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8.3 Photosynthesis

Hard



BIOLOGY

IB HL

8.3 Photosynthesis

Question Paper

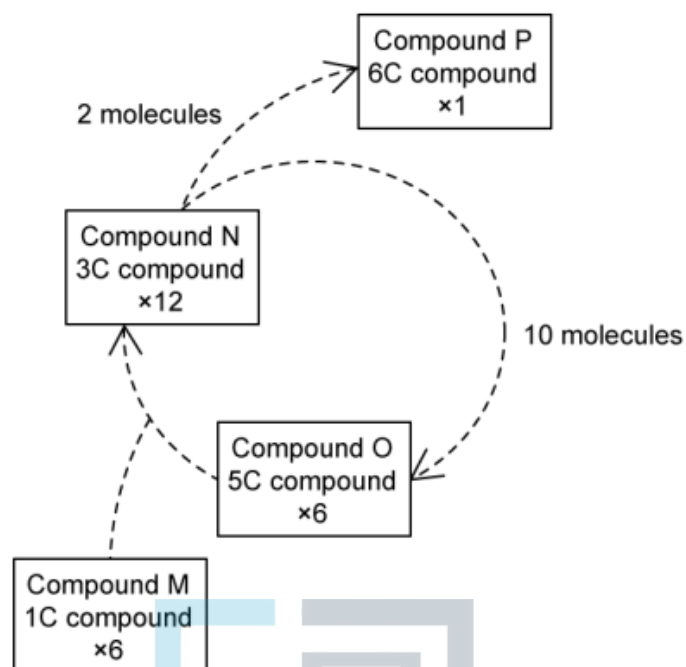
Course	DP IB Biology
Section	8. Metabolism, Cell Respiration & Photosynthesis (HL Only)
Topic	8.3 Photosynthesis
Difficulty	Hard

EXAM PAPERS PRACTICE

Time allowed: 10
Score: /5
Percentage: /100

Question 1

The diagram below shows the Calvin cycle of the light-independent reactions.



Which of the following correctly identifies compound **M** to **P**?

	M	N	O	P
A.	carbon dioxide	ribulose biphosphate	glycerate 3-phosphate	glucose
B.	carbon dioxide	glycerate 3-phosphate	ribulose biphosphate	glucose
C.	Rubisco	glycerate 3-phosphate	ribulose biphosphate	triose phosphate
D.	carbon dioxide	triose phosphate	glycerate 3-phosphate	ribulose biphosphate

[1 mark]

Question 2

The following steps describe non-cyclic photophosphorylation involving the electron transport chain.

- I. Electrons from the photolysis of water replace lost electrons from photosystem II
- II. Light passes to primary pigments in photosystem I and II
- III. Electrons are passed from photosystem II to photosystem I via electron transport chain
- IV. Energy is released to synthesise ATP
- V. Electrons are excited to a higher energy level

Which of the following represents the correct sequence of the steps?

- A. II. → V. → IV. → III. → I.
- B. V. → IV. → III. → II. → I.
- C. II. → V. → III. → IV. → I.
- D. V. → III. → IV. → II. → I.

[1 mark]

Question 3

The following molecules are all involved with the process of photosynthesis.

- I. Glucose
- II. ATP
- III. Water
- IV. Reduced NADP
- V. Carbon dioxide

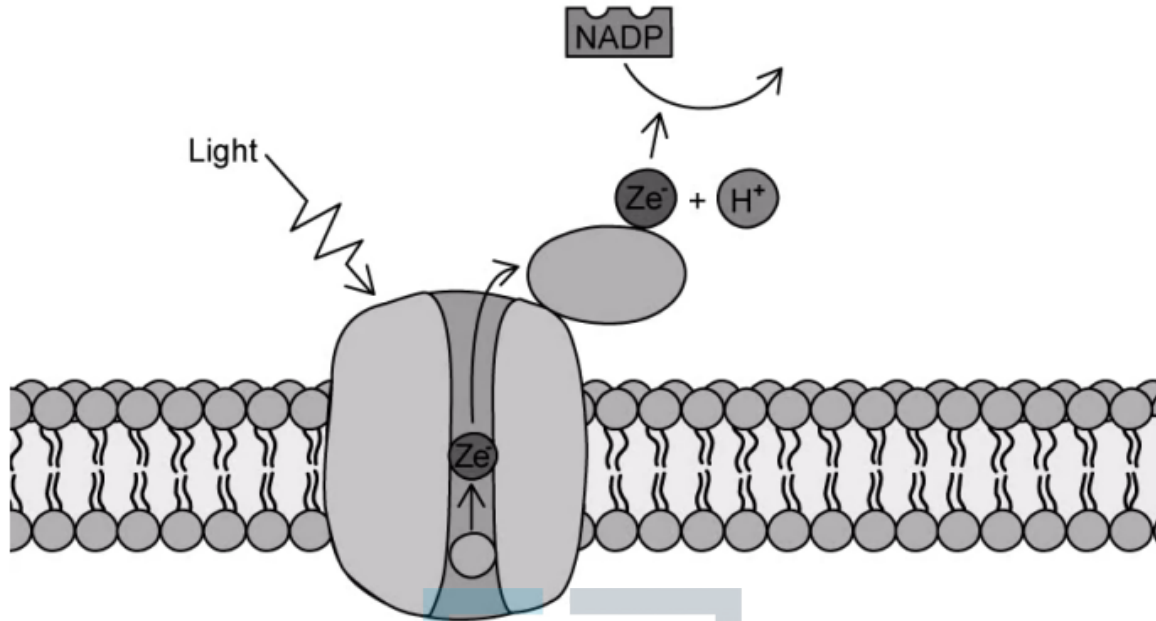
Which of these molecules are involved with both the light dependent **and** light independent reactions?

- A. I. and III.
- B. II. and IV.
- C. I., II. and IV.
- D. II., IV. and V.



Question 4

Which of the following provides the best explanation of the process illustrated in the diagram?



- A. Photosystem I and ferredoxin is involved with the reduction of NADP so that the hydrogen can be used during the light independent stage of photosynthesis
- B. Photosystem II and ferredoxin is involved with the reduction of NADP so that the hydrogen can be used during the light independent stage of photosynthesis
- C. Photosystem I and plastoquinone is involved with the reduction of NADP so that the hydrogen can be used during the light independent stage of photosynthesis
- D. Photosystem I and ferredoxin is involved with the reduction of NADP so that the hydrogen can be used during the light dependent stage of photosynthesis

[1 mark]

Question 5

Which of the following statements is **not** correct with regards to chemiosmosis in photosynthesis?

- I. Protons move down their concentration gradient through ATP synthase located in the chloroplast membrane
- II. The photolysis of water provides protons needed for chemiosmosis to occur
- III. ADP is phosphorylated to ATP due to the energy released by the movement of electrons down the electron transport chain
- IV. A high concentration of protons build up outside the intermembrane space, creating a concentration gradient

A. I. and IV. only

B. II. and III. only

C. I., III. and IV.

D. II., III. and IV.

[1 mark]