



9C Plants and photosynthesis...mark scheme

Assessment for learning...year 9 (level 3-6)

Question 1:

- (a) oxygen 1
- (b) carbon dioxide 1
- water 1
- do not accept light*
- do not accept chlorophyll*
- (c) D 1
- if more than one letter is given award no mark*
- (d) (i) chlorophyll 1
- (ii) blue ✓ or red ✓ 1
- if blue and red are both ticked award the mark,
but if green is ticked award no mark*
- (e) any **two** from 2
- as an energy source **or** for respiration
accept 'for energy' or 'for food'
 - to make starch
 - to make cellulose
*accept 'for growth' or 'as a starting material for
other compounds'*

Question 2:

- (a) (i) yellow 1
(ii) respiration 1
do not accept 'breathing'
- (b) (i) purple 1
(ii) photosynthesis 1
- (c) photosynthesis and respiration were happening at the same time **or** rate 1
accept 'carbon dioxide was being used up and produced at the same rate' or 'snails produce carbon dioxide and waterweed uses it up'
- (d) yellow ✓ 1
if more than one box is ticked, award no mark

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Question 3:

- (a) **answers should imply competition for resources between weeds and carrot plant A**
- any **two** from 2
- the weeds shaded the carrot plants
accept 'the weeds stopped the Sun getting to the carrots'
 - the weeds left the carrots with less space to grow
accept 'weeds choked the carrots' or 'weeds took up all the space' or 'carrot plant A had less space'
do not accept 'the carrot plants had less space'
 - the weeds absorbed **or** took most of the available water
accept 'the weeds took the water'
or 'carrot plant A had less water'
 - the weeds absorbed **or** took most of the available mineral salts **or** nutrients
accept 'the weeds took the minerals or nutrients or nitrates' or 'carrot plant A had less minerals'
do not accept 'weeds took the food'
- (b) **there are three marking areas: photosynthesis, carbohydrate production, and carbohydrate transfer or storage. At least one of these areas must contain the term 'more' to gain the three marks**
- more photosynthesis took place 1

*accept 'photosynthesis took place'
or 'the plants made more food'*

- more carbohydrate was produced in the leaves 1
accept 'carbohydrate or sugar or glucose was made in the leaves'
do not accept 'food was made in the leaves' for this mark

- more carbohydrate was transported to the roots **or** stored in the roots 1
accept 'carbohydrate or sugar or glucose or food was transported to the roots'
accept 'carbohydrate or food or starch was stored in the roots'

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Question 4:

- (a) (i) any **one** from 1
- water evaporates before entering the soil
accept 'it evaporates' or 'the Sun dries it up'
 - water runs off
 - water does not penetrate the soil
accept 'water stays on the surface'
- (ii) any **one** from 1
- roots cannot penetrate the soil **or** grow easily
*accept 'roots cannot anchor them'
or 'roots do not grow well' or 'roots cannot spread'*
 - minerals **or** nutrients cannot easily reach the roots
accept 'air cannot get to the roots'
- (b) any **two** from 2
- for photosynthesis
accept 'to make food'
 - to transport nutrients **or** minerals **or** nitrates
accept 'it is a solvent' or 'to make sap'
 - it makes the plant firm
*accept 'it provides support' or 'it makes the plant turgid'
or 'to stop it wilting'*
 - for cell growth
 - to form fruits **or** to grow fruits
do not accept 'growth' or 'to grow' or 'for fruits'

- (c) (i) any **one** from 1
- to transport water below ground
accept 'water can seep between the rocks'
 - to increase the area of soil in contact with water
accept 'porous rock absorbs water'
 - to spread water over a wider area
 - to reduce evaporation
accept 'to stop evaporation'
 - to increase the moist surface in contact with the roots
accept 'to increase the amount of air in the soil'
do not accept 'to stop the trench collapsing'
- (ii) any **one** from 1
- for growth
accept 'to grow better' or 'to grow better fruit'
do not accept 'to grow strong'
or 'to grow healthy' or 'to grow fruit'
 - to make amino acids
 - to make protein
do not accept 'because they are fertilisers'

[6]

Question 5:

Answers may be in any order

- (a) oxygen is produced during photosynthesis 1
- accept 'oxygen produced by plants is used by bacteria'*
do not accept 'oxygen is produced by the plants'
- carbon dioxide is used up during photosynthesis 1
- carbon dioxide is produced during respiration 1
- accept 'carbon dioxide is produced when bacteria or micro-organisms respire'*

Answers may be in either order

- (b) insects can't enter to transfer pollen 1
- accept 'there are no insects'*
- there is no wind in the bottle to transfer the pollen 1
- accept 'there is no wind'*
accept 'there might be only

*one of each type of plant in
the bottle'*

(c) to make protein

1

*accept 'to make amino acids'
or 'for chlorophyll'
or 'for enzymes'*

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