AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



MARK SCHEME

4.2.2 ANIMAL TISSUES, ORGANS AND ORGAN SYSTEMS (PACK 6)

SCORE	PERCENTAGE
/44	%

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Mark schemes

Q1.

(i) respiration

1

(ii) oxygen **or** O_2

*do not accept O **or** O^2*

1

(iii) carbon dioxide **or** CO_2

do not accept CO^2

1

[3]

Q2.

(a) to transfer / provide / give release energy

***or** production of ATP / adenosine triphosphate (molecules)*

accept to give heat

1

(b) (i) $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

accept any other

n : 6n : 6n : 6n ratio

do not credit if any other changes have been made

1

(ii) glucose

do not credit sugar / sucrose

1

(c) (i) any **two** from

large surface

thin (surface)

moist (surface)

(with a good) blood supply

2

(ii) carbon dioxide

accept water vapour

do not credit just water

1

(d) (i) anaerobic (respiration)

1

(ii) any **three** from

in mitochondria

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glucose decomposes / breaks down / reacts
or *glucose → lactic acid for (2) marks*

to give lactic acid
or *breathing hard*
or *lactic acid → CO2 + water*

causing pain

(leaving an) oxygen debt

(quick) source of energy

(but) less efficient than aerobic respiration
accept less efficient than with oxygen

3

[10]

Q3.

(a) oxygen passes from the air/lungs into the body
gains 1 mark

but
oxygen passes from the air/lungs into the blood
gains 2 marks

carbon dioxide passes from the body into the air/lungs
gains 1 mark

but
carbon dioxide passes from the blood into the air/lungs
gains 2 marks

4

(b) increased/5% more
gains 1 mark

but
6 times more (in air breathed out)
gains 2 marks

2

[6]

Q4.

(a) *idea*
O_2 increases
CO_2 decreases
for 1 mark each

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2

(b) (i)

reduced	unchanged	increased
digestive system	brain	skin
bone		muscles
		heart and arteries

All (6) correct gains 4
5 correct gains 3
4 correct gains 2
2/3 correct gains 1

Correct wording not needed if unambiguous. No mark if organ repeated.

4

(ii) more/higher/quicker/faster
gains 1 mark

but
7500 more/from 5,000 to 12,500 more
gains 2 marks

but
7500 cm^3/min more
gains 3 marks

or 2½ times more

3

[9]

Q5.

(a) carbon dioxide in range 2.5-5%
gains 1 mark

but
carbon dioxide closer to 4% than to 3% or 5%
gains 2 marks

OR
oxygen in range 15-17.5%
gains 1 mark

but
If 3 sectors drawn and two correctly labelled, award marks and ignore remaining sector
Oxygen and carbon dioxide sectors labelled
for 1 mark

3

(b) carbon dioxide
oxygen
for 1 mark each

Do not allow water vapour.
(Allow correct symbols/formulae)

2

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[5]

Q6.

(a) less / low

gains 1 mark

but
(also) half as much ***or*** still one fifth of what's breathed in

gains 2 marks

2

(b) for energy / respiration [credit for movement / to keep warm]

[Do not allow "to live"]
for 1 mark

1

[3]

Q7.

(a) (i) increasing one increases the other

gains 1 mark

but
they increase in proportion/ 1/5 taken in at first / 3/10 taken in after 2 weeks

gains 2 marks

2

(ii) *idea that* more/faster diffusion with higher concentration

for 1 mark

or
with more oxygen particles/molecules (in same space)

1

(b) (i) can take more oxygen from (the same) air/changes from 30 to 45/increases by 15

gains 1 mark

but
takes 50% more or 1.5 times as much

gains 2 marks

or
increases by 15 mg breath

2

(ii) more red blood cells develop
or
more haemoglobin in the blood
(not just 'acclimatises')

for 1 mark

1

(iii) 75
60

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each for 1 mark

2

[8]

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