

Answers for Unit 4.3 Photosynthesis Test 1

- Jan
2010
HB4
4. (a) Electrons leave chlorophyll molecules / raised to a higher energy level;
pass to / picked up by electron acceptor;
then passes down chain of electron carriers;
held in thylakoid membranes;
energy is released as electrons pass down chain;
used to phosphorylate ADP or eq. [3]
- (b) RuBP combines with carbon dioxide;
forming an unstable 6 C compound;
which splits into glycerate 3 phosphate (GP);
GP is phosphorylated to triose phosphate;
Triose phosphate is converted to glucose. [3]
- (c) active transport;
muscle contraction;
nerve transmission;
synthesis of materials within cells/proteins/mitosis. [2]
- (d) Lipids in food stores in seeds (e.g. olive oil);
Amino acids / proteins for growth. [2]

[Total 10 marks]

- June
-011
HB4
2. (a) (i) Y - ATP to ADP (+P); 1
X-NADPH₂ to NADP 1
- (ii) light dependent reactions/(non cyclic) 1
photophosphorylation;
(not: Z scheme/cyclic photophosphorylation)
- (iii) grana/thylakoids 1
- (b) 6 1

Total 5 marks

Question	Answer	Mark
7. (b) (i)	A. CO ₂ combines with ribulose biphosphate	1
	B. which is a 5C molecule	1
	C. The reaction is catalysed by the enzyme rubisco (RUBP carboxylase)	1
	D. The 6C molecule produced splits into two 3C molecules/glycerate-3-phosphate.	1
	F. These react with ATP	1
	G. and are then reduced by NADPH	1
	H. both of which have been produced in the light stage.	
	I. The product is a triose phosphate (glyceraldehyde phosphate)	1
	J. Most of which is used to regenerate ribulose biphosphate.	1
	K. The rest is used to synthesise glucose, other sugars, amino acids, etc.	1

(Seven marks can be awarded from the ten available)

(ii)	L. Photosynthesis traps the only primary source of biological energy - sunlight.	1
	M. It uses up CO ₂ (global warming) and regenerates oxygen.	1
	N. All food stuffs directly or indirectly traced back to photosynthesis.	1
	O. Source of fibre, coal, timber, oil. (Any examples of non-food materials)	1

(Three marks can be awarded from the four available)

(Total 10 marks)