Photosynthesis as an energy transfer process

Question Paper 4

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Photosynthesis
Sub Topic	Photosynthesis as an energy transfer process
Booklet	Theory
Paper Type	Question Paper 4

Time Allowed: 72 minutes

Score : /60

Percentage: /100

Grade Boundaries:

A*	А	В	С	D	Е	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

1	(a)	Explain how the palisade mesophyll cells of a leaf are adapted for photosynthesis.	[8]
	(b)	Outline the light-independent stage of photosynthesis.	[7]
		[Total: 1	15]
•••••	•••••		
			••••
			••••
•••••			

(a) Describe the structure of photosystems and explain how a photosystem functions in cyclic photophosphorylation. [8]
(b) Explain briefly how reduced NADP is formed in the light-dependent stage and how it is used in the light-independent stage. [7]
[Total: 15]

3 (a) An **absorption** spectrum is a graph of the absorption of different wavelengths of light by a photosynthetic pigment.

An **action** spectrum is a graph of the rate of photosynthesis at different wavelengths of light.

Fig. 7.1 shows the absorption spectra of chlorophyll a and chlorophyll b as well as an action spectrum.

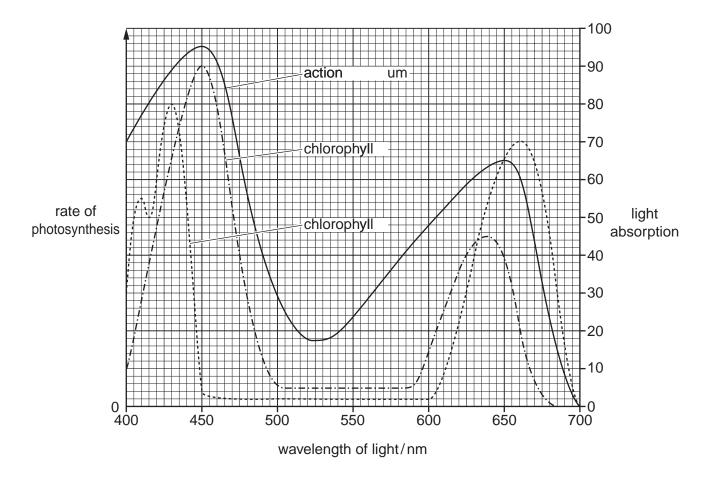


Fig. 7.1

With reference to Fig. 7.1,

(i)	compare the absorption spectra of chlorophyll a and chlorophyll b,		
	[3]		

(ii)	explain the shape of the action spectrum,
	[3]
(iii)	explain why plants appear green .
	[2]

(b) Fig. 7.2 is an electron micrograph showing a section through part of a chloroplast.

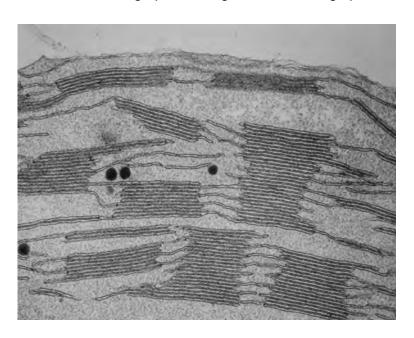


Fig. 7.2

On Fig. 7.2, draw label lines and use the letters ${\bf W}$ and ${\bf Y}$ to identify the following structures:

- **W** where the light-independent reactions occur
- Y where chlorophyll is found

cplain why increasing the concentration of carbon dioxide may increase the rate of oduction of carbohydrates at high light intensities.	(c)
[5]	
[Total: 1 <i>E</i>]	

[Total: 15]

(b) Explain how the palisade mesophyll cells of a leaf are adapted for photosynthesis	s. [6] :al: 15]
	al: 15]
[Tot	
