Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Specifically, molecules of chlorophyll are located in membranes of sacs called 1) _____
A) thylakoids.
B) vesicles.
C) grana.
D) cristae.
E) stroma.

2) The cellular organelle of eukaryotic organisms which is responsible for photosynthetic activity is the 2) _____
A) ribosome.
B) nucleus.
C) mitochondrion.
D) endoplasmic reticulum.
E) chloroplast.

3) A pigment that absorbs red and blue light and reflects green light is 3) _____
A) carotenoid.
B) xanthophyll.
C) melanin.
D) phycocyanin.
E) chlorophyll.

4) The products of photosynthesis are 4) _____
A) glucose and carbon dioxide.
B) glucose and water.
C) glucose and oxygen.
D) carbon dioxide, water, and energy.
E) carbon dioxide, chlorophyll, and oxygen.

5) What structural feature of a leaf allows a leaf to obtain CO_2 from the air? 5) _____
A) mesophyll
B) cuticle
C) epidermis
D) stomata
E) chloroplast

6) Which of the following provides O_2 as an end product? 6) _____
A) glycolysis
B) light-independent reaction
C) phosphorylation
D) light-dependent reaction
E) cellular respiration

7) Imagine a scientist discovers a mutant plant seedling that appears to lack stomata. What would be the effect of this? 7) _____

A) Visible wavelengths of light would be unable to reach the chloroplasts.
B) Additional ATP would be produced by the cells of the plant seedling and the plant would grow taller.
C) Water would not be able to enter the plant cells.
D) CO_2 would not be able to enter as a reactant for photosynthesis.

8) You are experimenting with different types of lighting for your indoor green plants. Which of the following colors of light will be most effective? 8) _____

A) orange-yellow
B) blue
C) red-blue
D) green
E) red-green

9) Which sequence accurately reflects the flow of electrons in photosynthesis? 9) _____

A) $H_2O \rightarrow$ Photosystem II $\rightarrow$ Photosystem I $\rightarrow$ NADP
B) Photosystem I $\rightarrow$ Photosystem II $\rightarrow H_2O \rightarrow$ NADP
C) $H_2O \rightarrow$ Photosystem I $\rightarrow$ Photosystem II $\rightarrow$ NADP
D) Photosystem II $\rightarrow$ Photosystem I $\rightarrow$ NADP $\rightarrow H_2O$
E) Photosystem I $\rightarrow$ Photosystem II $\rightarrow$ NADP $\rightarrow H_2O$

10) Light-dependent photosynthetic reactions produce 10) _____

A) ATP, NADPH, CO_2.
B) ATP, NADPH, O_2.
C) Glucose, ATP, O_2.
D) ATP, NADPH, H_2O.
E) Glucose, ATP, CO_2.

11) Where does the O_2 released during photosynthesis come from? 11) _____

A) H_2O B) CO_2 C) ATP D) RuBP E) $C_6H_{12}O_6$

12) During the process of photosynthesis, solar energy is converted into 12) _____

A) nuclear energy.
B) thermal energy.
C) chemical energy.
D) heat energy.
E) mechanical energy.

13) What is the role of water in photosynthesis? 13) _____

A) to provide H_2
B) to maintain turgor pressure
C) to provide oxygen
D) to provide electrons
E) all of these

14) The energy of the movement of electrons down a concentration gradient via electron transport within the thylakoid membrane generates _____ 14)

A) glucose. B) H_2O. C) O_2. D) CO_2. E) ATP.

15) Which of the following is TRUE about the light-dependent reactions? _____ 15)

A) Photosystem I generates ATP, while photosystem II generates NADPH.
B) ATP is the final electron acceptor.
C) Photosystem II generates ATP, while photosystem I generates NADPH.
D) NADPH and ATP are both synthesized on an electron transport chain that connects photosystem I and photosystem II.

16) The primary function of the light reactions of photosynthesis is _____ 16)

A) to produce energy-rich ATP and NADPH.
B) to produce NADPH used in respiration.
C) to produce energy-rich glucose from carbon dioxide and water.
D) to use the ATP to make glucose.
E) to convert light energy to the chemical energy of lipids.

17) You are carrying out an experiment on several aquatic plants in your fish tank. You decide to expose 2 of the plants to green light and 2 of the plants to blue light. You want to determine which type of light is best for the light dependent reactions so you decide to measure the amount of oxygen bubbles produced to reach your conclusions. Which of the following results would be expected? _____ 17)

A) There would be more bubbles from the plants in blue light compared to green light.
B) There would be the same number of bubbles from plants in either blue or green light.
C) There would be more bubbles from the plants in green light compared to blue light.
D) There would be no bubbles produced in either situation.

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

18) The photosystems are involved in the light-dependent reactions of photosynthesis. True or False? _____ 18)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

19) _____ is the main light-capturing molecule in chloroplasts and is responsible for giving most leaves their characteristic green color. _____ 19)

20) Photosystem II generates _____ and Photosystem I generates _____, both of which are required by the light-dependent reactions. _____ 20)