

Photosynthesis Question Bank



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف التاسع المتقدم ← علوم ← الفصل الأول ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 2026-10-03 20:11:45

ملفات اكتب للمعلم اكتب للطالب | اختبارات الكترونية | اختبارات | حلول | عروض بوربوينت | أوراق عمل
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المزيد من مادة
علوم:

إعداد: GILGIL OMAR

التواصل الاجتماعي بحسب الصف التاسع المتقدم



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف التاسع المتقدم والمادة علوم في الفصل الأول

شرح Photosynthesis

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U1: Chemistry in Biology

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مراجعة وحدة Biology in Chemistry

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Term 3 – lesson 2

Photosynthesis

Question Bank

Choose the correct answer for each of the following:

Overview of Photosynthesis :

1- The equation $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{light} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ represents the overall process of photosynthesis. Which type of energy conversion does this equation describe?

- a) Light energy into chemical energy
- b) Chemical energy into light energy
- c) Mechanical energy into heat energy
- d) Nuclear energy into chemical energy

2- Photosynthesis is best classified as a(n) _____ pathway because it _____.

- a) catabolic — breaks down glucose to release energy
- b) anabolic — builds glucose from smaller reactant molecules
- c) catabolic — builds larger molecules from smaller ones
- d) anabolic — breaks down carbon dioxide and water

3- Photosynthesis occurs in two phases. Which statement correctly matches each phase with what it produces?

- a) Phase one (light-dependent) produces glucose; phase two (light-independent) produces ATP and NADPH
- b) Both phases produce glucose directly
- c) Phase one (light-dependent) produces ATP and NADPH; phase two (light-independent) produces glucose
- d) Phase one produces oxygen only; phase two produces carbon dioxide only

4- The hydrocarbon backbone of the glucose formed during photosynthesis is mainly used to:

- a) Release light energy directly
- b) Produce oxygen continuously for the atmosphere
- c) Replace ATP as the main energy carrier in cells
- d) Build other carbon-based molecules such as proteins, lipids, and DNA





Term 3 – lesson 2

Photosynthesis

5- Which of the following is required as a reactant for photosynthesis, but is a waste product of cellular respiration?

- a) Carbon dioxide b) Oxygen c) Glucose d) ATP

Chloroplasts and Pigments :

6- Which of the following is NOT a component of the chloroplast?

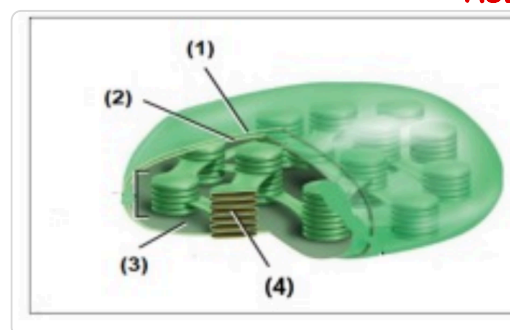
- a) Thylakoid b) Mitochondrion c) Granum d) Stroma

7- Which pigment absorbs light mainly in the blue and green regions of the spectrum, while reflecting yellow, orange, and red light?

- a) Chlorophyll a b) Chlorophyll b
c) Carotenoids d) Chlorophyll a and b together

8- Based on the diagram below, which shows the structure of the chloroplast, which of the following indicates the location of light-absorption colored molecules?

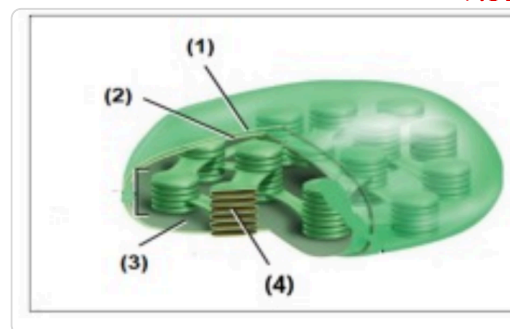
- a) (1) b) (2) c) (3) d) (4)



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9- Based on the same diagram, which of the following numbers represents the location of the light-independent reactions that use ATP and NADPH?

- a) (3) b) (1) c) (2) d) (4)



MOE





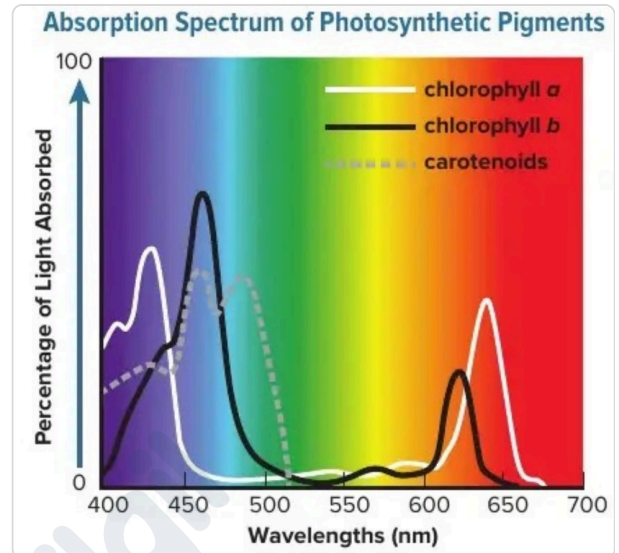
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10- Use the figure below to answer the question:
why do plant parts that contain chlorophyll appear green to the human eye?

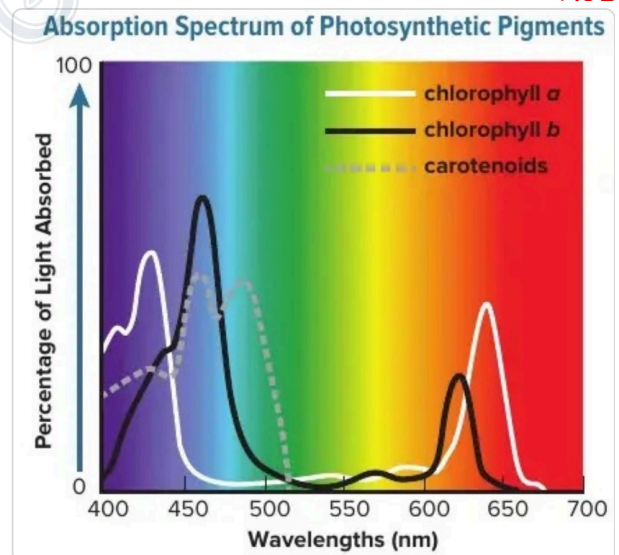
- a) Chlorophylls absorb light in the yellow region of the visible spectrum
- b) Chlorophylls reflect light in the green region of the visible spectrum
- c) Chlorophylls absorb light in the green region of the visible spectrum
- d) Chlorophylls reflect light in the violet–blue region of the visible spectrum



MOE

11- According to the same figure, chlorophyll a absorbs light most strongly in which regions?

- a) Green and yellow
- b) Yellow and orange
- c) Blue–violet and red
- d) Green only





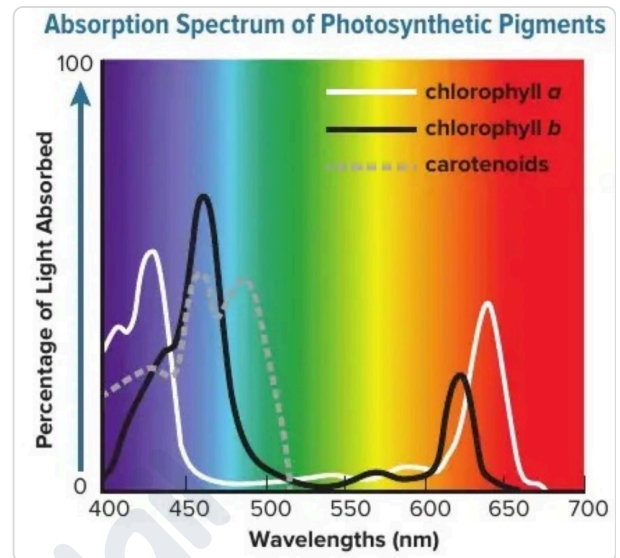
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12- According to the same figure, carotenoids absorb light most effectively in which region?

- a) Red only
- b) Yellow-orange only
- c) Green-yellow region
- d) Blue-green region



Light-Dependent Reactions :

13- What happens immediately when light energy is absorbed by Photosystem II?

- a) A water molecule splits, releasing electrons, protons, and oxygen
- b) Glucose is immediately synthesized in the thylakoid
- c) Carbon dioxide is fixed into 3-PGA
- d) ATP synthase moves to the stroma

14- During chemiosmosis, ATP is formed when protons move:

- a) From the stroma into the thylakoid space through the electron transport chain
- b) From the thylakoid space into the stroma through ATP synthase
- c) From the stroma directly into Photosystem I
- d) Out of the chloroplast into the cytoplasm



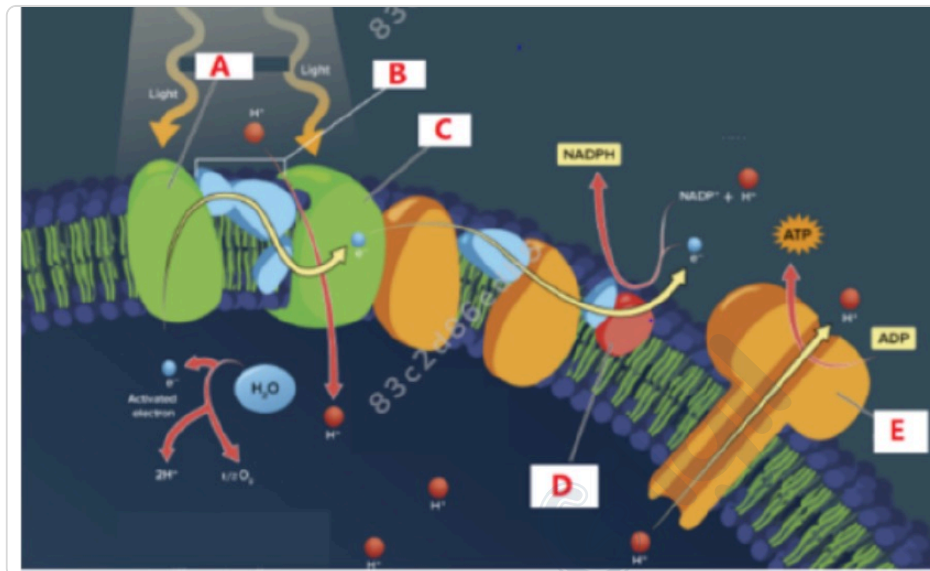


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15- The figure below shows the electron transport in the light reactions of photosynthesis. Which letter refers to the final electron acceptor?



a) E

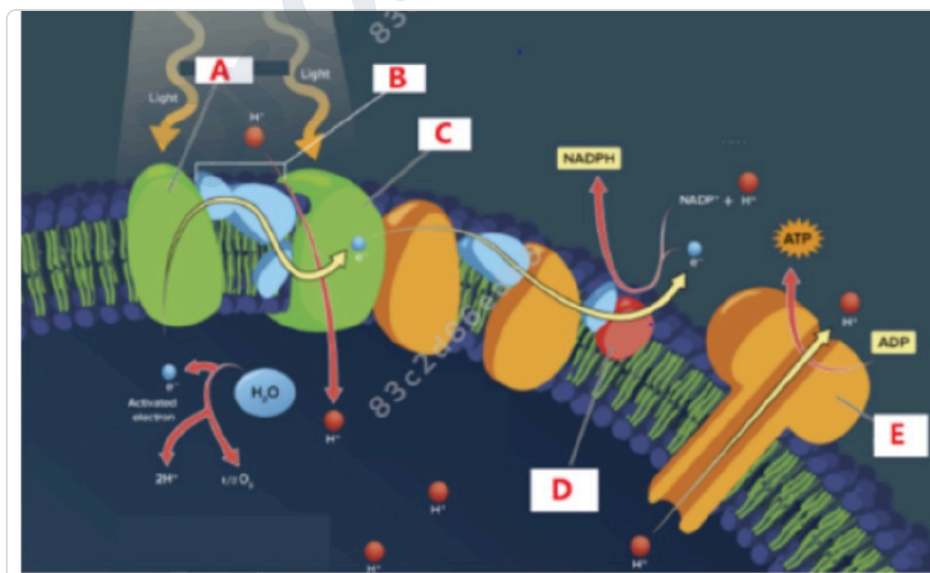
b) B

c) D

d) C

MOE

16- Based on the same figure, which letter refers to the ferredoxin protein?



a) A

b) B

c) D

d) C



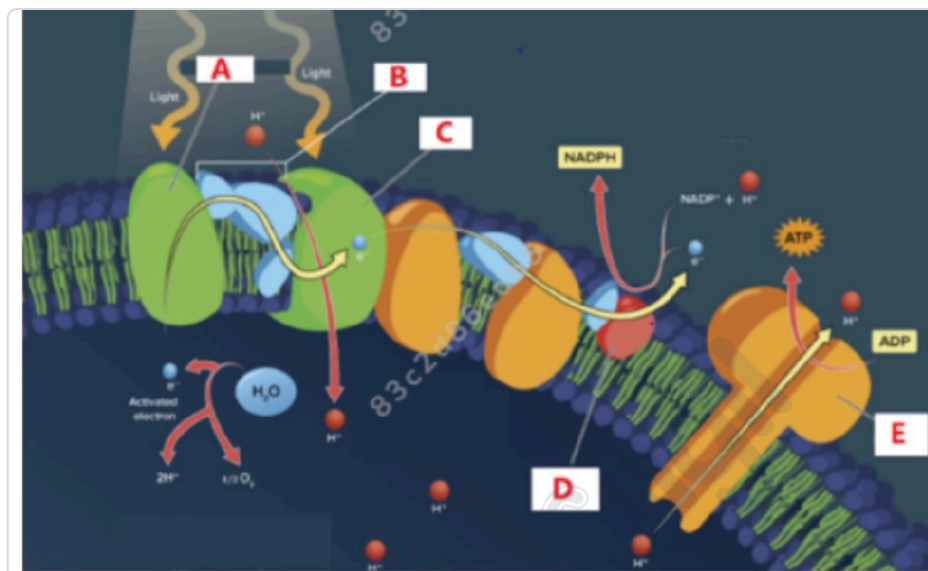


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Photosynthesis

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17- The figure below illustrates the electron transport in light reactions of photosynthesis. Which of the following statements is FALSE?



- a) D letter in the image refers to the Ferredoxin
- b) E letter in the image refers to the ATP synthase enzyme
- c) B letter in the image refers to the electron carrier
- d) C letter in the image refers to the Photosystem II

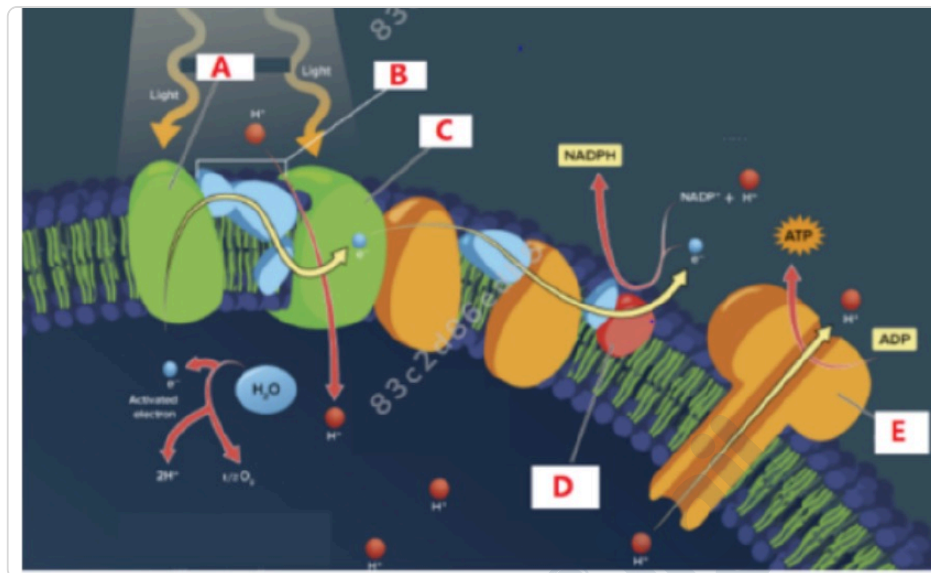




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Photosynthesis

18- According to the same figure, electrons move directly from Photosystem II to the:



- a) ATP synthase b) Electron carriers c) Ferredoxin d) NADP⁺

The Calvin Cycle and Alternative Pathways:

19- In which part of the chloroplast does the Calvin cycle take place?

- a) Thylakoid membrane b) Thylakoid space
c) Stroma d) Outer membrane

20- What is the main role of the enzyme rubisco in the Calvin cycle?

- a) It splits water molecules to release electrons
b) It converts ATP directly into glucose
c) It pumps protons across the thylakoid membrane
d) It combines carbon dioxide with RuBP to begin carbon fixation

21- A plant native to a hot, dry desert keeps its stomata closed during the day and opens them only at night to take in CO₂. This adaptation is characteristic of:

- a) CAM plants b) C₃ plants c) C₄ plants d) Aquatic plants



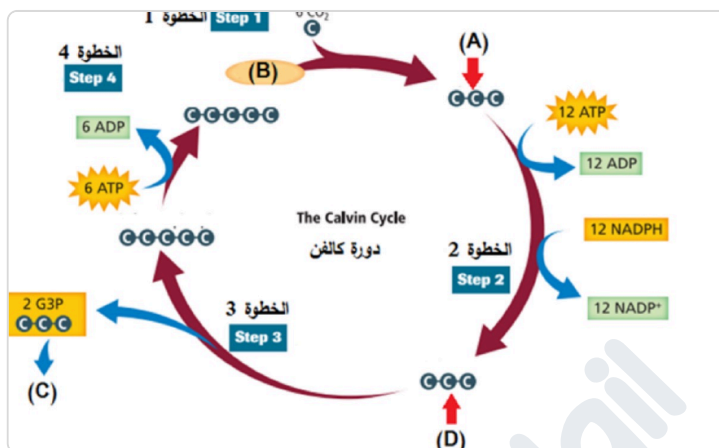


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22- The figure below shows the Calvin cycle. Which letter refers to the compound that will be transported from the chloroplast to make glucose, fructose, and starches?



a) A

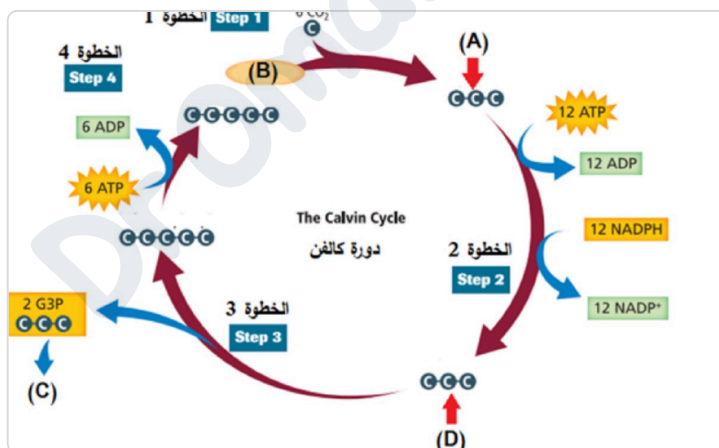
b) C

c) B

d) D

MOE

23- Based on the same figure, which letter refers to the rubisco enzyme?



a) A

b) D

c) B

d) C



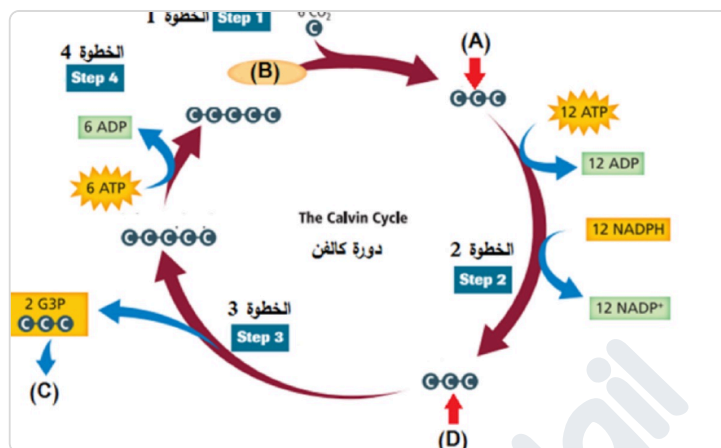


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24- Based on the same figure, which letter refers to the 3-phosphoglycerate (3-PGA) compound?



a) B

b) C

c) D

d) A

Higher-Order Thinking Skills :

25- A mutation prevents a chloroplast from making functional ATP synthase enzymes. Which process would be affected FIRST?

- a) Formation of ATP during chemiosmosis
- b) Splitting of water in Photosystem II
- c) Absorption of light by chlorophyll
- d) Formation of the proton gradient in the thylakoid space

26- A scientist supplies a plant with radioactively labeled carbon dioxide ($^{14}\text{CO}_2$) and stops photosynthesis a few seconds later. In which molecule would the radioactive label most likely appear first?

- a) Glucose
- b) 3-phosphoglycerate (3-PGA)
- c) Ribulose 1,5-bisphosphate (RuBP)
- d) ATP





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27- A plant is exposed only to green light (550 nm) instead of the full visible spectrum. Based on the absorption spectrum of chlorophyll, predict the effect on its rate of photosynthesis.

- a) The rate would increase, because chlorophyll absorbs green light strongly
- b) The rate would stay the same, because all wavelengths are absorbed equally
- c) The rate would decrease, because chlorophyll mostly reflects green light
- d) Photosynthesis would stop completely, because plants cannot use green light at all

28- Researchers block the splitting of water (photolysis) in a plant's thylakoids using a chemical inhibitor. Which of the following would occur as a direct result?

- a) The Calvin cycle would immediately speed up
- b) Glucose production would increase because ATP is no longer needed
- c) Carbon dioxide fixation would double in the stroma
- d) Electron transport would stop due to a lack of electrons, and no O_2 or NADPH would form





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Photosynthesis

Answer Key

1	a	2	b	3	c	4	d	5	a
6	b	7	c	8	d	9	a	10	b
11	c	12	d	13	a	14	b	15	c
16	d	17	a	18	b	19	c	20	d
21	a	22	b	23	c	24	d	25	a
26	b	27	c	28	d				

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