

MARK SCHEME

GCSE

BIOLOGY

AQA - COMBINED SCIENCE

B 7 - TEST 2

ECOLOGY

Beginner

Mark schemes

- 1.** e.g.
waste gases/air pollution harms living organisms
dumped waste can make land unfit to live on/
drainage pollutes water/harms organisms
for 1 mark each
(if no marks can allow – pollution harms organisms = 1) [2]
- 2.** (good eyesight) to see its prey / judge distance
ignore predators or competition throughout 1
- (strong sharp claws) to grasp / carry / kill its prey
allow to catch prey 1
- (powerful wings) to swoop to catch its prey / control its flight / fly fast / carry (heavy) prey
allow to fly only if qualified 1 [3]
- 3.** (a) carbon dioxide 1
methane 1
greenhouse effect 1
- (b) coal / oil / gas / peat / petrol / paraffin 1 [4]
- 4.** (a) (i) photosynthesis
allow phonetic spellings 1
- (ii) respiration
allow phonetic spellings
ignore breathing / decay 1

(b) any **two** from:

- burn / use less fossil fuels
or
reduce industrial processes
or
use cars less
allow cycle / use buses / walk / trains / public transport
allow stop for reduce in all cases
- reduce deforestation
accept named example
or
plant more trees
allow plants
- use alternative sources of energy
accept solar / wind / nuclear / hydroelectric / wave / tidal / geothermal
ignore renewable / biomass
- trap CO₂ in sedimentary rocks / underground / under sea
or
carbon capture / CCS
- rear less cattle / animals
allow eat less meat
allow reduce growth of human population
ignore reduce the human population

2

[4]

5.

(a) idea that

- light doesn't reach deeper parts
- plants need / absorb light
- to make food
gain 1 mark each to maximum of 2

but

so they can photosynthesise

gains 2 marks

2

- (b) herring will be on the bottom
herring follow / will be feeding
on the copepods

independent marking points

for 1 mark each

2

[4]

6.

- (1) A
(2) C
(3) B
(4) D

for 1 mark each

[4]

7.

- (a) Leaf
(b) Beetle
(c) Community
(d) Light intensity
Wind direction

1

1

1

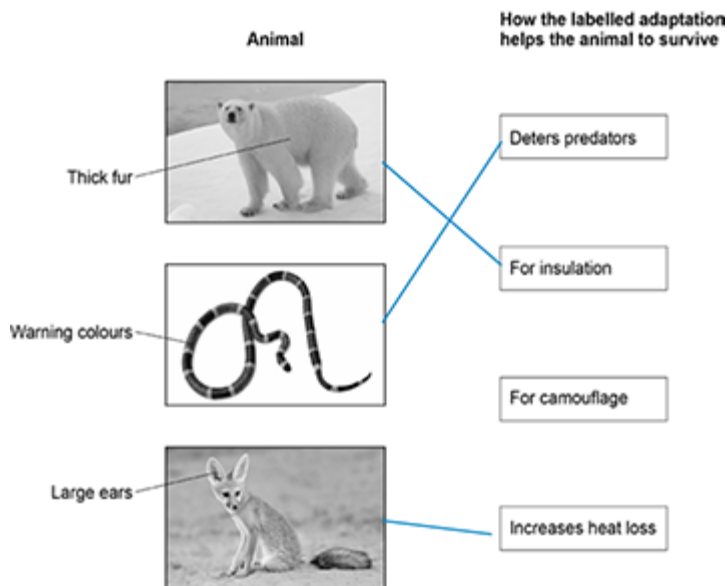
1

1

[5]

8.

(a)



extra lines drawn negates the mark

3

- (b) any **two** from:
- food / prey
allow water
 - mate(s)
allow females / males
 - territory.
allow space / shelter

2

[5]

9.

- (a) (i) carbon dioxide
accept other positive indications

1

- (ii) methane
accept other positive indications

1

- (b) increase
accept other positive indications

1

- (c) any **three** from:

building
accept houses / airports / roads / factories

farming / removing hedgerows / fire
*do **not** accept pesticides, fertilisers etc*

quarrying / mining

industry
*accept release of toxic chemicals / named eg
accept acid rain / global warming only if linked to production by
human activity do **not** accept just 'pollution'*

drainage of marshland

dam construction / flooding land

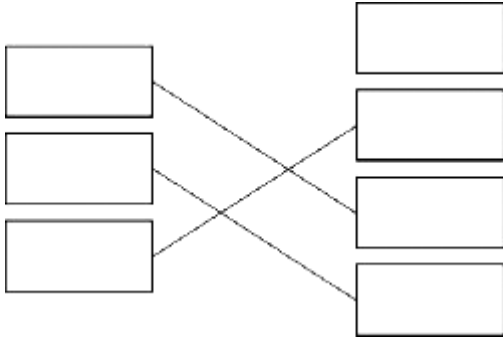
dumping waste
*do **not** accept fly tipping, litter*

3

[6]

10.

(a)



extra line from statement cancels the mark

3

(b) any **three** from:

- light

ignore Sun

ignore territory / soil / habitat

- space

- water / moisture

- mineral salts / ions / nutrients / named

ignore food

ignore gases

3

[6]

11.

(a) 88 000

correct answer = 2 marks

allow 1 mark for 1.1 (in 1 m²)

or

allow 1 mark for answer = [candidate's value in 1m²] × 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
- 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]

12.

- (a) Place more quadrats in the field

1

Place quadrats randomly

1

- (b) 26 400

1

- (c) transect

1

- (d) as distance from the path increases the number of (ribwort) plants increases

1

steep rise from 0.5 to 3.0 between 2 and 4 m from path **or** numbers level off to about 4 plants from 10 m from the path

1

- (e) The ribwort plants get walked on

1

[7]

13.

- (a) producer

1

- (b) predators

1

- (c) 1200

1

- (d) 2 (years) 1
 - (e) there is more food for wolves 1
 - (f) humans hunting 1
 - viruses 1
- [7]**

14.

- (a) place all the quadrats randomly on the lawn 1
 - (b) (i) 1 4
 - 2 2
 - 3 2
 - 4 0
 - all 4 counts correct* 1
 - Total = 15
 - total correct for their figures* 1
 - (ii) 1.5
 - allow ecf from (b)(i)* 1
 - (iii) 180
 - correct answer with or without working*
 - if answer incorrect, allow 1 mark for $\frac{15}{10} \times 120$ or 15×20*
 - or $\frac{15}{10} \times 12 \times 10$*
 - or $1.5 \times 12 \times 10$ or 1.5×120*
 - allow ecf from (b)(ii)*
 - allow 1 mark if only 1 error* 2
 - (c) use a larger sample size / more quadrats
 - ignore repeats but allow repeat in different places*
 - ignore 'count them all'*
 - or**
 - use bigger quadrats 1
- [7]**