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

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

(a) glucose

1

oxygen

1

extra ticks negates marks

(b) count the number of bubbles produced in 1 minute

1

measure the volume of gas produced in 30 seconds

1

extra ticks negates marks

(c) any **one** from:

- to control the temperature

  allow so pondweed / solution did not warm up

- temperature affects the rate of photosynthesis

  allow correct description of effect of temperature on rate
  allow high temperatures denature enzymes
  ignore references to limiting factors

  1

  ignore reference to 'it'

(d) 52

1

(e) all points plotted correctly

allow ± ½ a square
*allow **1** mark for three points correctly plotted*

2

smooth curve drawn through all points

ignore extensions of line / curve unless inconsistent with line / curve drawn

1

(where a bar chart has been plotted)
*allow **1** mark for all bars plotted correctly*
if points are plotted as well as bars, ignore bars

(f) any **one** from:

- the nearer the light source to the pondweed the faster the rate of photosynthesis

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allow the nearer the light source to the pondweed the faster the bubbles produced

- the greater the light intensity the faster the rate of photosynthesis

  allow the greater the light intensity the faster the bubbles produced

  allow the closer the light source the more the plant photosynthesises

  ignore more bubbles are produced with no reference to rate

  allow oxygen for bubbles

  *do **not** accept carbon dioxide*

1

allow converse statements for all marking points

[10]

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Q2.

(a) breathing rate when walking is twice that at rest

allow breathing rate when walking is 12 (breaths / minute) more than at rest

1

breathing rate when jogging is 5 times that at rest

allow breathing rate when jogging is 48 (breaths / minute) more than at rest

1

breathing rate when jogging is 2.5 times that when walking

allow breathing rate when jogging is 36 (breaths / minute) more than when walking

1

*allow for **1** mark if no other marks gained: breathing rate at rest is 12 (breaths per minute), breathing rate when walking is 24 (breaths per minute) and breathing rate when jogging is 60 (breaths per minute)*
or
breathing rate increases with increasing activity
***max 2** marks if written in terms of heart rate*

(b) (breathing rate increases)

to supply more oxygen / O_2
or
to supply oxygen / O_2 faster

allow to remove more carbon dioxide / CO_2
or
to remove carbon dioxide / CO_2 faster
*do **not** accept incorrectly written formulae*

1

for (aerobic) respiration
or
to reduce anaerobic respiration
or
to reduce lactic acid build up

1

(so) that more energy is transferred / released
or
(because) more energy is required

*do **not** accept used / produced / created or energy made*

1

reference to more / faster required at least once for full marks

(c) right ventricle / side of the heart pumps (blood) to the lungs

1

left ventricle / side of the heart pumps (blood) to the body

1

*if no other marks scored allow **1** mark for one side pumps blood to the lungs and the other side pumps blood to the body*

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(d) any **one** from:

- (the left ventricle) has to pump blood further (than the right ventricle)

  allow (the left ventricle) has to pump blood all around the body

- (the left ventricle) has to pump blood with a greater force (than the right ventricle)

  allow (left ventricle) has to pump blood harder

- (the left ventricle) has to pump blood at a higher pressure (than the right ventricle)

  there must be a comparative statement

1

(e) any **one** from:

- strengthens heart (muscle)
- reduces chance of another heart attack

  ignore prevents / no heart attacks

- reduces / controls weight
- improves circulation

  allow decreases chance of fatty deposits
  ***or** fat building up (in arteries / blood vessels)*

  allow reduces resting heart rate

1

[10]

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