Exam

Name_____

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

1) Choose the option that best describes the relationship between the cell wall thickness of parenchyma cells versus sclerenchyma cells. 1) _____
   A) The cell walls of parenchyma cells are thicker than those of schlerenchyma cells.
   B) The cell walls of both types of cells are roughly equal.
   C) The cell walls of parenchyma cells are thinner than those of sclerenchyma cells.
   D) The thickness of the cell walls for both types of cells is too variable for a comparison to be made.

2) Which of the following is derived from the ground tissue system? 2) _____
   A) periderm
   B) cuticle
   C) root hair
   D) phloem
   E) pith

3) Which cells are no longer capable of carrying out the process of DNA transcription? 3) _____
   A) tracheids
   B) mature mesophyll cells
   C) companion cells
   D) glandular cells
   E) meristematic cells

4) Water is most likely to enter a mesophyll cell 4) _____
   A) covalently bound to sugars.
   B) as a gas.
   C) via endocytosis.
   D) as a liquid.
   E) coupled to ion transport.

5) The vascular bundle in the shape of a single central cylinder in a root is called the 5) _____
   A) endodermis.
   B) pith.
   C) cortex.
   D) periderm.
   E) stele.

6) The ancestors of land plants were aquatic algae. Which of the following is *not* an evolutionary adaptation to life on land? 6) _____
   A) C_3 photosynthesis
   B) guard cells
   C) root hairs
   D) a waxy cuticle
   E) xylem and phloem

7) The detector of light during de-etiolation (greening) of a tomato plant is (are) 7) _____
A) chlorophyll.
B) carotenoids.
C) xanthophylls.
D) phytochrome.
E) auxin.

8) External stimuli would be received most quickly by a plant cell if the receptors for signal transduction were located in the 8) _____
A) nuclear membrane.
B) endoplasmic reticulum.
C) cytoplasmic matrix.
D) plasma membrane.
E) nucleoplasm.

9) Meiosis occurs within all of the following flower parts*except* the 9) _____
A) style.
B) ovary.
C) anther.
D) ovule.
E) megasporangium.

10) Which of the following is the correctorder of floral organs from the outside to the inside of a complete flower? 10) _____
A) spores → gametes → zygote → embryo
B) sepals → petals → stamens → carpels
C) male gametophyte → female gametophyte → sepals → petals
D) sepals → stamens → petals → carpels
E) petals → sepals → stamens → carpels

11) At the conclusion of meiosis in plants, the end products are always four haploid 11) _____
A) spores. B) gametes. C) eggs. D) seeds. E) sperm.

12) A long-day plant will flower if 12) _____
A) the duration of continuous light is less than a critical length.
B) the duration of continuous light exceeds a critical length.
C) the duration of continuous darkness is less than a critical length.
D) the duration of continuous darkness exceeds a critical length.
E) it is kept in continuous far-red light.

13) Which of the following best describes the ploidy level of a fertilized embryo sac? 13) _____
A) All cells are triploid.
B) All cells are polyploid.
C) The ploidy level varies among species.
D) There are haploid, diploid, and triploid cells.
E) All cells are diploid.

14) The plant hormone involved in aging and ripening of fruit is 14) _____
A) florigen.
B) auxin.
C) ethylene.
D) gibberellin.
E) abscisic acid.

15) Which of the following essential nutrients plays an essential role in the opening and closing of the stomatal aperture? 15) _____
A) Fe B) K C) Mg D) Bo E) H

16) Why does overwatering a plant kill it? 16) _____
A) Water supports the growth of root parasites.
B) Water does not have all the necessary minerals a plant needs to grow.
C) Water neutralizes the pH of the soil.
D) Water lowers the water potential of the roots.
E) The roots are deprived of oxygen.

17) For this pair of items, choose the option that best describes their relationship. 17) _____
(A) The average size of particles that constitute silt
(B) The average size of particles that constitute clay
A) Item (A) bears no relationship to item (B).
B) Item (A) is *larger* than item (B).
C) Item (A) is *smaller* than item (B).
D) Item (A) is exactly or very approximately *equal* to item (B).

18) Root hairs are most important to a plant because they 18) _____
A) contain xylem tissue.
B) store starches.
C) increase the surface area for absorption.
D) anchor a plant in the soil.
E) provide a habitat for nitrogen–fixing bacteria.

19) Active transport of various materials in plants at the cellular level requires all of the following *except* 19) _____
A) ATP.
B) membrane potential.
C) a proton gradient.
D) xylem membranes.
E) transport proteins

20) The molecule that functions as the reducing agent (electron donor) in a redox or oxidation–reduction reaction 20) _____
A) loses electrons and loses potential energy.
B) loses electrons and gains potential energy.
C) gains electrons and gains potential energy.
D) neither gains nor loses electrons, but gains or loses potential energy.
E) gains electrons and loses potential energy.

21) Which process is most directly driven by light energy? 21) _____
A) removal of electrons from chlorophyll molecules
B) ATP synthesis
C) creation of a pH gradient by pumping protons across the thylakoid membrane
D) carbon fixation in the stroma
E) reduction of $NADP^+$ molecules

22) Plants photosynthesize only in the light. Plants respire 22) _____
A) both in light and dark.
B) only when excessive light energy induces photorespiration.
C) in the light only.
D) in the dark only.
E) never–they get their ATP from photophosphorylation.

23) Which of the following statements best describes the relationship between photosynthesis and respiration? 23) _____
A) Respiration is anabolic and photosynthesis is catabolic.
B) Photosynthesis occurs only in plants and respiration occurs only in animals.
C) ATP molecules are produced in photosynthesis and used up in respiration.
D) Photosynthesis stores energy in complex organic molecules, whereas respiration releases it.
E) Respiration runs the biochemical pathways of photosynthesis in reverse.

24) Photosynthesis is *not* responsible for 24) _____
A) fossil fuels.
B) the ozone layer.
C) most of the organic carbon on Earth's surface.
D) atmospheric CO_2.
E) oxygen in the atmosphere.

25) Where does the Calvin cycle take place? 25) _____
A) interior of the thylakoid (thylakoid space)
B) stroma of the chloroplast
C) thylakoid membrane
D) cytoplasm surrounding the chloroplast
E) outer membrane of the chloroplast

26) Where is ATP synthase located in the mitochondrion? 26) _____
A) electron transport chain
B) outer membrane
C) cytosol
D) inner membrane
E) mitochondrial matrix

27) Starting with one molecule of glucose, the energy–containing products of glycolysis are 27) _____

A) 2 NADH, 2 pyruvate, and 2 ATP.
B) 6 CO_2, 30 ATP, and 2 pyruvate.
C) 6 CO_2, 2 ATP, and 2 pyruvate.
D) 2 $FADH_2$, 2 pyruvate, and 4 ATP.
E) 2 NAD^+, 2 pyruvate, and 2 ATP.

28) Which process in eukaryotic cells will proceed normally whether oxygen (O_2) is present or absent? 28) _____

A) oxidative phosphorylation
B) electron transport
C) chemiosmosis
D) glycolysis
E) the citric acid cycle

29) Which of the following statements describes the results of this reaction? 29) _____

$C_6H_{12}O_6 + 6\ O_2 \rightarrow 6\ CO_2 + 6\ H_2O + \text{Energy}$

A) CO_2 is reduced and O_2 is oxidized.
B) $C_6H_{12}O_6$ is reduced and CO_2 is oxidized.
C) O_2 is oxidized and H_2O is reduced.
D) $C_6H_{12}O_6$ is oxidized and O_2 is reduced.
E) O_2 is reduced and CO_2 is oxidized.

30) Genetically engineered plants 30) _____

A) are more difficult to engineer than animals.
B) are able to fix nitrogen themselves.
C) are being rapidly developed, but traditional plant breeding programs are still the only method used to develop new plants.
D) are banned throughout the world.
E) include a transgenic rice plant that can help prevent vitamin A deficiency.

Answer Key
Testname: PRACTICE

1) C
2) E
3) A
4) D
5) E
6) A
7) D
8) D
9) A
10) B
11) A
12) C
13) D
14) C
15) B
16) E
17) C
18) C
19) D
20) A
21) A
22) A
23) D
24) A
25) B
26) D
27) A
28) D
29) D
30) E