

- M1.** (a) stinging hairs / can sting 1
- (so) this harms herbivores / stops animals eating them 1
- (so) less of the plant is removed / damaged 1
- (b) clove (oil) 1
- it has the largest areas with no bacteria growing
allow largest inhibition zone or description of largest inhibition zone 1
- (c) antibiotics were not tested 1

[6]

M2. (a) root

1

(b) (i) chlorophyll

1

(ii) absorbs / traps / takes in light

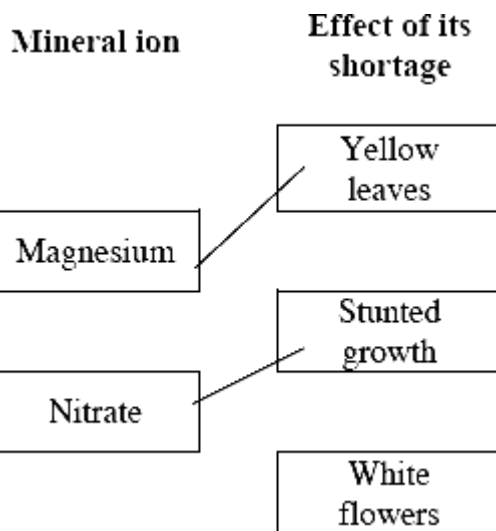
do not accept attracts / solar energy / sunshine / sun

1

(for) photosynthesis

accept to make food / glucose / sugar/ biomass

1



(c)

1 mark per correct line

extra line from a mineral ion cancels the mark

2

[6]

M3. (a) photosynthesis
do not accept other additional processes

1

(b) (i) any **three** from, eg:

ignore time / apparatus

- mass of pondweed
type of pondweed = max 2
accept amount / volume / length / size
ignore number / surface area of leaves / pondweed unqualified
- volume of water
accept amount
- other reasonable features of the water
- light intensity
accept distance between light source and tube / pondweed
- light colour
accept light if neither colour nor intensity is given
- carbon dioxide
- temperature
- pH

3

(ii) any **one** idea from, eg:

ignore reference to cost

- how much oxygen they give off
- is pondweed poisonous to fish
- will fish eat pondweed
- is pondweed harmful to environment
- how long the pondweed lives
- growth rate / size of pondweed
- reference to appearance / aesthetics

- availability

1

(c) magnesium / Mg

accept iron / Fe

ignore ion and ⁺ or ⁻

ignore nitrate

1

[6]

M4. (a) protein 1

(b) (i) (more) magnesium gives more growth / more leaves / more duckweed
if converse must be clear that less magnesium gives less growth 1

(ii) **A** gave highest number of leaves / plants **or** more than others
it equals 'A'
use of numbers must compare A with at least one other

or

A gave most growth / most duckweed **or** more than others
allow faster / fastest / better / best growth
allow more growth with nitrate / less growth without nitrate
do not allow 'no' growth without nitrate

(c) (i) mark (c) as a whole
sensible method:
e.g. mass / weighing
ignore dry or fresh
allow other sensible method involving measuring eg length of roots – ignore 'size' of roots or measure roots unqualified 1

(ii) corresponding explanation:
ignore accuracy
e.g. includes roots / includes whole plant **or** leaves vary in size **or** (length / mass / surface area given in c(i)) is a continuous variable 1

[5]