AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



MARK SCHEME

4.1.1 CELL STRUCTURE

SCORE	PERCENTAGE
/160	%

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Q1.

(a) cell membrane

extra ticks negates marks

1

(b) engulf pathogens

1

produce antibodies

1

produce antitoxins

1

extra ticks negates marks

(c) 2050 − 100

1

= 1950

*allow **1** mark for a correct subtraction of incorrect values*

1

*an answer of 1950 scores **2** marks*

(d) any **one** from:

- (more) people vaccinated

  ignore injections / treatments / medicines unqualified
  allow vaccine produced
  allow (more people given) MMR (vaccine)
  *do **not** allow antibiotics*
  ignore less people infected

- (more) people immune
- no new measles strain

1

(e) any **one** from:

- measles is (caused by) a virus

  allow measles is not caused by a bacterium

- viruses cannot be killed / destroyed by antibiotics

  *allow antibiotics **only** kill / destroy bacteria*
  ignore harmed / treated

1

(f) any **one** from:

- use of a barrier method of contraception

  ignore use of diaphragm

- use of a condom

  ignore use protection / safe sex

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- vaccination / immunisation
- avoid sexual intercourse / contact

*do **not** accept less sexual intercourse / contact*

1

(g) any **one** from:

- size / shape/ type of paper disc

ignore paper disc unqualified

- concentration of antibiotic

allow strength / dosage of antibiotic

- volume / amount of antibiotic
- (incubation) time

allow 3 days

- (incubation) temperature

ignore size of petri dish

1

(h) to check that the disc / water did not have an effect
or
to make sure it was the antibiotic that had an effect

allow for comparison with the antibiotics

allow as a (experimental) control

*do **not** accept as a control variable*

1

(i) (antibiotic) **A**

no marks if wrong antibiotic given

1

any **one** from:

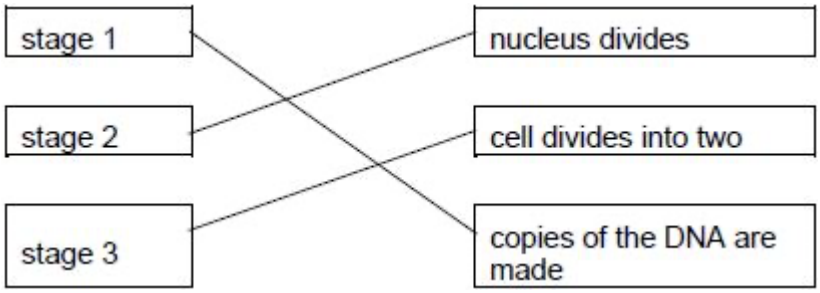
- (antibiotic **A**) had the larg**est** clear area around it
- (antibiotic **A**) killed the **most** bacteria

1

[13]

Q2.

(a)



*allow **1** mark for 1 or 2 correct*

credit can be given where students have matched the boxes correctly, for example numbering the boxes

2

(b) 6 picograms

1

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(c) meristem cells in plants can differentiate throughout the life of the plant

1

(d) any **two** from:

- may cure / treat diseases
  or
  cure medical conditions
  or
  produce replacement cells / tissues / organs

  allow example e.g. diabetes / paralysis
  allow cells can be stored for future use
  ignore used in medical treatments
  ignore patient makes / grows cells / tissues / organs

- cells unlikely to be **rejected** by patient)

  ignore same genetic information

- cells / tissues of any type can be produced

  ignore differentiated into most types of cells

- many cells produced

- cells produced could be used for research

- would reduce waiting time for transplants

2

ignore references to cost
ignore all reference to producing babies / IVF

(e) any **two** from:

- (potential) life is killed / destroyed

  allow embryo is killed
  ignore embryo is destroyed
  ignore embryo is a life / becomes a baby

- shortage of donors / eggs

- egg donation / collection has risks

- do not yet know risks / side effects of the procedure on the patient

  ignore long term effects are not well understood
  allow may cause tumours / cancer

- may transfer (viral) infection

- poor success rate

  allow in terms of viable egg / embryo / cell / tissue / organ production

2

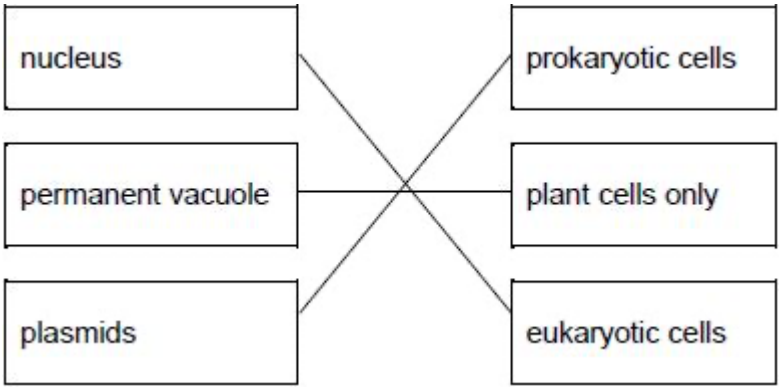
ignore references to cost
ignore unethical unqualified
Ignore reference to religion / beliefs

[8]

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Q3.

(a)



*allow **1** mark for one or two correct links*

2

(b)

vacuole	ribosome	cell wall

tick box takes precedence
if no tick is given, look at both the figure and the circling of words in the table
if writing is seen on the figure and in the table both must be correct

1

(c) turn the (fine focusing) knob until the cells are in focus

allow focus it

*do **not** accept increase magnification*

ignore decrease magnification
ignore clear
ignore references to resolution / illumination
ignore zoom in / out

1

(d) (rotate the) nosepiece / objective lens

allow change the (objective / eyepiece) lens

1

to a higher power (lens)

allow (to) increase the magnification

a comparator is required

ignore change / adjust the magnification

allow stronger or more powerful lens

ignore references to resolution / illumination unqualified

ignore zoom in / out

ignore references to an electron microscope

1

(e) conversion of units:
(112 mm ⟶) 112 000 (µm)
or
(280 µm ⟶) 0.28 (mm)

1

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$(\text{magnification} =) \frac{112}{0.28}$

or

$(\text{magnification} =) \frac{112000}{280}$

*allow **1** mark for no conversion of units 112 / 280*
or
incorrect value from step 1 correctly substituted

1

400 (×)

*do **not** accept if units are given*
*if no other mark scored allow **1** mark for:*
$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$

a triangle with words or letters in is insufficient, as the correct rearrangement is needed

1

*an answer of 400 (×) scores **3** marks*

[9]

Q4.

(a) any **one** from:

- meristem(s)
- **tip** of shoot
  ignore stem and embryo
- **tip** of root

1

(b) to produce large numbers of identical plants

1

(c) 6×10^{-12} (grams)

1

(d) $\frac{28}{360} \times 15$

or

1.166666666(r)

allow $\frac{7}{90} \times 15$

allow correct rounding
allow 1.16

1

1.17 (hours)

*allow **1** mark for 1 hour 10 minutes **or** 1 and 1/6 hours **or** 70 minutes **only** if units given*

1

*an answer of 1.17 (hours) scores **2** marks*

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(e) **stage 1**
cell growth
or
increase in number of organelles

allow increase in named organelle e.g. ribosomes / mitochondria

1

DNA replicates*
or
two copies of each chromosome form*

**allow DNA duplicates / doubles*
**ignore genetic information replicates*
if this statement given as part of stage 2 allow **max 4 marks*

1

stage 2 / mitosis
one set of chromosomes moves to each end of cell

allow chromosomes separate or are pulled apart

1

nucleus divides

allow nucleus splits into two

1

stage 3
cytoplasm / cell membrane divides to form two (genetically) identical cells

allow cytokinesis

1

***max 4** if correct sequence but no reference to stage numbers*

***max 4** marks if no stage numbers given*
ignore names of phases

marks can be awarded for labelled diagrams

(f) any **two** from:

advantages:

- may be used to cure / treat (current / future) diseases
  or
  cure medical conditions
  or
  produce replacement cells / tissues / organs

  allow example e.g. diabetes / paralysis
  ignore used for medical treatments

- cells / tissues of any type could be produced

  allow cells differentiate into many types

- cells / tissues of any type could be produced

  ignore identical cells are produced unqualified

- many cells produced
- cells produced could be used for research
- would reduce waiting time for organ transplants

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2

any **two** from:

ignore references to cost
ignore unethical unqualified
ignore references to religion / beliefs

disadvantages:

- potential life is killed / destroyed

  allow embryo is destroyed
  ignore cells destroyed or wasted

- shortage of donors / eggs
- egg donation / collection has risks
- do not yet know risks /side effects of the procedure on the patient

  allow may cause tumours / cancer

- may transfer (viral) infection
- poor success rate to produce viable eggs / embryo

2

ignore references to cost

[14]

Q5.

(a) A

1

(b) D

1

(c) A = synapse

1

B = motor (neurone)

1

in this order only

(d) a reflex action

1

(e) 12 (ms)

1

0.012 (s)

1

*an answer of 0.012 (s) scores **2** marks*

(f) A

1

(g) controls the release of an egg

1

(h) in the blood(stream)

allow in the plasma / blood vessels

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*do **not** accept in blood cells / platelets*

1

(i) (person) C

1

any **one** from:

- the testosterone level is high(er)

  allow testosterone is the main male (sex) hormone

- the oestrogen **and / or** progesterone levels are low

- the oestrogen and progesterone levels do not rise and fall as they do in a menstrual cycle

  allow there is no menstrual cycle

1

no marks if A or B given

[12]

Q6.

(a) nucleus

1

cell wall

1

(b) any **one** from:

- contain (many) chloroplasts
- positioned near the top surface of the leaf
- packed closely together

1

(c)

Structure	Tissue	Organ	Organ system
Leaf		✓	
Xylem	✓		
Roots, stem and leaves			✓

additional tick in a row negates the credit for that row

allow **1** mark for two correct rows

2

(d) ×4

1

reason: any **one** from:

- gives the largest field of view
- easier to focus

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1

(e) eyepiece lens: ×10
and
objective lens: ×40

or

eyepiece lens: ×5
and
objective lens: ×80

allow sensible suggestions that give a magnification of ×400

1

(f) 12.4 (mm)

allow 12 (mm)

1

(e) real width = $\frac{12.4}{400}$

1

0.031 (mm)

*an answer of 0.031 (mm) scores **2** marks*
allow ecf from part (f)

1

[11]

Q7.

(a) any **two** from:

- synthesis of new molecules
  allow named molecule eg starch / glycogen / cellulose / lipids / fats / proteins / hormones / antibodies
- for active transport
- to keep warm (in mammals / birds)
  allow description
  allow to keep warm (in animals)
  allow for movement (in animals)
  allow for transmission of nerve impulses (in animals)

2

(b) mitochondria / mitochondrion

1

(c) both occur without oxygen

1

both release (a small amount of) energy

1

muscle cells produce lactic acid but plant cells produce ethanol

1

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muscle cells do **not** produce carbon dioxide but plant cells do

marks can be awarded from correct word or balanced symbol equations

1

(d) the amount of oxygen needed to react with the lactic acid formed

allow the amount of oxygen needed to break down

or *oxidise the lactic acid*

1

[8]

Q8.

(a) any **one** from (bacterial cell):

- has a cell wall
- has plasmids

allow converse

- has a single DNA loop
- has no nucleus
- is much smaller

1

(b) 14.50 × 3 = 43.5

1

43.5 + 14.50 = 58
or
14.50 × 4 = 58

*allow 58 for **2** marks*

1

(58 / 100000 =)

0.00058 or 0.058%

*an answer of 0.00058 or 0.058% scores **3** marks*

1

(c) decreased (from 2006 to 2014)

1

(d) improved hygiene (for food preparation)

allow stricter food hygiene regulations

1

vaccination of poultry

1

(e) any **one** from:

- warmer weather so number of bacteria increases faster
- more cold / precooked food (rather than hot food) being eaten
- food not cooked properly on barbeques

1

[8]

Q9.

(a) evaporation

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1

(b) water is condensing

1

(c) safe

1

(d) uses a lot of electricity / energy

ignore cost unqualified

allow the volume of water is too small

***or** you only get a small volume produced*

1

(e) guard cells

1

(f) chloroplasts

1

permanent vacuole

1

(g) $\frac{12}{0.03}$

1

400

1

(h) **C**

1

highest number of stomata

1

[11]

Q10.

(a) cell membrane

extra boxes ticked negates mark

1

(b) nucleus

extra boxes ticked negates mark

1

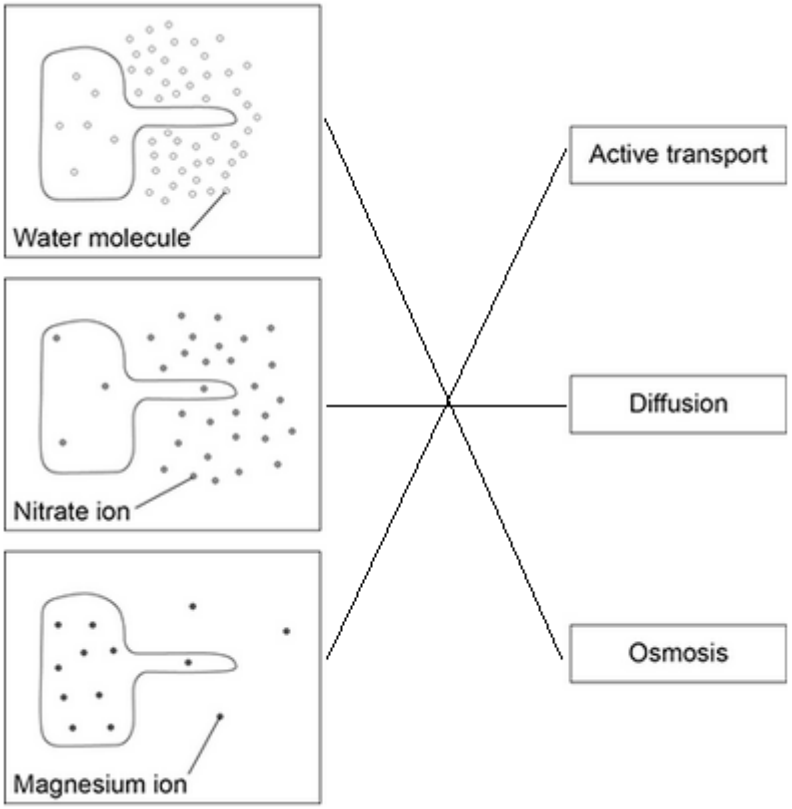
(c) has a tail so it can swim (to an egg)

accept has many mitochondria to release energy to swim

1

(d)

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*all three correct for **2** marks*
*one or two correct for **1** mark*

2

[5]

Q11.

(a) 8 (micrometres)

1

(b) red blood cell(s)

1

white blood cell(s)
accept named cell
eg phagocyte / lymphocyte

1

(plasma)
transports proteins / dissolved substances / food (molecules) / urea / hormones / blood
cells

1

(c) any **one** from:

- you could lose a lot of blood
- bleed internally

allow bleeding would not stop
allow could bleed to death

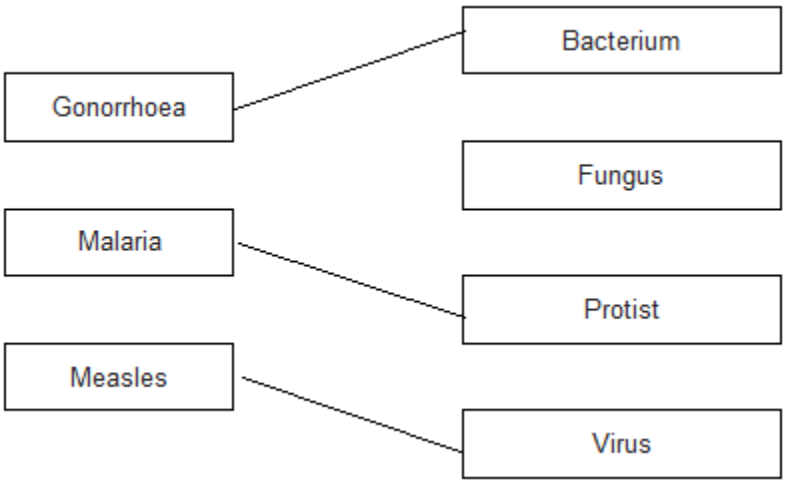
1

[5]

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Q12.

(a)



3

(b) (trachea) has mucus

1

to trap pathogens

1

(trachea) has cilia

1

to move mucus out of trachea

1

(c) **dependent variable:**
number of times mosquitoes landed on socks

1

control variable:
any **one** from:

- number of mosquitoes in each container
- length of time socks worn
- dampness of socks
- same type of socks
- size of container
- time
- temperature
- species of mosquito
- age of mosquito

1

(d) use worn socks
or
use chemical from worn socks

1

to attract / trap infected mosquitoes

1

or accept:
wear clean socks / change socks regularly (1)

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to reduce the chance of attracting mosquitoes (1)

(e) less chlorophyll present

1

(so) less light absorbed

1

(so) reduced photosynthesis
or
(so) less sugar / food made

1

[14]

Q13.

(a) **D**

1

any **one** from:

- has chloroplasts
- has a (large) vacuole
  ignore has a (cell) wall

1

(b) **B**

1

does **not** have a (cell) wall
*allow has <u>only</u> a nucleus, (cell) membrane **and** cytoplasm*

1

(c) **C**

1

any **one** from:

- genetic material is not in a nucleus
  allow no nucleus
- has a single loop of DNA

1

(d) real size = 25 / 100 000

1

0.00025

1

(conversion to) 0.25 (µm)
*allow 0.25 (µm) with no working shown for **3** marks*

1

[9]

Q14.

(a) animal cells also have cell membrane

1

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(b) 1945–1955

allow 1946–1956

***or** 1947–1957*

1

(c) $(2 / 22 =) 9.0\dot{9}$

*allow 9.09 (%) or 9 (%) with no working shown for **1** mark*

1

9.1 (%)

*allow 9.1 (%) with no working shown for **2** marks*

1

(d)

More likely	Less likely
	✓
	✓
✓	
✓	
✓	

*allow **3** marks for 4 correct*

*allow **2** marks for 3 correct*

*allow **1** mark for 2 correct*

4

more than one tick in a row negates a mark

[8]

Q15.

(a) asexual reproduction

1

(b) mitosis

1

(c) clones

1

(d) 44

1

[4]

Q16.

(a) human cells have cell membrane

or

human cells have no cell wall

1

(b) can no longer synthesise proteins

1

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(c) antibiotics are being developed at a slower rate than emergence of new resistant strains

1

resistant strains mean we cannot treat (common) infections

1

reduce (future) cost of antibiotic resistant infections

1

[5]

Q17.

(a) $\text{magnification} = \frac{\text{image size}}{\text{real size}}$

= 29 ÷ 0.03

1

= 967

1

*allow 967 with no working shown for **2** marks*

(b) they are transverse

1

(c) wave speed = frequency × wavelength

allow $v = f\lambda$

1

(d) 75 cm = 0.75 m

1

1.6 = f × 0.75

1

f = 1.6 ÷ 0.75

1

= 2.13 (Hz)

1

*allow 2.13 (Hz) with no working shown for **4** marks*

[8]

Q73.

(a) A – (cell) membrane

allow phonetic spelling

1

B – cytoplasm

1

C – nucleus

1

(b) any **two** from:

- to react / respond (to the surroundings)

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ignore brain / nervous system reacts
ignore adapt

- avoid dangers / prevent harm to body
  allow examples eg to prevent body being burned by hot object

- to coordinate behaviour / process information
  ignore send messages

2

[5]

Q74.

A – (cell) membrane

1

B – cytoplasm

1

C – nucleus

1

must be in correct order
accept phonetic spelling – see marking guidance 3.6

[3]

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Q1.

(a) 51% of students identified A as being the cell membrane. Almost as many thought it was the cell wall.

(b) 39% of students achieved full marks for identifying the three ways that white blood cells defend the body. Almost a third of students had not read the instruction to tick three boxes, and only ticked one box instead of three. The majority of students knew that white blood cells produce antibodies.

(c) 60% the students achieved two marks. 195 of students achieved one mark. This was usually for a correct subtraction of incorrect graph readings. Some students attempted to subtract the values for 2013, 2014 and 2015 from that for 2012.

(d) 38% of students suggested a correct reason for the decrease in the number of cases of measles. They usually said it was due to the use of vaccines or vaccinations. Some referred to the MMR vaccine.

Vague responses such as new cures, improved medical knowledge, new medical technology or new treatments were insufficient. The use of antibiotics was seen quite often, which was incorrect.

(e) 43% of students knew that measles is caused by a virus so cannot be treated with antibiotics. Some said antibiotics would not treat measles because they were not strong enough. Others said measles is not a disease, or is not caused by a pathogen.

(f) 34% of students gave a correct method to control the spread of gonorrhoea. The majority of these said use a condom. Safe sex, use protection, or contraception unqualified were insufficient. Others achieved the mark for saying ‘vaccinate people’.

Some students said use antibiotics, which was given in the question and was therefore ignored. Others did not realise gonorrhoea is a sexually transmitted infection and said wash your hands or cover your mouth when coughing.

(g) 62% of students gave a correct control variable. The concentration of the antibiotic or size of the disc was often given. Just saying paper disc unqualified was ignored; the size, shape or type of paper disc was required. Many said the type of antibiotic, which was the independent variable.

(h) 27% of students understood why one disc was soaked in water. They usually said it was for a comparison with the antibiotics.

Most responses were not clearly expressed. There were some confused ideas about the water affecting the antibiotics or the agar.

(i) Many students identified antibiotic A as being the most effective in treating gonorrhoea. 67% of students also included a correct reason for their choice to achieve full marks.

Q2.

(a) 33% of students achieved both marks for knowing the sequence of events in the cell

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cycle. 51% of students achieved one mark, which was usually for realising that in the final stage the cell divides into two.

(b) The majority of students thought the mass of DNA in the new cells produced by mitosis would be half of that in the cell at the start of the cell cycle. 30% of students said the mass would be the same.

(c) The majority of students incorrectly thought that animal stem cells divide by meiosis. 31% of students correctly said that meristem cells in plants can differentiate throughout the life of the plant.

(d) The majority of students copied sentences from the information given in the question. There had to be some added value in order to be awarded marks. A fifth of students scored 1 mark. This was often for saying therapeutic cloning would produce replacement cells or could treat some diseases. Very few gained 2 marks. A lot of students confused therapeutic cloning with IVF treatment.

(e) The majority of students copied the sentence about the embryo being destroyed, which had no added value, and so it was ignored. Those who rephrased this to say a life is killed or destroyed were awarded a mark. Another common correct response was that the procedure may not work.

Q3.

Foundation

(a) 57% of students demonstrated a good understanding of prokaryotic and eukaryotic cells and were awarded two marks. To achieve both marks all three structures had to be correctly linked to the type of cell where each structure is found.

When only one mark was awarded it was usually for identifying the nucleus as being found in eukaryotic cells.

(b) 59% of students were awarded the mark for identifying the vacuole, ribosome and cell wall in the plant cell.

Students were asked to tick one box, but some labelled the diagram, whilst others circled the names of the structures in the table.

(c) 17% of students achieved this mark. The cells on slide A appeared large, but blurred. The required response was a reference to focusing the image.

Many students referred to zooming in or out, to altering the magnification or using an electron microscope. All of these were ignored. However, if they said increase the magnification this was incorrect and negated a correct answer of focusing the image.

(d) The cells on slide B appeared small but in focus. The required response was a description of how to obtain a larger image. There were two marks available for this question:

- one was for reference to changing the lens
- one was for stating that the new lens would have a higher power or magnification.

3% of students achieved two marks, and 23% obtained one mark, usually for saying increase the magnification.

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Changing or using a better magnification was insufficient. Many students referred to zooming in or out or said use an electron microscope, both of which were ignored.

(e) There were three marks available for this question.

- The first mark was for conversion of units. Many students did not attempt a conversion but could still go on to achieve two marks. A range of different errors were made which included multiplying or dividing by 10, 100 or 10 000, rather than by 1000. Some did not appreciate that a micrometre is smaller than a millimetre.
- The second mark was for correctly substituting into the rearranged equation to calculate magnification. This mark was allowed even if their initial conversion was incorrect.
- The final mark was for an answer of 400. Some students added a unit to their answer and this negated the mark.

33% of students achieved all three marks, and 33% achieved two marks. 24% of students scored zero. This was often for 280 ÷ 112 = 2.5

Higher

(a) Students demonstrated a good understanding of prokaryotic and eukaryotic cells. 87% of students achieved two marks. To gain both marks all three structures had to be correctly linked to the type of cell where each structure is found.

When only one mark was awarded it was usually for identifying the nucleus as being found in eukaryotic cells.

(b) Students demonstrated a good understanding of cell structure. 80% of students were awarded the mark for identifying the vacuole, ribosome and cell wall in the plant cell.

Students were asked to tick one box, but some labelled the diagram, whilst others circled the names of the structures in the table.

(c) 27% of students achieved this mark. The cells on slide A appeared large, but blurred. The required response was a reference to focusing the image.

Many students referred to zooming in or out, to altering the magnification or using an electron microscope. All of these were ignored. However, if they said increase the magnification this was incorrect and negated a correct answer of focusing the image.

(d) The cells on slide B appeared small but in focus. The required response was a description of how to obtain a larger image. There were two marks available for this question.

- One was for reference to changing the lens.
- One was for stating that the new lens would have a higher power or magnification.

45% of students obtained a mark. Where a mark was awarded it was usually for saying increase the magnification.

Changing or using a better magnification was insufficient. Many students referred to

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zooming in or out or said use an electron microscope, both of which were ignored.

(e) There were three marks available for this question.

- The first mark was for conversion of units. Many students did not attempt a conversion but could still go on to achieve two marks. A range of different errors were made which included multiplying or dividing by 10, 100 or 10 000, rather than by 1000. Some did not appreciate that a micrometre is smaller than a millimetre.

- The second mark was for correctly substituting into the rearranged equation to calculate magnification. This mark was allowed even if their initial conversion was incorrect.

- The final mark was for an answer of 400. Some students added a unit to their answer and this negated the mark.

22% of students achieved two marks. 56% of students scored zero marks. This was often for 280 ÷ 112 = 2.5

Q4.

(a) 26% of students achieved the mark for saying stem cells are found in meristems or the tips of roots or shoots. A variety of incorrect organs or tissues were named, the most common being root, stem, xylem and embryo. Some students named parts of a cell, such as chloroplast or cytoplasm.

(b) 49% of students correctly identified producing a large number of identical plants as one economic use of plant stem cells. There was some confusion of genetic engineering and stem cell technology, as most other students selected to create genetically modified crops as their answer.

(c) This question was targeted at grades 8−9. 4% of students correctly converted 6 picograms into grams and wrote the answer in standard form.

Some students did not understand the term standard form and gave a number written in decimal form. This value was usually an incorrect conversion of picograms to grams. Common incorrect attempts at writing the value in standard form included 6×10^{-6} or 6×10^{-9}

(d) 15% of students achieved both marks for calculating the number of hours the cell spent in mitosis and giving the answer to three significant figures. 20% of students achieved one mark because they rounded the number incorrectly or gave their answer in hours and minutes. Many students referred to both 28 and 15 but used an incorrect calculation or did not realise there are 360° in a circle.

(e) 14% of students achieved more than two marks. The majority of students gained a mark for stating that the cell would grow during stage 1, or two copies of each chromosome form. The latter of these events was often included in stage 2, rather than stage 1. This error, or if stage numbers were omitted, limited the response to a maximum of four marks.

Some very good descriptions of mitosis, including spindle formation, were seen. However, a lot of students did not mention the nucleus dividing. A few students gained the final mark for saying cytokinesis occurred in stage 3. Few gave the full description of the cytoplasm or membrane dividing to form two identical cells.

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42% of students did not achieve any marks. This was usually because they described the process of IVF. Some confused the cell cycle with meiosis and fertilisation.

(f) 31% of students achieved two or more marks.

Marks were generally awarded for advantages, rather than disadvantages. Common correct advantages given included:

- how stem cells can be used in patients
- diseases stem cells can be used to treat, for example paralysis
- that the cells would not be rejected by patients.

The most common disadvantage mentioned was that an embryo or potential life was destroyed. Saying the cells were wasted was insufficient.

A lot of students confused the process with that of IVF.

Q5.

(a) 98% of students were able to identify the cell nucleus from the sensory neurone

(b) 50% of students were able to identify the receptor.

(c) Students had to label the synapse and the motor neurone on the nerve pathway. On many scripts seen (13%) there was no attempt to label either part. Where a part was correctly identified it was occasionally the motor neurone. Synapse was very rarely seen. 9% of students achieved both marks.

(d) 91% of students were able to identify that the action described was a reflex action.

(e) Students were asked to read two values, in milliseconds, from a table and subtract them to give the difference in muscle contraction time between an old and a young person. An answer in seconds was required. 72% of students achieved one mark from an answer of ‘12’. 3% of students managed to successfully convert milliseconds into seconds, to arrive at a value of 0.012s.

(f) The position of the pituitary gland was correctly located by 35% of students.

(g) The most common misconception for the function of LH was to control blood glucose concentration. 32% of students knew that it controlled the release of an egg.

(h) This question was generally well answered with 57% of students identifying the bloodstream. However, many students thought that LH travelled via the nervous system, digestive system or in blood cells which was not creditworthy.

(i) Overall 80% of students were able to identify person C as the 18-year-old boy from three graphs showing the relative levels of sex hormones. Students usually gave the correct reason of there being a high level of testosterone, although some stated the low amounts of oestrogen / progesterone.

Often students failed to gain the mark because they made statements such as ‘only males produce testosterone’, or ‘only females produce oestrogen’. Those who did not achieve the second mark often made vague statements referring to hormones rather than naming the specific hormones.

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Q73.

(a) The most common correct response was nucleus. Many labelled the membrane as a cell wall.

(b) Many students gave examples of how the body detects stimuli, or listed different stimuli can be detected, but did not go on to explain why this is important. The most common correct response was ‘to prevent harm to the body’. Few gained the third marking point for the idea of the nervous system co-ordinating behaviour or processing information. There were many vague responses about sending messages, which was not enough to gain the mark.

Q74.

This question addressed a topic new to the specification leading to considerable variation in responses. The most common correct response was ‘nucleus’. Many students gave ‘synapse’ for one of the labels.

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