

Solve general biology

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Instructions

Description

Homework #5 Photosynthesis & Cellular Communication is due by this Sunday night, October 21, at 10: 00pm. Login to Blackboard to complete the assignment anytime between now and then, and once you are finished push Save and Submit.

Instructions

Multiple Attempts

Not allowed. This Test can only be taken once.

Force Completion

This Test can be saved and resumed later.

Question Completion Status:

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Question 1

The primary source of energy for most organisms is ultimately derived from

Answer

A.

glucose

B.

plants

C.

glycogen

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D.

the sun

E.

catabolism

2 points

Question 2

These organisms most specifically utilize light energy to make organic molecules from inorganic molecules.

Answer

A.

photoautotrophs

B.

photoheterotrophs

C.

photoisotrophs

D.

photohemitrophs

E.

heterotrophs

3 points

Question 3

The main structure for gas exchange in plants is called the

Answer

A.

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mesophyll

B.

chloroplast

C.

grana

D.

stomata

E.

2 points

Question 4

Which of the following statements would be most INCORRECT if there were a sudden decline in plants on Earth?

Answer

A.

oxygen levels in the environment might decline

B.

the rate of photosynthesis in existing plants would decline

C.

there would be less organic matter on Earth

D.

a decline in the populations of herbivores would likely occur

E.

heterotrophic organisms would be significantly impacted

2 points

Question 5

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Which of the following is NOT a product of the light reaction?

Answer

a.

NADPH

b.

energy intermediates

c.

Adenosine triphosphate

d.

oxygen

e.

carbon dioxide

2 points

Question 6

Which of the following statements about chlorophyll is correct?

Answer

A.

It appears green because it absorbs light in the green light spectrum.

B.

It reflects all colors in the light spectrum except green.

C.

It reflects light in the green light spectrum.

D.

It reflects high-energy electrons.

E.

All of the choices are correct.

2 points

Question 7

Which of the following is mismatched with its location?

Answer

A.

light reaction; grana

B.

electron transport; thylakoid lipid bilayer

C.

Calvin cycle; stroma

D.

ATP synthase; intermembrane space

E.

splitting of water; thylakoid lumen

2 points

Question 8

Which of the following is FALSE when comparing the mitochondria and chloroplast?

Answer

A.

Both have similar electron transport protein complexes.

B.

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Both contain ATP synthase.

C.

Both generate ATP via a H^+ electrochemical gradient.

D.

The inner-membrane space of the mitochondria is similar to that of the thylakoid lumen insofar as each has a higher H^+ concentration relative to that of the mitochondrial matrix and chloroplast stroma.

E.

The stroma of chloroplasts is similar to that of the mitochondrial inner-membrane space insofar as each has a higher H^+ concentration relative to that of the chloroplast thylakoid lumen and the mitochondrial matrix.

2 points

Question 9

During noncyclic electron flow of the light reaction, which molecule is the final acceptor of the high-energy electron?

Answer

A.

water

B.

P700

C.

NADP+

D.

P680

E.

oxygen

2 points

Question 10

During photosynthesis, the energy given up by electrons as they move through the electron transport chain is used to

Answer

A.

produce glucose

B.

fix CO₂.

C.

generate an electrochemical H⁺ gradient across a membrane.

D.

oxidize water

E.

boost energy levels of pigment electrons.

2 points

Question 11

Which of the following represents a reactant or input for the light reaction of photosynthesis?

Answer

A.

carbon dioxide

B.

H₂O

C.

oxygen

D.

ATP

E.

NADPH

2 points

Question 12

What is the main role of the pigment molecules within the antenna or light-harvesting complex?

Answer

A.

Oxidize water and release oxygen to the reaction center chlorophyll.

B.

Absorb photons and transfer light energy to the reaction center chlorophyll.

C.

Synthesize NADPH.

D.

Pass electrons to the electron transport chain and then to NADPH.

E.

Increase H⁺ concentration in the stroma.

2 points

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Question 13

The Calvin cycle is only capable of fixing carbon dioxide in the dark.

Answer True

False

2 points

Question 14

Which order of events for the Calvin cycle is correct?

I. Reduction

II. Regeneration of the CO₂ acceptor (RuBP)

III. Carbon fixation

Answer

A.

I, II, III

B.

III, II, I

C.

III, I, II

D.

I, III, II

2 points

Question 15

This molecule combines with CO₂ to form the 3-carbon substance, 3-phosphoglycerate.

Answer

A.

glyceraldehyde-3-phosphate (G3P)

B.

glucose

C.

ribulose biphosphate (RuBP)

D.

glycerol

E.

nicotinamide adenine dinucleotide phosphate (NADPH)

2 points

Question 16

Which of the following has the highest photosynthetic efficiency in hot and dry environments?

Answer

A.

C3 plants

B.

C4 plants

C.

plants undergoing photorespiration

D.

plants that use oxygen to produce sugars

E.

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plants that only produce sugar in the dark

2 points

Question 17

CAM plants have temporal adaptations which allow the fixation of carbon dioxide through stomata only during the night, while C4 plants exhibit morphological adaptations and can keep stomata partially open during the day even under hot and dry temperatures, storing the fixed carbon in specialized cells.

Answer True

False

1 points

Question 18

_____ is the process through which cells can detect and respond to signals in their extracellular environment.

Answer

Reception

Transduction

Cell communication

Sensory response

2 points

Question 19

A substrate binds an enzyme as a signal molecule binds a

Answer

A.

second messenger.

B.

kinase.

C.

transcriptional factor.

D.

receptor.

2 points

Question 20

Hormones regardless of whether they operate locally or at long distances must bind a receptor to elicit a cell response.

Answer True

False

2 points

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