

ACTIVITY 6 – sample student work

Biology

Paper 1B, Q2(c)(ii)

(c) A student investigates the effect of genetic modification on the growth of salmon.

The student measures the mass and length of one normal salmon and one genetically modified salmon when both salmon are 18 months old.

The table shows the student's results.

Type of salmon	Mass in g	Length in cm
normal	1250	33
genetically modified	3000	61

(ii) The student concludes that his results show that genetically modified (GM) salmon are useful in providing a balanced diet.

Discuss the student's conclusion.

(6)

Question Number	Answer	Mark
2(c)(ii)	<p>An answer that makes reference to six of the following points:</p> <ul style="list-style-type: none">• GM salmon grow more / heavier / longer / larger / more mass / grow faster / eq (1)• (more) protein provided (1)• only need protein in correct amount / only need sufficient protein / only need 50g / too much protein / excess protein / eq (1)• balanced diet also needs vitamins / carbohydrate / lipid / minerals / fibre / no idea of other named component in salmon (1)• one salmon used / not repeated/ should use several fish (1)• (data) not reliable / result may be anomalous (1)• no information on food supply to salmon / temperature / oxygen / pollution (1)• protein need depends on age / sex / activity / eq (1)	<p>6</p> <p>Mp1 Allow converse</p>

Paper 1B, Q10(b)

(b) Plants produce plant growth substances such as auxin.

Suggest why some biologists do not consider auxin to be a hormone.

(2)

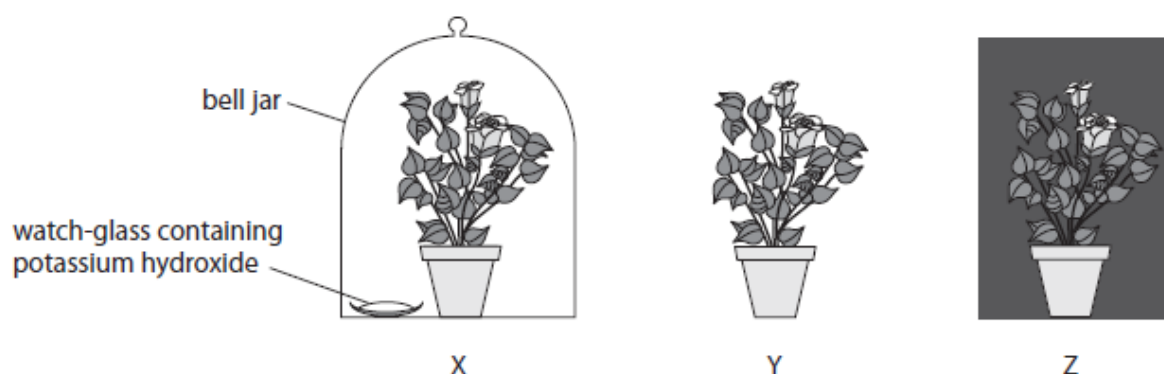
Question Number	Answer	Mark
10(b)	<p>An answer that makes reference to two of the following points:</p> <ul style="list-style-type: none">• auxin transported in xylem / phloem / auxin not transported in blood / plasma (1)• auxin produced in tips / eq auxin not from endocrine / glands / organs (1)• auxin has different effect on roots and shoots / eq (1)	<p>2</p> <p>Allow converse for Mp1 and Mp2</p>

Paper 1BR, Q9(d)

(b) A student investigates the need for light and carbon dioxide in photosynthesis.

This is his method.

- keep three plants, X, Y and Z, in the dark for 24 hours
- place plant X in a bell jar with a watch-glass containing potassium hydroxide
- leave plants Y and Z exposed to the atmosphere
- place plants X and Y in the light
- place plant Z in the dark



(d) The student sets up another plant in the same conditions as plant X, but replaces the potassium hydroxide with water.

Explain why this improves the student's investigation.

(2)

Question Number	Answer	Mark
9(d)	<p>An explanation that makes reference to the following points:</p> <ul style="list-style-type: none">• control (1)• carbon dioxide not absorbed / plant has carbon dioxide / CO_2 in bell jar / carbon dioxide needed for photosynthesis <p>show <u>bell jar</u> allows photosynthesis / <u>bell jar</u> allows starch production (1)</p>	2

Paper 1BR, Q10(b)

(b) Explain why a pregnant woman may need to take extra minerals and vitamins.

(4)

Question Number	Answer	Additional guidance	Mark
10(b)	<p>An explanation that makes reference to four of the following points:</p> <ul style="list-style-type: none">• vitamin A for (foetus) eyes / vision / sight (1)• vitamin C for (foetus) skin / (connective) tissue (1)• vitamin D for (foetus) bones / teeth / calcium absorption (1)• calcium for (foetus) bones / teeth / milk (1)• iron for (foetus) haemoglobin / Hb / <u>red</u> blood cells (1)• phosphate for (foetus) ATP / bones / DNA / RNA (1)	<p>Answer makes no mention of foetus / embryo / baby = max 3</p> <p>Mp2 Ignore scurvy</p> <p>Mp3 Ignore rickets</p> <p>Allow other vitamins and minerals eg. vitamin B for nerve development</p>	4