



CHEMISTRY ONLINE
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BIOLOGY

GENETICS, BIODIVERSITY & CLASSIFICATION

Level & Board	AQA (A-LEVEL)
TOPIC:	BIODIVERSITY, WITHIN A COMMUNITY
PAPER TYPE:	SOLUTION - 2
TOTAL QUESTIONS	5
TOTAL MARKS	39

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Biodiversity within a community - 2

1.

(a)

3	6	9
152	211	167

(b) 2.45

(c) The index of diversity is generally higher in environments with a variety of habitats and resources, as found in hedges, compared to more homogeneous areas like barley fields. Hedges provide a greater complexity in structure and resources, which supports more diverse species and interactions between them.

OR

More habitats are available. More species are present so more variety of food.

2.

(a)

- Increase in plant diversity leads to more types of food for animals;
- Increase in variety of animals leads to increase in predator species;
- Increase in niche / habitat.

(b) Through a trial, they count at 20 minutes then 30 minutes then at 40 and at 50+ minutes they find the same results as 40 and realize anything above then wastes time so 40 is the optimum time.

(c)

No data on number of individuals in each

$$D = \frac{N(N-1)}{\sum n(n-1)}$$

(d) Principle:

Overlap of $2 \times$ SD shows probability of differences (in means) being due to chance is greater than 0.95;

Agree:

No difference in number of earthworms and millipedes (per m²);

No difference in number of species of centipedes or millipedes;

Disagree:

More beetles and woodlice in grassy strips;

More species of beetles, earthworms, woodlice in grassy strips

3.

(a) Human activity is a major threat to the planet's biodiversity. This is because human population growth thus far has been exponential, meaning that its growth rate stays the same regardless of population size. This makes the population grow faster and faster as it gets larger.

OR

- Only cleared and abandoned and introduction of non-native species make significant difference
- Because only means of these ± 2 SDs from zero / no change
- About same number / 4 to 3 increase or decrease (species) richness / biodiversity

(b)

Non-native species out-competes / kills is a disease of native plants

Some populations of native species become extinct in the community

(c)

- Set up grid system with coordinates
- Place large number of quadrats at coordinates selected at random
- Count number of/estimate percentage cover of native plant in quadrats
- Repeat at same time each year for many years

(d) 0.0599

4.

(a) 4

(b) 2.686

(c) Use a larger number of samples in order to identify and remove anomalies and then calculate a mean value.

5.

(a) Species richness is the number of species found in a community or ecosystem. Species diversity is a measurement of species richness combined with evenness, meaning it takes into account not only how many species are present but also how evenly distributed the numbers of each species are.

OR

Species richness measures only number of different species / does not measure number of individuals.

(b) Trees vary in height.

(c) Index for canopy is 3.73

Index for understorey is 3.30

Index in canopy is 1.13 times bigger

(d)

For Zaretis itys, difference in distribution is probably due to chance / probability of being due to chance is more than 5%

For all species other than *Zaretis itys*, difference in distribution is (highly) unlikely to be due to chance

Because $P < 0.001$ which is highly significant / is much lower than 5%.



I am Sorry !!!!!



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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
- Tutoring students in UK and worldwide since 2008
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