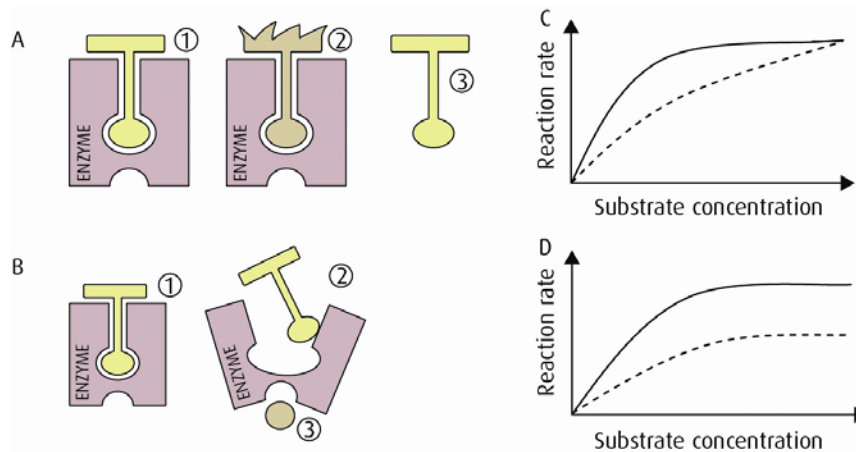
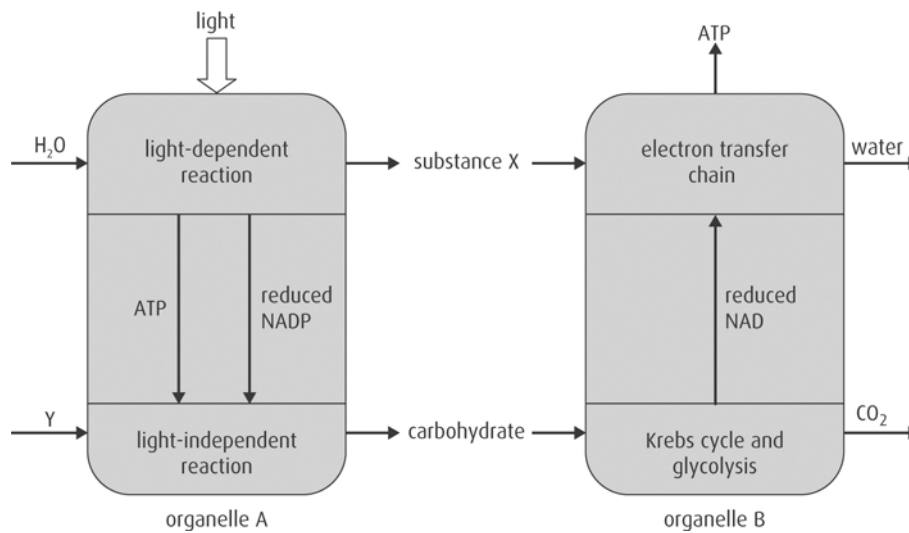


**Support worksheet – Option C**

- 1** Enzyme activity may be affected by competitive or non-competitive inhibitors.
- a** Identify which of the diagrams below represent each type of inhibition. (4)
- b** Explain the shapes of the two graphs, which show rate of reaction plotted against substrate concentration. (2)



- 2** The diagram below shows processes taking place in two plant organelles, A and B.

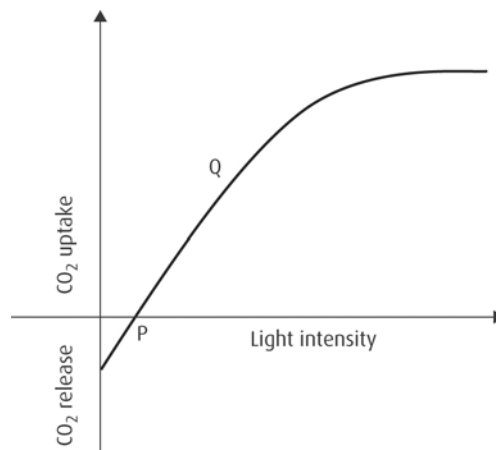


- a** Name the organelles A and B. (2)
- b** Name the substances X and Y. (2)
- c** What are ATP and reduced NADP used for in the light-independent reaction? (2)
- d** State where in the cell glycolysis and the Krebs cycle occur. (2)

- 3 Complete the following table, which compares the production of ATP in mitochondria and in chloroplasts. Write 'true' or 'false' in the boxes to indicate which statements correctly describe processes that occur in each organelle. (10)

Process	Mitochondrion	Chloroplast
Photons excite electrons.		
Electrons pass through carrier molecules.		
Oxidative phosphorylation occurs.		
ATP is produced from ADP and P <sub>i</sub> .		
Takes place in both light and darkness.		

- 4 The graph shows the uptake and release of carbon dioxide by a green plant at different light intensities.



- a The point P is known as the compensation point. Using the information on the graph, explain what is happening at this point. (2)
- b Describe the shape of the graph at point Q and explain what is happening in the cells. (2)
- c What are the products of the light-dependent reactions? (2)
- d Why does the uptake of CO<sub>2</sub> slow down at higher light intensities? (1)

5 a Why do plants need an effective root system in order to photosynthesize? (1)

b Copy and complete the following paragraph, which describes part of the process of photosynthesis, by inserting the correct words in the spaces. (8)

Chlorophyll *a* and chlorophyll *b* are both found in chloroplasts. Chlorophylls absorb mainly \_\_\_\_\_ and \_\_\_\_\_ wavelengths of light. In the process of *cyclic photophosphorylation*, light displaces an electron from a chlorophyll molecule. This electron is returned to the chlorophyll via a series of \_\_\_\_\_, each of which is at a lower energy level. \_\_\_\_\_ is synthesised as the electrons flow. \_\_\_\_\_ is used in the light-independent reactions, which occur in the \_\_\_\_\_ of the chloroplast. In the process of *non-cyclic photophosphorylation*, the electrons are combined with \_\_\_\_\_, which are produced from the photolysis of \_\_\_\_\_.

6 Chemiosmosis is a process that occurs in both mitochondria (during respiration) and chloroplasts (during photosynthesis). Complete the table, which compares respiration and photosynthesis. (5)

	Photosynthesis	Respiration
Place where H <sup>+</sup> ions accumulate		between inner and outer membranes of mitochondria
Source of H <sup>+</sup> ions		hydrogen acceptors such as NADH + H <sup>+</sup>
Source of energy		
Use of ATP formed	used in the stroma to reduce CO <sub>2</sub> in light-independent reactions	