*accept 'traps **or** catches light'*
*do **not** accept 'it attracts light'*
- photosynthesis
*accept 'it makes food **or** glucose **or** sugar*
***or** starch **or** carbohydrate'*
'it produces oxygen' is insufficient

1 (L6)

(iii) any **one** from

- gives the cell its shape
'it protects the cell' is insufficient
- supports the cell

1 (L6)

(c) any **two** from

- cell wall
accept 'wall'
- vacuole
- chloroplast

2 (L6)

(d) •

<i>photosynthesis</i>	<i>respiration</i>
	✓
✓	
	✓
✓	

*if **all four** answers are correct, award two marks*
*if **two or three** answers are correct, award one mark*
if more than one box is ticked in any row, do not credit that row

2 (L6)

4.

- (a) • chloroplast
accept 'chlorophyll'
1 (L6)
- any **one** from
- photosynthesis
*accept 'it produces food **or** glucose **or** sugar **or** carbohydrate'*
'contains chlorophyll' is insufficient
 - absorbs or traps light
1 (L6)
- (b) • nucleus
1 (L6)
- it controls the cell
accept 'it tells the cell what to do'
'brain of the cell' is insufficient
*accept 'it transfers **or** contains genetic information **or** chromosomes'*
*do **not** accept 'for reproduction'*
'it controls substances entering or leaving the cell' is insufficient
1 (L6)
- (c) any **two** from
- A
 - B
 - D
- accept 'chloroplast' **or** 'chlorophyll'*
accept 'vacuole'
accept 'cell wall'
1 (L6)
- (d) • it has chloroplasts **or** chlorophyll
accept 'it is green'
'it is a different shape' is insufficient
'it does not have a hair' is insufficient
1 (L6)

[6]

5.

(a) any **two** from

- mucus will build up
- airways will be (partially) blocked
accept 'cilia cannot move'
accept 'narrower airways' or named part of the airway
accept 'breathing will be more difficult'
'cilia do not work as well' is insufficient
do not accept 'lungs will be blocked'

2 (L7)

(b) any **two** from

- reduction in nicotine
- she gets used to less nicotine
accept 'mass of nicotine goes down'
accept 'it reduces the craving'
or 'it reduces the amount she needs'
- the patch **or** it provides her with nicotine so she does not need to smoke
- it provides her with less nicotine than a cigarette

2 (L7)

- (c) (i) • the elements are combined **or** joined **or** bonded
accept 'the atoms are joined'
accept 'it has a definite composition'
'it has three elements' is insufficient as it is given in the question

1 (L7)

(ii) • any **two** from

- carbon dioxide
- water
- carbon monoxide
accept 'CO₂'
accept 'hydrogen oxide' or steam or H₂O'
accept 'CO'
accept 'carbon oxide' if neither 'carbon dioxide'
nor 'carbon monoxide' is given

2 (L7)

[7]

- 6.** (a) (i) • sperm 1 (L3)
- (ii) • testis
accept 'testes' 1 (L4)
- (b) (i) • ovum **or** egg 1 (L3)
- (ii) • ovary
accept 'ovaries' 1 (L4)
- (c) fertilisation 1 (L3)
- (d) (i) • foetus 1 (L4)
- (ii) • uterus 1 (L3)

[7]

- 7.** (a) any **one** from
- it is streamlined
*do **not** accept 'it is slimline'*
 - it has a pointed head
'its shape' is insufficient
 - it does not have much cytoplasm
accept 'there are enzymes in the head'
'it has a nucleus' is insufficient as it is not a specific adaptation of a sperm cell
- 1 (L7)
- (b) (i) any **one** from
- in the cytoplasm of the bacterium
 - in a nucleus **or** within a membrane in the cell from the intestine
*accept 'the bacterium does not have a nucleus **or** nuclear membrane'*
accept 'in the bacterium it is not enclosed'
- 1 (L7)

- (ii) any **one** from
- it determines the characteristics of the cell
 - it transfers information
accept 'gives the cell instructions'
accept 'it tells the cell what to do'
accept 'to control the cell'
accept 'allows the cell to reproduce'

1 (L7)

- (c) any **one** from
- it has a large surface area
 - the folds increase the surface

1 (L7)

- (d) they are independent cells **or** they do not work together
or do not work in a group
accept 'each sperm cell is individual or works individually'
'the cells are not joined together' is insufficient

1 (L7)

[5]

8.

- (a) (i) • *name:* nucleus
- *function:* it controls the cell
accept 'nuclei'; 'it contains genetic information';
'contains chromosomes'
'it is the brain of the cell' is insufficient

1 (L6)

1 (L6)

- (ii) tissue ✓
if more than one box is ticked, award no mark

1 (L6)

- (b) (i) any **one** from
- to push food **or** waste along
accept 'for peristalsis'
 - to break up large pieces of food
accept 'mechanical digestion'
 - to churn food
accept 'to mix in enzymes'
'to digest food' is insufficient

1 (L6)

(ii) • they speed up digestion
accept 'they digest them'
accept 'they break them down'
accept 'they turn it into amino acids'
1 (L6)

(iii) • fibre ✓
if more than one box is ticked, award no mark
1 (L5)

[6]

9.

(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]

10.

(a) cells ✓✓

if more than one box is ticked, award no mark

1 (L3)

(b) tail

1 (L3)

(c) testis **or** testicle

accept plurals

1 (L4)

(d) fertilisation ✓✓

if more than one box is ticked, award no mark

1 (L3)

[4]