

1. Define *photosynthesis*

*The conversion of \_\_\_\_\_ into \_\_\_\_\_ in plants.* <sup>(1 p. 65)</sup>

2. Write a word equation and balanced symbol equation for the process of photosynthesis.

Word:

Symbol

3. *Glucose* is a product of photosynthesis. It can be used directly in respiration, stored as starch or converted to glucose.

a. Distinguish between the functions of starch and cellulose.

Starch:

Cellulose:

b. Identify and outline the process of condensation to form a disaccharide.

c. Explain why a plant which is left in the dark for a long period of time will test negative for starch.



**4. Light from the Sun is composed of a range of wavelengths (colours).**

a. Outline the properties of these wavelengths of light:

Wavelength (nm)	10-400	400-500	500-650	700-800	0.8-1000 $\mu$ m
Name	Ultraviolet				Infra-red
Photosynthesis?	No				No
Visible?	No	Yes	Yes	Yes	No
Energy	Very High	←————→			Low
Frequency	Very High	←————→			Low

5. State the name of the photosynthetic pigment and its location in green plants.

Name: \_\_\_\_\_

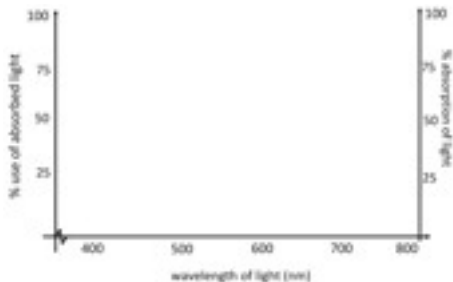
Location: \_\_\_\_\_

6. Distinguish between *action* and *absorption* spectra for photosynthesis.

Action:

Absorption:

7. In the space below, draw a graph showing the action and absorption spectra for chlorophyll. Annotate the diagram to show why leaves appear green.



8. Leaves appear green because...

9. Summarize the two main stages of photosynthesis:

	Input	Outcome
	Light energy is used to...	
Light-dependent reactions		
Light independent reactions		

Define *rate*, with regard to reactions.

10. Explain how the **rate** of photosynthesis can be measured *directly* and *indirectly*.

Direct Measurement 1	Product:	
Explanation:		

Direct Measurement 2	Product:	
Explanation:		



Indirect Measurement	Outcome:	
Explanation:		

11. Outline the effects of the following variables on the rate of photosynthesis.

*Sketch and annotate a graph for each one.*

Light intensity	

*Note: light intensity is not the same as wavelength or frequency. Light intensity refers to the amount of light of a given wavelength which is available to the plant. Light intensity is high at the equator, in the summer or at midday.*

Temperature	

Carbon dioxide concentration	

