

Organisation of an Ecosystem

Mark Scheme 1

Level	GCSE (9-1)
Subject	Combined Science – Trilogy - Biology
Exam Board	AQA
Topic	4.7 Ecology
Sub-Topic	Organisation of an Ecosystem
Difficulty Level	Bronze Level
Booklet	Mark Scheme 1

Time Allowed: 56 minutes

Score: / 56

Percentage: /100

Grade Boundaries:

M1.(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]
M2.(a)	Photosynthesis	1	
	(b) Respiration	1	
	(c) C		

	1	
(d) (it will) rise	1	
(e) water vapour	1	
methane	1	
(f) Microorganism	1	[7]
M3.(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]

M4.(a) any **three** from:

- place 30-m tape measure across field / from one wood to the other
- place quadrat(s) next to the tape
- count / record the number / amount of dandelions / plants in the quadrat
ignore 'record the results'
ignore measures / estimates dandelions
- repeat every 2 metres
allow every metre / at regular intervals

3

(b) (i) low light / it is shady
allow no light
ignore sun / rays

or

not enough water / ions / nutrients
accept correct named ion
ignore no water / ions / nutrients

or

wrong pH of soil
accept competition with trees for light / water / ions
ignore competition for space and competition unqualified
accept soil too acidic / too alkaline
ignore temperature

1

(ii) sensible suggestion for a small area, eg chance variation / anomaly / poisoned by animal waste / wrong pH of soil / eaten (by animals) / cut down / footpath

1

- (c) repeat (transect) / compare with the results of other groups
allow 'do it in two different locations' for 2 marks

1

at different / random location(s) / elsewhere (across the field)
*do **not** allow 'in other fields'*

1

[7]

M5.(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]

M6.(a) 40 – 60 hours

1

- (b) (i) decrease

1

1st slowly then faster / appropriate detail from the graph – e.g. from 7.8 to 0 / faster after 4 – 10h

1

- (ii) oxygen after glucose

extra box ticked cancels 1 mark

1

oxygen less than glucose

1

- (iii) respiration

1

[6]

M7.(a) chose places randomly

1

method of obtaining randomness, e.g. (grid and) random numbers

allow thrown qualified e.g. over shoulder, eyes shut

allow max 1 for mention of a transect with sampling at regular or random intervals

1

(b) (i) 7 or 8

allow fractions / decimals between 7 and 8

1

(ii) count number of whole squares and add estimate of area covered by part squares

allow reference to counting squares with $\frac{1}{2}$ cover or more

allow clear working on diagram and / or (b)(i)

1

(iii) 28 – 32 (in range)

allow ecf

if answer incorrect allow 1 mark for reasonable reference to divided by 25 or multiplied by 4

2

(c) nutrients / minerals / ions / fertiliser / water

allow light / pH / trampling / soil texture / grazing / mowing / weed killer / where seeds originally fell

ignore pollution / soil / competition if unqualified

ignore temperature / wind

1

[7]

M8. any **three** from:

ignore references to carbon cycle

accept digested / decomposed / broken down / rotted for decay throughout

ignore eating

- dead leaves / flowers / bluebells are decayed
- idea that microorganisms do the decaying
accept microbes / bacteria / fungi / mould / decomposers for microorganisms
- minerals / ions / nutrients / named released (by decay / microorganisms)
not mineral ions unqualified
- (released) into soil **or** minerals / ions / nutrients taken up / in by (bluebell) roots (next year)
look for idea that minerals / ions / nutrients are in soil (eg released into soil or taken up from soil)

3

[3]

M9. (a) (i) 70

*award 2 marks for correct answer irrespective of working
allow 1 mark for $30 + 10 + 24 + 6$ (with wrong answer or no answer), do **not** award this sum if other figure(s) are included in the addition*

2

(ii) 6

*award 2 marks for correct answer irrespective of working
award 2 marks for correct answer to (a)(i) – 64 (ecf)
award 1 mark either for $70 - 64$ or answer to (a)(i) – 64 with no answer or incorrect answer*

2

(b) photosynthesis.

1

[5]

Save My Exams! – The Home of Revision

For more awesome GCSE and A level resources, visit us at www.savemyexams.co.uk/