

# MARK SCHEME

# GCSE

## BIOLOGY

## AQA - TRIPLE SCIENCE

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B 1 - TEST 1

CELL BIOLOGY

Beginner

## Mark schemes

- 1.** (a) A (inoculating / wire) loop 1
- B Petri dish
- allow (agar) plate*
- ignore ref to culture medium* 1
- (b) (i) to kill (unwanted) bacteria / microorganisms / microbes
- allow fungi*
- ignore viruses / germs* 1
- (ii) Using a flame 1
- (iii) any **one** from:
- so bacteria / microorganisms / microbes / pathogens / fungi (growing in dish) do not get out
- ignore reference to gases*
- ignore viruses / germs*
- so bacteria / microorganisms / microbes / pathogens / fungi (from the air) do not get in.
- ignore viruses / germs* 1
- (c) 25 °C 1
- [6]**
- 2.** (a) (i) A = nucleus 1
- B = (cell) membrane 1
- (ii) any **two** from:
- ignore shape*
- no (cell) wall
  - no (large / permanent) vacuole
  - no chloroplasts / chlorophyll 2
- (b) because high to low oxygen / concentration **or** down gradient
- allow 'more / a lot of oxygen molecules outside'*
- ignore along / across gradient* 1

(c) a tissue

1

[6]

3.

(a) xylem **and** phloem

*either order*

*allow words ringed in box*

*allow mis-spelling if unambiguous*

1

(b) (i) movement / spreading out of particles / molecules / ions / atoms

*ignore names of substances / 'gases'*

1

from high to low concentration

*accept down concentration gradient*

*ignore 'along' / 'across' gradient*

*ignore 'with' gradient*

1

(ii) oxygen / water (vapour)

*allow O<sub>2</sub> / O<sub>2</sub>*

*ignore O<sup>2</sup> / O*

*allow H<sub>2</sub>O / H<sub>2</sub>O*

*ignore H<sup>2</sup>O*

1

[4]

4.

(a) (i) water / H<sub>2</sub>O

*accept oxygen*

*allow H<sub>2</sub>O*

*do **not** allow H<sup>2</sup>O or H<sub>2</sub>O*

1

(ii) the mineral ions are absorbed by active transport

1

the absorption of mineral ions needs energy

1

(iii) have (many root) hairs

1

(which) give a large surface area (for absorption)

1

(b) carbon dioxide in  
**or**  
oxygen out  
**or**  
control water loss  
*accept gas exchange*  
*ignore gases in and out*  
*ignore gain / lose water*

1

(c) (i) guard cells  
  
(ii) (stomata are) closed  
*allow there is no gap / space*

1

1

(iii) plant will wilt / droop  
*ignore die*

1

[9]

5.

(a) to kill microorganisms on / in the flask  
**or**  
so only microorganisms in the milk caused the results  
*allow bacteria / fungi / microbes*  
*do **not** accept viruses*  
*ignore germs*

1

(b) heating  
  
to over 100 °C  
*allow place in oven / pressure cooker*  
*do **not** accept disinfectant*  
*allow other suitable method – e.g. use of UV*

1

1

(c) to prevent microorganisms entering from the air  
*allow bacteria / fungi / microbes for microorganisms*  
*do **not** accept viruses*  
*ignore germs*

1

(d)

0	olive-green	7
1	olive-green	7
2	olive-green	7
3	orange-green	6

*all correct for 1 mark*

1

(e) (pH meter) – more accurate / more precise

*allow more exact*

*allow can measure to 0.1 pH unit*

*or to smaller intervals of pH*

1

(leaving...6 days) – obtain greater pH change

**or**

because there was (very) little change in 3 days

*allow more acid will be made*

1

(f) scale  $> \frac{1}{2}$  of x-axis

**and**

x-axis labelled (time in) days

1

points plotted correctly

*all 7 correct = 2 marks*

*5 or 6 correct = 1 mark*

2

line of best fit = smooth curve through points

*do **not** accept ruled point-to-point*

1

(g) (1<sup>st</sup> day) too few bacteria

1

(after day 1 more bacteria so more) acid made

1

(days 5-6) sugar / food used up

**or**

low pH denatures enzymes

**or**

low pH kills bacteria

*allow enzymes do not work*

*do **not** accept enzymes killed*

1

- (h) (similarity) – same start pH / pH7 and end pH / pH4.5  
**or**  
 same pH change / change = 2.5  
 (difference) – faster

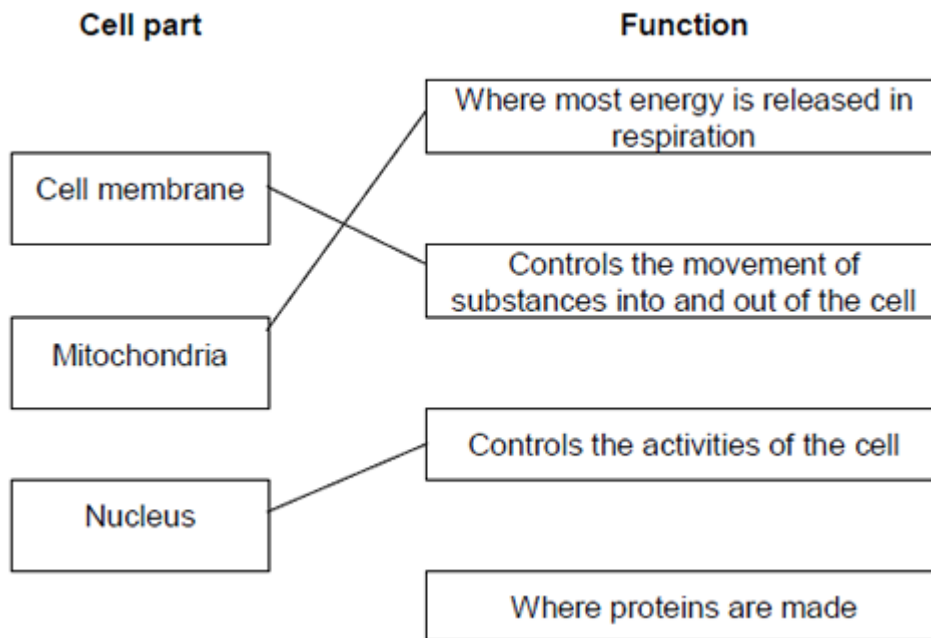
1

1

[16]

6.

(a)



*extra lines cancel*

3

(b) Cell wall

*in either order*

1

Chloroplast

*allow (permanent) vacuole*

1

[5]

7.

(a) (i) A = cytoplasm

1

B = (cell) membrane

1

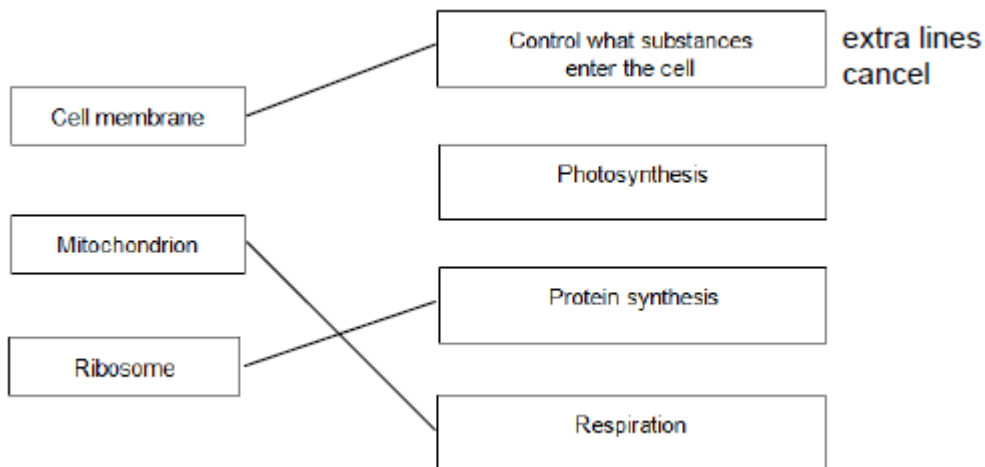
(ii) nucleus

*accept chromosome / DNA / genes*

*accept phonetic*

1

(b)



3

[6]

8.

(a) nucleus labelled correctly

1

cell membrane labelled correctly

1

(b) mitosis

1

(c) electron (microscope)

1

(d) higher magnification

1

(e) 45 (mm)

1

45 / 250 or 0.18 (mm)

*allow ecf*

1

180 (µm)

1

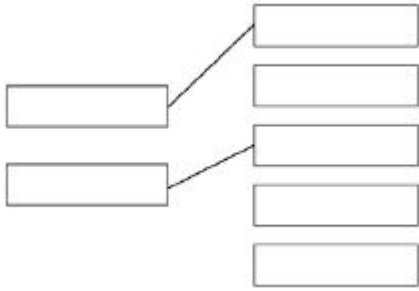
*allow 180 (µm) with no working shown for 3 marks*

(f) 0.2 µm

1

[9]

9. (a)



*additional line from a level of organisation negates the mark for that level of organisation*

2

(b) palisade mesophyll

1

(c)  $\frac{50}{8}$

1

6 / 6.25 / 6.3 (micrometres)

1

*an answer of 6 / 6.25 / 6.3 scores 2 marks*

(d) they have no chloroplasts / chlorophyll

*allow they are underground*

*allow they don't get (access to) light*

*allow (because) photosynthesis needs light*

*allow they can't absorb light*

*ignore 'sun'*

*ignore 'it is dark'*

1

(e) differentiation

1

(f) to protect endangered plants from extinction

1

(g) plants can be produced quickly

1



(h) any **one** from:

- glucose / sugars / starch
- amino acids / protein
- hormones

*allow named hormones e.g. auxin*

- ions / minerals

*allow magnesium / nitrate*

- vitamins

*allow named vitamins e.g. vitamin B*

- water

*allow H<sub>2</sub>O / H2O*

*ignore oxygen / carbon dioxide / agar / nutrients / fertiliser*

1

[10]