CHEMISTRY ONLINE
TUITION

Phone: +442081445350

www.chemistryonlinetuition.com

Email:asherrana@chemistryonlinetuition.com

BIOLOGY

ORGANISMS RESPOND TO CHANGES IN ENVIRONMENTS

Level & Board	AQA (A-LEVEL)
TOPIC:	SURVIVAL AND RESPONSE
PAPER TYPE:	SOLUTION - 2
TOTAL QUESTIONS	6
TOTAL MARKS	34

Survival and Response - 2

1.

(a) Taxis and Tropism are directional movements in response to stimuli like light, water, gravity, etc. The difference between the two terms is that Taxis is primarily related to animal movements while Tropism is primarily related to plant movements.

OR

Similarity: Directional response to a stimulus

Difference: Taxis organism moves and tropism a growth response

(b)

Grow in direction of gravity

Grow away from salt

Salt has more effect than gravity

(c)

More carriers in L

So less IAA in cell L

More growth in L

2.

(a) The conclusion that the worms' behavior demonstrated taxis is supported by observations indicating a directed movement in response to a stimulus.

OR

Taxis is movement away from a stimulus

Move towards temperature they were used to.

(b)

Hungry so seeking food

Move towards temperature they were used to

Associate this temperature with food

Then stay in this temperature

(c)

Dim worms live in soil, dim light is like normal environment

Even because worms might move away from bright light

Dim light ensures heat from light is not a variable

3.

(a)

Push stimulus: Legume

Push stimulus: Grass

(b) To select maize plants at random for measuring the mean percentage damage, you would need to ensure that every plant has an equal chance of being chosen. Here's how you could do it: Divide the test plot into smaller sections or rows to make it easier to navigate and randomly select plants.

OR

Set up tape measures on two sides of the plot

Use random number table

To generate coordinates

(c) To select maize plants at random for measuring the mean percentage damage, you would need to ensure that every plant has an equal chance of being chosen. Here's how you could do it: Divide the test plot into smaller sections or rows to make it easier to navigate and randomly select plants.

OR

To prevent competition between the maize and the grass

For light / nutrients / water

4.

(a) Increased nitrogen availability: When legume plants with nitrogen-fixing nodules are grown in the same field or rotation as maize, the nitrogen-fixing

bacteria in the legume nodules can release fixed nitrogen into the soil. This nitrogen becomes available to other plants, including maize, as a nutrient source.

OR

Nitrogen fixing bacteria convert nitrogen into ammonium compounds which are converted into nitrates

Maize uses nitrates for amino acid production

(b)

Reduced percentage of damage to the maize plants

Standard deviation shows no overlap but need stats to show significance of this difference

More profit than additional cost with push-pull

5.

(a)

Formation of vacuole

Formation of starch grains

Movement of grains

(b)

Grow sideways before starch grains form

Bending starts when grains form

More bending as grains increases in number

6.

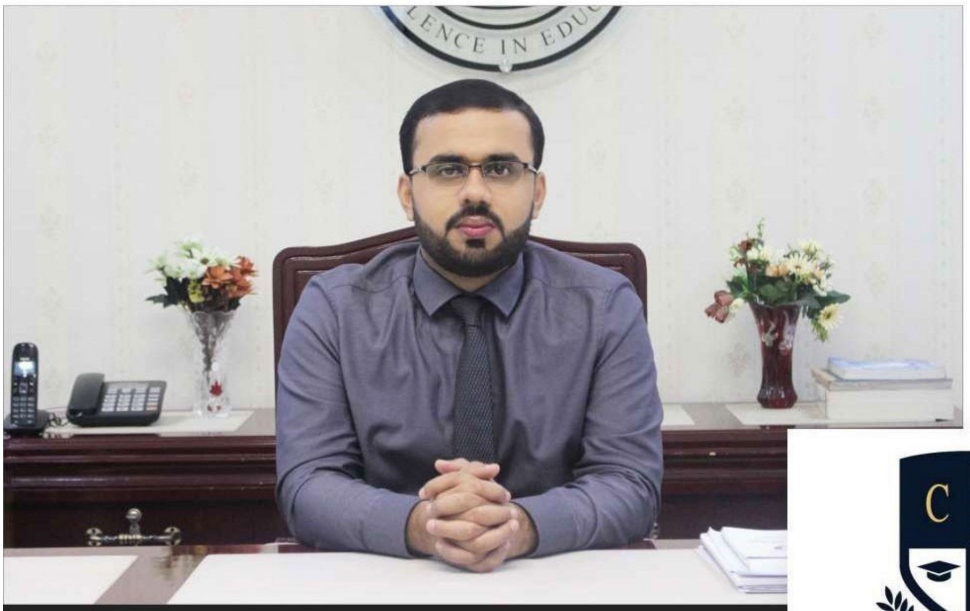
(a) Positive geotropism – IAA redistributes to the underside of the root. IAA inhibits growth, so the side with the lower concentration will grow faster, therefore the root will bend towards gravity.

OR

IAA at bottom of root inhibits elongation of cells

IAA at top of root leads to elongation of cells

www.chemistryonlinetuition.com asherrana@chemistryonlinetuition.com



DR. ASHAR RANA
M.B.B.S / MS. CHEMISTRY

CHEMISTRY ONLINE TUITION
Phone: +442081445350
www.chemistryonlinetuition.com
Email: asherrana@chemistryonlinetuition.com

- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- Chemistry, Physics, Math's and Biology 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