

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

Q1.

- (a) (So the) oxygen is used/absorbed/respired; 1
- (b) 1. Anaerobic respiration produces carbon dioxide;
2. Increase in pressure/volume (of gas);
Reference to either volume or pressure required for the mark 2
- (c) 1. Correct answer in range of
 4.9×10^{-4} to 4.91×10^{-4} = **2 marks**;;
Accept any equivalent mathematical representation of this answer
2. Incorrect answer but shows division by 24 = **1 mark**
OR
Incorrect answer but shows a number from 1175 to 1178 (ignore position of decimal point, standard form and any numbers that follow) = **1 mark**;
OR
Incorrect answer but show the number 49 (ignore position of decimal point, standard form and any numbers after 49) = **1 mark**; 2
- (d) Large range/difference/increase in numbers;
Accept reference to exponential (increase)
Ignore if the answer only refers to numbers being high
Ignore to 'fit on the scale' 1
- (e) Decrease/no glucose/substrate
OR
Increase in ethanol/carbon dioxide/acidity;
*Accept decrease/no oxygen as **Figure 2** is not linked to **Figure 1**.*
Accept competition for glucose/oxygen.
Accept any named sugar
Accept decrease in pH
Accept increase in toxins
Ignore food/nutrients 1
- (f) 1. Correct answer of 298000 or 297766 or 297765.59 or 296826 = **2 marks**;;
Accept: any equivalent answer with appropriate rounding
e.g. 2.98×10^5 ,

$$29.78 \times 10^4 \text{ etc.}$$

2. Incorrect answer but working shows $2000 \times 2.72 = \mathbf{1 \text{ mark}}$;

OR

Incorrect answer but working shows $2.72^{0.5 \times 10} / 2.72^5 / e^{0.5 \times 10} / = \mathbf{1 \text{ mark}}$

2

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Q2.

- (a) Increase in aerobic respiration

OR

Increase in / more mitochondria

OR

Increase in / more slow muscle fibres;

Ignore: reference to Krebs cycle as this in the stem of the question.

1 max

- (b) 1. (More aerobic respiration) produces more ATP;
2. Anaerobic respiration delayed;
3. Less or no lactate;
1. Accept: produces ATP faster.
2. Accept: aerobic respiration can continue.
2. Accept : no anaerobic respiration.
3. Accept: lactic acid.

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- (c) 1. Correct answer in range 84 to 84.2 = 2 marks;
2. For one mark accept incorrect answer but shows r (radius) = 0.63 (mm)
OR
 d (diameter) = 1.26 (mm);
2. Ignore: numbers after 0.63 and 1.26.

2

- (d) 1. A numerical comparison of range = **2 marks** i.e.
Young (fibres) range 14/15 – 47/48 (μm) **and** adult (fibres) 17/18 – 86/87/88 (μm)
OR
Young (fibres) range 32/33/34 **and** adult (fibres) range 68/69/70/71;
2. Comparison of range without numbers = one mark i.e.
Adult (fibres) greater range / spread / variation (of diameters)
OR
Young (fibres) smaller range / spread (of diameters);
3. Comparison of mode = one mark i.e.
Adult (fibres) peak/most common/frequent/mode at 50 (μm) and young (fibres) peak/most common/frequent/mode at 30 (μm);
1. Accept: **one** mark for comparison of minimum values i.e.
14/15 compared to 17/18
Allow **one** mark for comparison of maximum values i.e.
47/48 compared to 86/87/88.
1. Note: comparison of both maximum and minimum values = **2 marks**.
3. Accept: adult (fibres) peaks at higher diameter or young (fibres) peak / most frequent at lower diameter.
3. Reject: reference to mean / average.

2 max

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