



CHEMISTRY ONLINE
— **TUITION** —

Phone: +442081445350

www.chemistryonlinetuition.com

Email: asherrana@chemistryonlinetuition.com

BIOLOGY

GENETICS, POPULATIONS, EVOLUTION & ECOSYSTEMS

Level & Board	AQA (A-LEVEL)
TOPIC:	POPULATIONS IN ECOSYSTEM
PAPER TYPE:	SOLUTION - 1
TOTAL QUESTIONS	6
TOTAL MARKS	37

ChemistryOnlineTuition Ltd reserves the right to take legal action against any individual/ company/organization involved in copyright abuse.

Populations in Ecosystems - 1

1.

(a)

Variation due to mutations

Allopatric speciation

Smaller lakes will have different abiotic conditions

Reproductive isolation, no gene flow

(b)

$$(9480 \times 0.414) - (9480 \times 0.264) / (56 \times 26)$$

$$= 10.4$$

(c) Growth of algae blocks light reducing the rate of photosynthesis for plants deeper underwater causing them to die so saprobionts used in there breakdown do so and use aerobic respiration to generate ATP to do this outcompeting fish for oxygen causing the fish to respire less and die.

2.

(a) Mark and recapture is a method commonly used in ecology to estimate an animal population's size where it is impractical to count every individual. A portion of the population is captured, marked, and released. Later, another portion will be captured and the number of marked individuals within the sample is counted.

OR

Use the mark-release-recapture method.

be careful to ensure the capture sample is marked in a non-harmful way, then release them with a sufficient amount of time to ensure a sufficient amount of time for them to distribute between unmarked fish before collecting a second sample

population = no. in first sample x no. in second sample / marked fish in recaptured sample.

(b) There is a lower chance of recapturing marked fish.

3.

(a)

Ecological succession is the slow replacement of plant species by other plant species in a disturbed ecosystem. Primary succession occurs when a natural disaster leaves no topsoil behind. Secondary succession occurs when fires, floods, or human activity remove vegetation but leave the topsoil.

OR

Colonization due to pioneer species

Pioneer species cause a change in the abiotic factors

More suitable for new species

Increase in biodiversity

To climax community

4.

(a)

Use a grid

Random number generator for coordinates

Count in each quadrat

Large sample + calculate the mean

(b) Insects contain proteins which are digested to amino acids which can be absorbed into leaf.

OR

Digestion/breakdown of proteins

Provides amino acids

OR

Sundew can produce a named (organic) nitrogen-containing compound e.g. proteins, amino acids, DNA, ATP

Ignore if nitrate or ammonium ions given as products.

Digestion/breakdown of named (organic) phosphate-containing compound e.g. DNA, RNA

Provides named (organic) phosphate-containing product e.g. nucleotides

5.

(a) To determine the mean percentage cover for beach grass on a sand dune, divide the dune into plots and count how many have grass. Calculate percentage cover for each dune and find the mean.

OR

Determine random positions to place the quadrat using a random number generator

Use a large number of quadrats

Divide total percentage by no of quadrats = find mean

(b) Beach grass is pioneer species.

Pioneer changes environment.

Less hostile for named species.

Conifer represents climax community.

6.

(a) Trees block/reduce sunlight

CHEMISTRY ONLINE
— TUITION —

I am Sorry !!!!!



DR. ASHAR RANA



**CHEMISTRY ONLINE
— TUITION —**

Phone: +442081445350
www.chemistryonlinetuition.com
Email: asherrana@chemistryonlinetuition.com

- Founder & CEO of Chemistry Online Tuition Ltd.
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- Chemistry, Physics, and Math's Tutor

CONTACT INFORMATION FOR **CHEMISTRY ONLINE TUITION**

- UK Contact: 02081445350
- International Phone/WhatsApp: 00442081445350
- Website: www.chemistryonlinetuition.com
- Email: asherrana@chemistryonlinetuition.com
- Address: 210-Old Brompton Road, London SW5 OBS, UK