1.3 Respiration and Photosynthesis: 10-minute Pack

Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Give two ways aerobic respiration differs from anaerobic respiration in animal cells.

(a) Difference in oxygen requirement. **(1)**

(b) Difference in energy released. **(1)**

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2 A student places pondweed in two test tubes of hydrogencarbonate indicator solution, which is orange-red at normal air CO_2 levels, turns purple when CO_2 falls, and turns yellow when CO_2 rises. One tube is left in bright light, the other in the dark, for two hours.

(a) What colour will the indicator turn in the tube left in bright light, and why? **(2)**

(b) What colour will the indicator turn in the tube left in the dark, and why? **(2)**

(c) Suggest one variable that should be kept the same between the two tubes to make this a fair comparison. **(2)**

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3 Which organelle is the main site of aerobic respiration, releasing energy from glucose?

- [ ] A) Chloroplast
- [ ] B) Nucleus
- [ ] C) Mitochondria
- [ ] D) Ribosome

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Mark scheme · 1.3 Respiration and Photosynthesis: 10-minute Pack

Question 1

(a) aerobic needs oxygen; anaerobic does not, oe **B1**

(a) Answer: **Aerobic respiration requires oxygen; anaerobic respiration does not**

(b) aerobic releases much more energy per glucose molecule than anaerobic, oe **B1**

(b) Answer: **Aerobic respiration releases much more energy from each glucose molecule than anaerobic respiration**

Question 2

(a) indicator turns purple **M1**

(a) because photosynthesis removes more CO_2 than respiration produces, lowering the CO_2 concentration, oe **A1**

(a) Answer: **Purple - photosynthesis removes more carbon dioxide than respiration produces, so the CO_2 concentration falls**

(b) indicator turns yellow **M1**

(b) because only respiration occurs in the dark, releasing CO_2 and raising the CO_2 concentration, oe **A1**

(b) Answer: **Yellow - only respiration occurs in the dark, releasing carbon dioxide, so the CO_2 concentration rises**

(c) e.g. temperature, volume of indicator solution, size/mass of pondweed, distance from any light source (for the lit tube) **M1**

(c) reason: this variable also affects the rate of photosynthesis/respiration, so it must be controlled so any colour difference is due only to light, oe **A1**

(c) Answer: **Keep the temperature of both tubes the same, because temperature affects the rate of both photosynthesis and respiration, so any colour difference should be caused only by the presence or absence of light**

Question 3

mitochondria cao (C) **B1**

Answer: **Mitochondria**

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