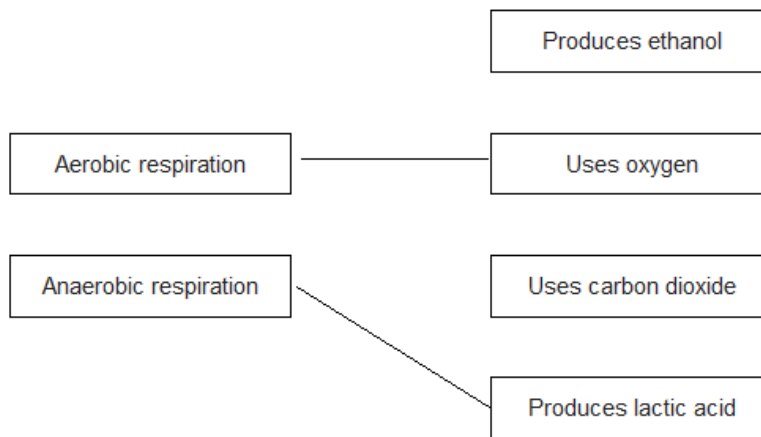


Mark schemes – Biology Unit 4 homework

Q1. (a)



an extra line from a LH box negates that mark

2

(b) any **one** from:

- not enough oxygen present (for aerobic respiration)
- more energy required for exercise (than can be transferred by aerobic respiration)

1

allow named example for exercise

(c) produces carbon dioxide

1

produces ethanol

1

plus any **two** from:

- (carbon dioxide) makes bread rise
- (carbon dioxide) makes beer / cider / (some) wines fizzy
- (ethanol) is the alcohol in beer / cider / wine / spirits

allow for alcoholic drinks / named drink

2

Q2

[7]

(a) **Level 3 (5–6 marks):**

A coherent method is described with relevant detail, which demonstrates a broad understanding of the relevant techniques and procedures. The steps in the method are logically ordered. The method would lead to the production of valid results.

Level 2 (3–4 marks):

The bulk of the method is described with mostly relevant detail, which demonstrates a reasonable understanding of the relevant scientific techniques and procedures. The method may not be in a completely logical order and may be missing some detail.

Level 1 (1–2 marks):

Simple statements are made which demonstrate some understanding of some of the relevant scientific techniques and procedures. The response may lack a logical structure and would not lead to the production of valid results.

0 marks:

No relevant content

Indicative content

- description of how the apparatus would be used
- reference to control intensity of light / brightness
- use of ruler to measure distance of light from beaker / pondweed
- reference to varying colour of light or use of different filters
- plant releases gas / oxygen
- measure number of bubbles / volume of gas produced
- same length of time
- reference to control of temperature
- reference to control / supply of carbon dioxide in water
- do repeats and calculate a mean

6

- (b) rate does not increase further if light intensity increased beyond 20
allow graph levels off after 20

1

- (c) any **one** from:

- temperature
- carbon dioxide (concentration)
- amount of chlorophyll

allow number of chloroplasts

1

[9]

Q3 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 (by woodlice)

*do **not** accept anaerobic respiration*

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**) would remain colourless

1