

# MARK SCHEME

# GCSE

## BIOLOGY

## AQA - TRIPLE SCIENCE

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B 7 - TEST 2

ECOLOGY

Beginner

## Mark schemes

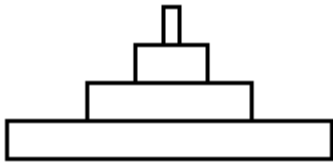
1.

(a) any **two** from:

- *idea of absorption of light / energy*
- *transfer to chemical energy*  
*allow produce sugars / glucose / starch / carbohydrate / food / biomass*
- *provides food / energy for animals / caterpillar*
- *releases oxygen*

2

(b)



1

(c) 15(%)

*allow 1 mark for  $\frac{3 \times 100}{20}$  with no answer or incorrect answer*

**or**

*allow 1 mark for 0.15*

2

(d) (i) any **two** from:

- *markings look like eyes / face / mouth of much larger animal*
- *looks fierce / scary / dangerous*  
*allow it looks like a snake*
- *to frighten blue tit / bird*

*max 1 if reference to camouflage*

2

(ii) any **two** from:

- *sharp / long / big claws*  
*ignore strong*
- *sharp / hooked beak*  
*ignore strong / big*
- *large wings or flies quickly*  
*allow streamlined / aerodynamic*  
*ignore powerful wings*
- *good eyesight*

2

[9]

2.

(a) methane / CH<sub>4</sub>

*allow CH<sub>4</sub>*

*do not allow CH<sup>4</sup> or ch4 or CH4*

1

- (b) any **two** from:
- didn't carry out repeats
  - only tested four types of manure
  - don't know the mass of manure was the same each time
  - inaccuracies in measuring (diameter of) balloon
  - bottles might have been different sizes
  - temperature of the room may have been different.

2

- (c) The potato contains a lot of carbohydrate

1

[4]

3.

- (a) microorganisms / microbes / bacteria / fungi / decomposers

*allow named example **or** mould*

*ignore germs / worms / other detritivores*

1

- (b) (weather / it is) warm(er) / hot(ter)

*accept optimum conditions for enzymes*

*allow cold(er) in winter*

*ignore wet(ter) / light(er) / sun*

*do **not** accept heat dries the leaves out*

1

- (c) oxygen

*no mark if more than one box is ticked*

1

[3]

4.

- (a) correct figures from graph: 5.0 / 5 and 2.60 / 2.6

2.40 / 2.4

*an answer of 2.40 / 2.4 scores **2** marks*

1

*allow correct answer from candidate's figures from graph for **1** mark*

1

- (b)  $\frac{1}{3}$

1

- (c) protein

1

- (d) a genetically-modified variety of seed was sown in 2004

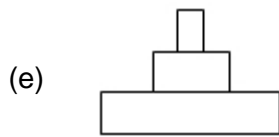
1

more rain fell in spring and early summer in 2004

1

the mean summer temperature was lower in 2003

1



1

(f) 80

1

(g) chickens use energy for movement and for keeping warm

1

much of the food eaten by chickens is wasted as faeces

1

[11]

5.

(a) an extremophile species

1

(b) (i) smaller ice area

*allow smaller amount of ice*

*allow less ice*

1

(so) less habitat

*allow fewer places to live / nest*

1

(ii) **either** increase

as more sea to live in

**or**

as less competition for food

**or** decrease

as less space (ice) to lay eggs

**or**

predators more likely to eat them

*there is no mark for increase / decrease alone. The mark is for an appropriate reason linked to increase / decrease*

*if increase / decrease not ringed the mark may be awarded if it is clear in the explanation which is intended*

1

(c) Living organisms show long-term changes.

1

[5]

6.

(a)  $(140 + 240 + 380 + 450 = )$  1210

1

(b) the local people decided to farm cattle

1

a company starts growing plants for biofuels

1

- (c) carbon dioxide  
*in this order only* 1
- photosynthesis 1
- (d) animals and birds migrate because there is less food 1
- more habitats are destroyed 1
- (e) any **one** from:
- breeding programmes (for endangered species)
  - regeneration (programmes)
  - reintroduction of field margins / hedgerows
  - awareness raising with politicians / public
  - recycling

1

**[8]**

**7.**

- (a) 88 000
- correct answer = 2 marks*
- allow 1 mark for 1.1 (in 1 m<sup>2</sup>)*
- or**
- allow 1 mark for answer = [candidate's value in 1m<sup>2</sup>] × 80 000*

2

- (b) Place the quadrat in 100 random positions.

1

- (c) any **three** from:  
*must include at least one advantage and one disadvantage for full marks*

Advantages:

- less cost / free
- less likely to kill other (harmless species of) plants
- weedkiller may be toxic **or** may cause water pollution
- weedkiller may accumulate up food chains  
*allow uneven distribution of ragwort so much wastage of weedkiller*

Disadvantages:

- volunteers may mistake other species for ragwort
- volunteers may miss plants  
*allow weeds will grow back*
- some ragwort left to poison horses
- time consuming
- difficulties getting enough volunteers  
*if no other disadvantages; allow ref. to issues with volunteers – eg don't turn up / not careful / don't finish the job*

3

[6]

8.

- (a) measure the length / area of the field 1
- (b) use (a) random number(s) (generator)  
**or**  
 use coordinates method explained 1
- (c) compare their results with another student's results 1
- place more quadrats 1
- (d)  $0.25 \times 5 = 1.25$  1
- $500 / 1.25 = 400$  1
- $(40 \times 400 =) 16\ 000$   
*allow 16 000 with no working shown for 3 marks* 1
- (e) 11 1
- (f) (quadrat) 5  
*both quadrat number and correct reason must be given for 1 mark* 1

very few or only 2 growing (here)

[9]

9.

- (a) snail  
or  
shrew

*additional incorrect answer negates correct answer*

1

- (b) shrew

*additional incorrect answer negates correct answer*

1

- (c) fewer shrews to eat them

1

- (d) population

1

- (e) **C**

1

- (f)  $(11\,000 \times 0.1 =)$   
1 100 (kJ)

1

- (g) the snails do not eat the roots of the lettuces

1

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

- light (intensity)
  - temperature
  - moisture (levels)
  - soil pH
  - mineral / ion content (of soil)
  - wind intensity / speed
- ignore wind direction*
- carbon dioxide (levels)
  - oxygen (levels)

1

[8]

10.

- (a) kills microorganisms / bacteria / fungi / viruses / microbes  
*allow to remove microorganisms / bacteria / fungi / viruses / microbes*  
*ignore germs*  
*allow so mycoprotein is not contaminated*

1

(which) compete for food / oxygen

**or**

which make toxins

*allow so mycoprotein is safe to eat*

**or**

which are pathogens

**or**

which might kill the fungus / *Fusarium*

1

- (b) 30 °C

1

- (c) for (aerobic) respiration

*do **not** accept anaerobic*

1

(which) releases energy (for growth)

*do **not** accept produces energy*

*allow glucose is used to make other organic substances*

*e.g. protein*

1

- (d) any **two** from:

so *Fusarium* can

- grow faster / better
- get sufficient food / glucose / minerals

*allow more / enough*

- get sufficient oxygen

*allow more / enough*

- get rid of sufficient carbon dioxide

*allow more / enough*

*allow waste*

- be kept at a (suitable) temperature

*allow to avoid 'clumping'*

2

- (e) 200 grams

1

**[8]**