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

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Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Mark Schemes

Q1.

(a) starch (molecules) are large / insoluble

1

(so) cannot be absorbed (into the blood)

allow (so) cannot pass through the wall of the (small) intestine / gut

allow (so) cannot diffuse into the blood

allow sugar (molecules) are small / soluble (1)

(so) can be absorbed into the blood

or

(so) can pass through the wall of the (small) intestine / gut (1)

1

(b) (10 cm^3 dilute) iodine solution and (1 cm^3 of) water

allow (10 cm^3 dilute) iodine solution

allow water

ignore iodine unqualified

1

(c) percentage of light passing through the liquid decreased with increasing starch concentration

allow the more concentrated the starch (suspension) the less light could pass through

1

(because iodine) solution was darker (in colour)

allow (iodine) solution was blacker

allow the more (insoluble) starch the more cloudy the mixture

1

(so) absorbed more light

ignore less light passes through

1

(d) any **one** from:

- to allow them to reach 37 °C

  allow to allow them to reach body temperature
- so they would be at the optimum / same temperature

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allow to equilibrate

1

(e) 6.6 (g/dm^3)

allow answer in range 6.5 to 6.7 (g/dm^3)

1

6.6 - 0.3
or
6.3 (g/dm^3)

allow correctly calculated value consistent with range allowed in step 1

1

$\frac{6.3}{3}$

allow correct subtraction of answer to step 1 minus 0.3 for 6.3 in this equation

1

2.1 (g/dm^3 per minute)

allow correctly calculated rate using incorrectly calculated value for 6.3

1

*if no other marks awarded allow **1** mark for the concentrations 1.8 **and** 0.8 (g/dm^3*

(f) (at pH 1) shape of active site would be altered

allow (at pH 1) enzyme / amylase would be denatured

1

(so) starch would not be digested

allow (so) enzyme / amylase would not work

allow (so) no reaction would occur

allow (so) reaction would be (a lot) slower

1

(so) percentage of light passing through liquid would stay at 10

allow (so) percentage of light passing through liquid would not change / increase

1

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Q2.

(a) to transfer energy

allow idea that light is the source of energy (for the reaction)

*do **not** accept to produce / make / create / use energy*

or

photosynthesis is an endothermic reaction

1

(b) $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

1

(c) allow the pondweed to equilibrate in the light

allow leave the pondweed in the light (for a few minutes) before taking measurements

allow use the same concentration of sodium hydrogen carbonate solution

ignore control carbon dioxide concentration unless method described

ignore use same intensity / distance of light

ignore control temperature

ignore use same pondweed

1

use a gas syringe

or

use a (measuring) cylinder to measure / collect the oxygen / gas produced

*do **not** accept carbon dioxide*

ignore references to counting bubbles

1

measure time oxygen / gas is collected for using a timer / stopwatch / stopclock

1

repeat the measurements **and** calculate a mean

*allow repeat the measurements (several) **and** discard anomalies*

1

(d) independent variable in student's investigation is categoric / discrete

allow colour of light is a categoric / discrete variable

ignore discontinuous

1

independent variable in scientist's investigation is continuous

allow wavelength is a continuous variable

1

ignore answers relating to the scale on the y-axis

(e) 492 to 577 (nm)

*allow answers in range 475 to 525 **and** 575 to 650 (nm)*

1

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