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*

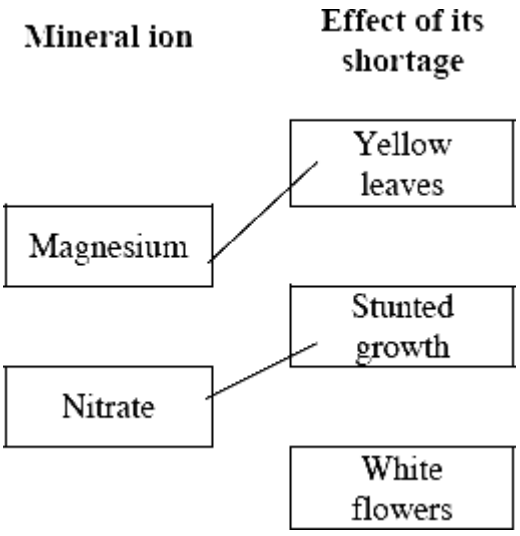
1

(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
  *<u>type</u> 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 <u>whole</u> plant**or**leaves vary in size**or**(length / mass / surface area given in c(i)) is a continuous variable

1

[5]