S2 Biology Plants Photosynthesis HOMEWORK

DO NOT write on these sheets Number \_\_\_\_\_\_

1. a) Write out the word equation for photosynthesis. [2]

b) The diagram below shows an investigation into photosynthesis. Three leaves are labelled P, Q and R.

**a)** Which of the following statements is correct?

A P, Q and R make food

B P and Q make food

C only Q makes food

D only R makes food [1]

**b)** Plants store food as starch. What chemical is used to test for starch? [1]

**2.** The light energy for photosynthesis is captured by

A water

B hydrogen

C chlorophyll

D oxygen [1]

**3.** A crop of tomatoes was grown in a poly-tunnel.

**a)** Which of the following changes would NOT produce an earlier crop of tomatoes?

A increasing the heating during the day

B increasing the CO2 concentration at night

C increasing the light intensity at night

D increasing the CO2 concentration during the day [1]

**b)** Explain your choice of answer for part a). [1]

**4.** An investigation into photosynthesis was carried out using the apparatus shown in the diagram below.



After the lamp was switched on, the leaf disc floated to the surface because oxygen was produced in the leaf. The time taken for this to happen was measured.

The experiment was repeated six times and the results are shown in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| experiment | 1 | 2 | 3 | 4 | 5 | 6 |
| time for leaf disc to float to surface (seconds) | 18 | 17 | 12 | 15 | 12 | 16 |

**a)** Calculate the average time for the leaf discs to float to the surface. *Show your workings* [1]

**b)** Why is it good practice to repeat the experiment six times and calculate an average time for the leaf to float to the surface? [1]

**c)** State one feature of the leaf disc which must be kept the same in each experiment. [1]

**d)** State one feature, not relating to the leaf disc, which must be kept the same in each experiment. [1]

**e)** Describe how this method could be used to investigate the effect of light intensity on the rate of photosynthesis. [3]

**4.** The graph below shows the effects of two different factors on the rate of photosynthesis.

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**a)** What is the effect on rate of photosynthesis of increasing the light intensity from 0 to 20 units at both high and low carbon dioxide concentrations?[1]

**b)** What does the term ‘limiting factor’ mean? [1]

**c)** What is the limiting factors at point X? [1]

**d)** What is the limiting factors at point Y? [1]