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

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Name of the Student:_____
Max. Marks : 27 Marks **Time : 27 Minutes**

Mark Schemes

Q1.

(a) repeat for another ten quadrats

1

use a random method to place the quadrats

1

(b)

*an answer of 4.8 x 10^5 scores **5** marks*
*an answer of 481 766.4 **or** 481 766 **or** 480 000 scores **4** marks*
*an answer of 15 744 × 4 × 7.65 scores **3** marks*
*an answer of 15 744 (m^2) scores **2** marks*

(area of field =) 62 × 164 + 164 × 68 ÷ 2 **or** equivalent

1

15 744 (m^2)

1

15 744 × 4 × 7.65

allow use of incorrect area

allow $\frac{7.65}{0.25} \times 15744$

1

- 481 766.4

  *allow 481 766 **or** 480 000*

1

- 4.8×10^5

  allow incorrect calculation expressed correctly

1

(c) **Level 3:** Relevant points (reasons / causes) are identified, given in detail and logically linked to form a clear account.

5–6

Level 2: Relevant points (reasons / causes) are identified, and there are attempts at logical linking. The resulting account is not fully clear.

3–4

Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.

1–2

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No relevant content

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Indicative content

- trees over / in field
- (which) reduce light for photosynthesis
- (so) fewer daisies there

- trees over / in field
- (which) take water / nitrates / ions from the soil
- (so) fewer daisies there

- trampling on sports pitches
- (will) kill plants
- (so) fewer daisies there

- competition from plants / grasses on field
- (will) use up water / nitrates / ions / space
- (so) fewer daisies there

- gardener may water / fertilise / mow field
- (which provides) more water / nitrates / ions
- (so) more / fewer daises grow there

- more insects / disease / animals in some areas
- (may) eat / kill plants
- (so) fewer daisies there

- school buildings
- (which) reduce light for photosynthesis
- (so) fewer daisies near school

- pollution / toxins from vehicles on roads
- (which will) reduce growth
- (so) fewer daisies near roads

- wrong pH **or** lack of ions **or** poor drainage **or** poor / wet / dry soil in some areas
- (which will) slow growth
- (so) fewer daisies there

Level 3 answers must refer to several factors in accurate detail

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Q2.

(a) regulation / control / maintenance of internal conditions (of a cell / body)

allow keeping the internal conditions (of a cell / body) the same

1

for optimum (cell / enzyme activity)

allow description of optimum functioning (of cell / body)

1

(b) glucagon

correct spelling only

1

(c) any **two** from:

- fasting blood glucose is higher than normal range
- reached a very high concentration after glucose drink
- did not return to normal after 3 hours
- **or**
- fell slowly after reaching peak.

use of correct data in comparison to normal ranges given for any of the above points

allow ± half a small square for values quoted from the graph

1

ignore references to person A

2

(d) (person A has Type) 2 (pancreas) producing (lots of) insulin but body cells cannot respond to it.

*allow cells becoming resistant to insulin for respond to insulin. do **not** accept the person has become resistant to insulin*

1

(person B has Type) 1 (pancreas) not producing enough insulin (to control concentration of glucose in the blood)

1

type of diabetes must be correct

(e) starving children have used up their glycogen stores

allow starving children have no / low glycogen stores

1

(so) would need (liver enzyme) to release glucose from fats

1

as enzyme is stopped from working they get low / no glucose

allow no working enzyme leads to hypoglycaemia

1

(cell) respiration is insufficient (so they die)

allow starving children use proteins to release energy (which leads to death)

1

children that are not starving have glycogen stores in liver / muscle

1

(so) glucagon will continue to release glucose (into the blood for them)

1

[14]

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