

## **GCSE Biology**

Respiration

**Mark Scheme** 

Time available: 45 minutes Marks available: 40 marks

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## Mark schemes



1.

2.

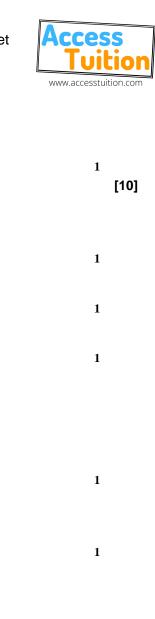
(a)  $C_6H_{12}O_6$ 

		1	
(b)	atmospheric air contains less carbon dioxide than exhaled air		
	allow converse		
		1	
	(flask B goes more cloudy because) carbon dioxide is produced in (aerobic) respiration	າ (by	
	woodlice)  do <b>not</b> accept anaerobic respiration		
	do <b>not</b> decept under espiration	1	
(c)	for comparison / to compare		
,	allow answers in the context of the investigation e.g.		
	or		
	to check that no other factor / variable is influencing the results		
	to prove that the results obtained were due to the woodlice respiring and nothing else		
	or		
	to prove that the woodlice produced the carbon dioxide and nothing else		
		1	
(d)	(flask A) would remain colourless		
	ignore references to clear		
	allow not cloudy	1	
	(flask <b>B</b> ) would remain colourless		
	(	1	
(e)	lactic acid		
		1	
(f)	alcohol / ethanol		
		1	[8]
(2)	no oxygen (is used)		
(a)	no oxygen (is used)	1	
(b)	muscles become fatigued / stop contracting		
` '		1	
	because not enough energy is transferred		
		1	
(c)	carbon dioxide		

1

	(d)	count the bubbles	Access
		or measure volume of gas	Tuitio www.accesstuition.com
			1
		in a given time	1
	(e)	brewing / bread making	
		allow other suitable use of fermentation in food industry	
			1 [ <b>7</b> ]
3.	(a)	LHS – glucose	
O.			1
		RHS – water allow $H_2O/H2O$	
			1
	(b)	so the earthworms' body temperature would change to 20°C	1
	(0)	(i) 56 or 55 or 54	1
	(c)	(i) 56 or 55 or 54 if incorrect answer given accept 60 - 5 for 1 mark	
		or 60 – 6 for <b>1</b> mark	
		or 60 – 4 for <b>1</b> mark	
			2
		(ii) one-tenth of answer to (c)(i) eg 5.5	1
		(at 10°C / lower temperature):	1
		· · ·	
		lower rate of respiration	
		allow chemical reactions slower or enzymes less active	
		ignore breathing	
		do not allow anaerobic	1
		worms less active / worms release less energy / worms use less energy	
		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1
	(d)	(i) anomalous result / not in line with other data / does not fit the pattern	

more representative / more reliable / can check 'repeatability' / see if get similar values / identify anomalies ignore valid / more fair ignore reproducible ignore 'to remove' anomalies do not accept more accurate or more precise 1 [10] mitochondrion / mitochondria (a) (i) must be phonetically correct 1 (ii) carbon dioxide / CO<sub>2</sub> 1 water / H<sub>2</sub>O 1 in either order accept CO2 but not CO2 accept H2O or HOH but not H2O (iii) diffusion 1 high to low concentration allow down a concentration gradient 1 through (cell) membrane or through cytoplasm do not accept cell wall 1 (b) ribosomes make proteins / enzymes using amino acids 1 part A / mitochondria provide the energy for the process allow ATP do **not** accept produce or make energy 1 [9]



**5**.

(a) (i) 19 800

for correct answer ignore working or lack of working

165 × 120 but no answer / wrong answer = 1 mark (ignore extras)



2

- (ii) any **two** from:
  - for respiration ignore oxygen debt
  - energy released
     allow energy produced
  - prevents anaerobic respiration
  - prevents build-up of lactic acid

2

- (b) any **two** from:
  - increased breathing rate(\*)
  - increased depth of breathing or deep breathing(\*)
     (\*)more breathing is max 1 mark
     ignore increase in heart rate
     allow heavier breathing
     do not allow harder breathing
  - dilation of arteries / vasodilation
     allow blood vessels dilate
     do not allow veins / capillaries dilate
  - blood diverted from elsewhere ignore name of organ

2

[6]