Chapter 01
What Is Plant Biology?

Multiple Choice Questions

1. The early scientist who first demonstrated experimentally that plants do not have the same modes of nutrition as animals was
A. Nehemiah Grew.
B. Carl Willdenow.
C. Alexander von Humboldt.
D. Sir J. D. Hooker.
E. J. B. van Helmont.

Blooms: 1. Remember

2. Plant _____ study plant relationships, identify and classify plants into groups based on genetic similarity, and name plants according to these groups.
A. taxonomists
B. physiologists
C. anatomists
D. morphologists
E. geographers

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

3. The science that deals with the form, structure, and life cycles of plants is
A. plant taxonomy.
B. plant physiology.
C. plant genetics.
D. cytology.
E. plant morphology.

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

4. The scientific method begins with
A. reading scientific journals.
B. substantiated observations that aren't explained by existing principles or theories.
C. a tentative, unproven explanation of an observation.
D. restating a general theory in understandable terms.
E. testing hypotheses generated to explain observations.

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

5. The study of plants and their impact on humans is important because plants
A. provide food, shelter, and clothing.
B. provide the ecological support system linking all living organisms in their environment.
C. contribute to the natural beauty of the world and play a role in many recreational pursuits.
D. have, at least in the past, been an important source of medicine.
E. all of the choices are correct.

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.
Learning Outcome: 01.03 Explain how and why all life is dependent on green organisms.

6. An experiment to test an hypothesis
A. should have one specific aspect or variable that is altered.
B. have a control in which a specific aspect or variable is not changed.
C. must be repeatable by others so that the results may be confirmed or refuted.
D. all of these are needed for a good experiment.

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

7. Which sequence generally describes the steps of the scientific method?
A. hypothesis, observation, testing, retesting
B. testing, observation, hypothesis, retesting
C. observation, hypothesis, testing, retesting
D. observation, testing, hypothesis, retesting
E. observation, writing, hypothesis, publishing

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

8. The objective of scientific research is described as
A. collecting data.
B. developing and testing hypotheses.
C. using human history to explain technological advances.
D. using scientific instrumentation such as microscopes.
E. applying results to improve human lives.

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

9. Which of the following scientists would more likely be concerned with the rate of photosynthesis in leaves?
A. plant anatomist
B. plant physiologist
C. forester
D. plant geneticist
E. plant geographer

Blooms: 2. Understand
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

10. The Swedish botanist who produced the elements of our present system of naming and classifying plants in the eighteenth century was
A. Matt Johnson.
B. Carolus Linnaeus.
C. Gustav Bjorklund.
D. J. B. van Helmont.
E. Olaf Anderson.

Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

11. A *theory* is
A. an educated guess.
B. an accumulation of data.
C. a modified hypothesis.
D. a repeatable observation.
E. a group of generalizations or principles that help us understand events in the natural world

Blooms: 1. Remember
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

12. An early English botanist who described the structure of wood more precisely than any of his predecessors was
A. Nehemiah Grew.
B. Sir Joseph D. Hooker.
C. Charles Claude Smythe.
D. James Worthington.
E. Anton L. Bortenschlager.

Blooms: 1. Remember

13. According to the scientific method, an hypothesis is
A. a well supported idea expanded from facts via reasoning but is not currently known to be entirely or universally True.
B. an idea or explanation that is a basis for experimental investigation.
C. information that is known and specific.
D. the last step in the scientific method that deals with collection of data.
E. an experimentally demonstrated fact.

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

14. People who study the interaction of people and plants in their environment are _____.
A. ethnobotantists
B. plant physiologists
C. plant scientists
D. plant taxonomists
E. horticulturalists

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

15. _____ is the scientific investigation of the biology of plants.
A. plant morphology
B. ecology
C. botany
D. cytology
E. ethnobotany

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

16. Environmental scientists are developing technologies to convert _____ into _____ as a source of renewable, plant-based fuel.
A. oil shale; diesel
B. cellulose and starch; ethanol
C. petroleum products; gasoline
D. wind; electrical energy
E. hydropower; electrical energy

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

17. When human populations increase, they increase their impact on plants and other living organisms by _____.
A. using plants as fuel
B. building homes
C. harvesting plants for food for themselves and their animals
D. replacing plant communities with agricultural crops
E. all of the these

Blooms: 2. Understand
Learning Outcome: 01.01 Explain how humans have impacted their environment, particularly during the past century.

18. Plant ecologists and NASA scientists are working together to develop _____ for space travel that use plants to recycle carbon dioxide and produce oxygen.
A. chemical carbon dioxide scrubbers
B. open pond systems
C. methane generators
D. closed systems
E. water purification systems

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

19. If a catastrophe destroyed all green plants and algae on land and in the water, animal life would be able to survive for approximately _____ before suffocating due to lack of oxygen.
A. 6 months
B. 1 year
C. 6 years
D. 11 years
E. 100 years

Blooms: 1. Remember
Learning Outcome: 01.03 Explain how and why all life is dependent on green organisms.

True / False Questions

20. Plants can live without humans but humans cannot live without plants.
TRUE

Blooms: 2. Understand
Learning Outcome: 01.03 Explain how and why all life is dependent on green organisms.

21. Originally, the scientific method was considered to involve a routine series of steps.
TRUE

Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

22. The noted Swedish botanist Linnaeus published his book, *Species Plantarum,* in the early twentieth century.
FALSE

Blooms: 1. Remember

23. Plant morphology is a discipline that deals with the naming and classification of plants.
FALSE

Blooms: 1. Remember
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

24. Van Helmont concluded after his classical experiment with the willow tree that its increase in weight had been due to the water it had absorbed.
TRUE

Blooms: 1. Remember

25. Science may be defined as "a search for knowledge of the natural world."
TRUE

Blooms: 2. Understand
Learning Outcome: 01.02 Describe how hypotheses are formulated and used in the scientific method.

26. Van Helmont's experiment with a willow branch demonstrated that the soil in which it grew gained weight over time.
FALSE

Blooms: 1. Remember

27. Internet browsers such as *Internet Explorer, Firefox,* and *Netscape* allow access to information about various botanical topics.
TRUE

Blooms: 1. Remember

28. Tropical rainforest is the only vegetation type that is being negatively impacted by human activities.
FALSE

Blooms: 2. Understand
Learning Outcome: 01.01 Explain how humans have impacted their environment, particularly during the past century.

29. Knowledge of plant anatomy can help in determining past climates and in forensic science.
TRUE

Blooms: 2. Understand
Learning Outcome: 01.04 List the aspects of botany with which each of the major botanical disciplines is concerned.

30. Humans have contributed to global warming and atmospheric pollution which, in turn will affect plant distribution. However, a change in plant distribution will not affect animal populations.
FALSE

Blooms: 2. Understand
Learning Outcome: 01.01 Explain how humans have impacted their environment, particularly during the past century.