

Practice Question Set For GCSE
Subject : Biology
Paper-1 Topic: B4 Bioenergetics

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

- Q1.
- (a) anaerobic respiration
allow phonetic spelling
1
- (b) (i) 4.4
4.2, 4.3, 4.5 or 4.6 with figures in tolerance (6.7 to 6.9 and 2.3 to 2.5)
and correct working gains 2 marks
4.2, 4.3, 4.5 or 4.6 with no working shown or correct working with one
reading out of tolerance gains 1 mark
correct readings from graph in the ranges of 6.7 to 6.9 **and** 2.3 to 2.5
but no answer / wrong answer gains 1 mark
2
- (ii) more energy is needed / used / released
*do **not** allow energy production*

(at 14 km per hour)
ignore work
1
- not enough oxygen (can be taken in / can be supplied to muscles)
allow reference to oxygen debt
*do **not** allow less / no oxygen*
1
- so more anaerobic respiration (to supply the extra energy) **or** more glucose
changed to lactic acid
allow not enough aerobic respiration
1
- [6]

Q2.

Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also apply a 'best-fit' approach to the marking.

0 marks

No relevant content

Level 1 (1 – 2 marks)

There is at least one reason for deforestation

or

an attempt at a description of at least one way deforestation is affecting the atmosphere.

Level 2 (3 – 4 marks)

There is at least one reason for deforestation

and

a description of the way deforestation is affecting one gas in the atmosphere

or

the process that causes an effect.

Level 3 (5 – 6 marks)

There are reasons for deforestation

and

a clear description of the way deforestation is affecting one gas in the atmosphere

and

the process that causes this.

examples of the points made in the response

Reasons for deforestation

- timber for construction / furniture / boat building / paper production
- growing plants for biofuels for motor fuel / aviation / lawnmowers
- use of wood as a fuel
- land for building or agriculture to provide food, such as rice fields and cattle ranching

Effects of deforestation

- increase in carbon dioxide in atmosphere
due to burning
due to activities of microbes
less carbon dioxide taken in / locked up (by trees)
less photosynthesis
- increase in methane in atmosphere
due to rice production / cattle

extra information

ignore references to oxygen

accept explanations of the effect of water (vapour)

[6]

Q3.

(a) any **one** from:

ignore 'check temperature'

- add a water bath
- heat screen
- use LED
- low energy bulb / described

1

(b) (i) rate / number of bubbles decreases

*accept converse with reference to increasing light **or** shorter distance*

or

less oxygen / gas released

ignore reference to rate of photosynthesis

1

(ii) temperature / CO₂ (concentration)

*accept 'it was too cool' **or** not enough CO₂*

accept number of chloroplasts / amount of chlorophyll

allow heat

allow CO₂

*do **not** allow CO₂*

1

(c) Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information in the [Marking guidance](#), and apply a 'best-fit' approach to the marking.

0 marks

No relevant content.

Level 1 (1-2 marks)

There is a brief description of at least 1 tissue **or** at least 1 function of an indicated part of the leaf.

The account lacks clarity or detail.

Level 2 (3-4 marks)

There is a clear description which includes at least 1 named tissue and at least 1 correct function described for an indicated part of the leaf.

Level 3 (5-6 marks)

There is a detailed description of most of the structures and their functions.

Examples of responses:

- epidermis
- cover the plant
- mesophyll / palisade

- photosynthesises
- phloem
- xylem
- transport.

The following points are all acceptable but beyond the scope of the specification:

- (waxy) cuticle – reduce water loss
- epidermis – no chloroplasts so allows light to penetrate
- stomata / guard cells – allow CO₂ in (and O₂ out) **or** controls water loss
- palisade (mesophyll) – many chloroplasts to trap light
 - near top of leaf for receiving more light
- spongy (mesophyll) – air spaces for rapid movement of gases