

**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

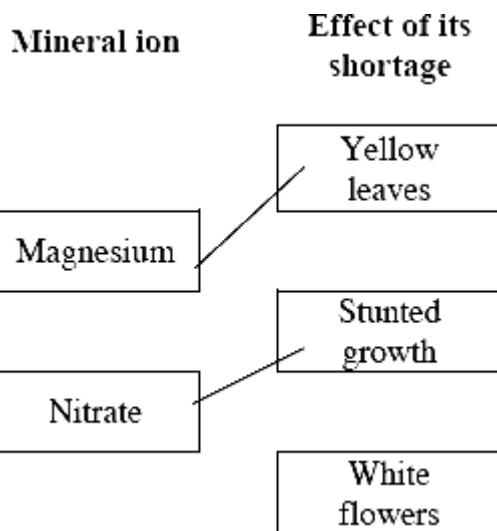
*do not accept attracts / solar energy / sunshine / sun*

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 <sup>+</sup> or <sup>-</sup>*

*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]