

Interdependence & feeding relationships

Q1.a(2018)

C glow-worm larvae will eat more slugs

1. The only correct answer is C

A is not correct because fewer snails will not cause the population of glow-worms to increase

B is not correct because fewer snails will not cause the adult glow-worms to eat more snails

D is not correct because fewer snails will not cause the adult female glow-worms to glow more brightly

Q1.b(2018)

An answer that combines the following points to provide a logical description of the plan:

Step 2: add {some / set amount of} enzyme to each of the flasks (1)

Step 3: time how long the glow lasts / measure intensity of glow (1)

Q1.c(2018)

D keep the volume of each solution the same in each flask.

1. The only correct answer is D

A is not correct because changing the concentration of the protein solution in each flask will not improve the investigation

B is not correct because changing the volume of the protein solution added to each flask will not improve the investigation

C is not correct because keeping the concentration of dissolved oxygen the same in each flask will not improve the investigation

Q1.d(2018)

An explanation including any **two** from:

- enzymes are pH sensitive / this enzyme has an optimum / optimal pH of 8 (1)
- because the {enzyme / active site} will change shape / become denatured (1)
- so the enzyme is not able to bind so easily to {substrate / protein / oxygen} (1)

Q1.e(2018)

An answer that provides a description by making reference to **three** of the following points:

- use of quadrat (1)
- random placement (of quadrat) (1)
- **count** the number of (female) glow-worms in the quadrat / 1m² / square (1)
- use several samples (1)
- total number found ÷ number of samples (1)

Q1.f(2018)

$$4000 / 4 \times 10^3$$

Q2.a(2019,4)

2108 (g)

Q2.b(2019,4)

An explanation linking

- population of earthworms will decrease (1)
- because more earthworms will be eaten by hedgehogs (1)

Q2.c(2019,4)

A description including

- use of quadrat / belt transect (1)
- count the number of slugs in the sampled area (1)
 - multiplication factor to make the estimate (1)

Q2.d(2019,4)

An explanation linking three from

- {squirrels / earthworms / cabbages} release carbon dioxide (1)
- from respiration (1)
- cabbages take in carbon dioxide (1)
- (cabbages) for photosynthesis (1)
- when organisms die decomposers release carbon dioxide (1)
- {squirrels/earthworms} eat {cabbages/plants} which contain **carbon** (1)
- egestion releases **carbon** (into the soil) (1)

Q2.e(2019,4)

Any three from:

- (add) artificial fertilisers (1)
- (add) manure / slurry / (use) green manuring (1)
- use crop rotation (1)
- nitrogen fixing bacteria (1)
- nitrifying bacteria (1)

Q3.a(2020,4)

food

reject if more than one word is used from the box

Q3.b(2020,4)

parasites

reject if more than one word is used from the box

Q4.a(2020,4)

**mutualism / mutualist /
mutualistic**

Q4.b(2020,4)

- grass (in first box) (1)
- zebra, tick, oxpecker (in correct order in boxes 2,3 and 4) (1)

Q5.a(2020,4)

A description including:

- there are more oxpeckers on the (white) rhinos (than hippos) (1)
- manipulated data (1)

Q5.b(2020,4)

There are more ticks / food (on the giraffes than the zebras)

Q6.a(2021,4)

D organism, population, community

The only correct answer is D

A is not correct because community is not the lowest level of organisation in an ecosystem

B is not correct because community is not the lowest level of organisation in an ecosystem

C is not correct because population is not the highest level of organisation in an ecosystem

Q6.b(2021,4)

The blackbirds will be eating more caterpillars (because there are fewer slugs)

Q6.c(2021,4)

There will be more {food / lettuce} for the caterpillars to eat (because there are fewer slugs eating the lettuce)

Q6.d(2021,4)

A description including **two** from:

The population of slugs:

- falls a little (1)
- (then) increases (1)
- starts to level off between 2.5 and 3 years / levels off after (approximately) 4 years (1)

Q6.e(2021,4)

D non-indigenous

The only correct answer is D

A is not correct because pathogenic means disease causing

B is not correct because non-pathogenic means does not cause disease

C is not correct because indigenous means that the slugs have not come from another country

Q6.f(2021,4)

An explanation including:

- parasites live in / on their host (1)
- parasites feed off their host (1)

Q7.a(2023,4)

The only correct answer is

B mutualism

A is incorrect because eutrophication is not about feeding relationships.

C is incorrect because indigenous is not a feeding relationship

D is incorrect because biodiverse is not a feeding relationship

Q7.b(2023,4)

- glucose (1)
- decompose (1)

Q7.c(2023,4)

- an arrow drawn from 'carbon dioxide in the atmosphere' to 'plants' (1)
- arrow labelled photosynthesis (1)

