# Classifying and Naming Plants

## Part One: Matching

***Instructions:*** **Match the term with the correct definition.**

a. bolting
b. taxonomy
c. kingdom
d. morphology
e. dichotomous key
f. common name
g. scientific name
h. species
i. perennial
j. Carl von Linne

_____1. A written set of choices that leads to the name of a plant

_____2. The rapid elongation of a stem

_____3. A plant that has a life cycle of more than two growing seasons

_____4. The first stage of classification with all living things in one of five groups

_____5. A Swede who created a classification system for minerals, plants, and animals

_____6. The two-word name of a plant used by plant scientists

_____7. The study of the internal and external appearance of a plant

_____8. The scientific classification of plants and other organisms

_____9. The name used by people without regard to scientific classification

____10. The second name of a binomial name

## Part Two: Multiple Choice

***Instructions:*** **Write the letter of the correct answer.**

_____1. A(n) _____ is a plant that normally requires two growing seasons to produce flowers and seed before dying.

a. annual
b. biennial
c. perennial
d. winter annual

_____2. Plants within a species that show a significant difference from other plants in the species that is inherited from the previous generation through sexual reproduction are called _____.

a. cultivar
b. genus
c. species
d. variety

_____3. The study of the internal and external appearance of an organism is called _____.

a. hierarchical classification
b. morphology
c. nomenclature
d. taxonomy

_____4. _____ is the naming of organisms.

a. Dichotomy
b. Morphology
c. Nomenclature
d. Taxonomy

_____5. A _____ has flower parts in multiples of four or five, broad leaves with netted venation, and stems with vascular bundles organized in a ring pattern.

a. dicot
b. fern
c. herbaceous perennial
d. monocot

_____6. The study of the internal and external appearance of an organism is _____.

a. taxonomy
b. morphology
c. dichotomy
d. biology

## Part Three: Short Answer

***Instructions:*** **Complete the following.**

1. How do varieties and cultivars differ?

2. What is the difference between a monocot and a dicot? Provide definitions and examples of both.

# Cells

## Part One: Matching

***Instructions:*** **Match the term with the correct definition.**

a. cell
b. cell membrane
c. cytoplasm
d. endoplasmic reticulum
e. mitochondria
f. lysosomes
g. Golgi apparatus
h. chloroplasts

_____1. Organelles that contain green pigment, called chlorophyll, which aids in photosynthesis

_____2. Basic unit of life

_____3. Outside covering of an animal cell

_____4. Jellylike substance in cells

_____5. Organelles that manufacture ATP

_____6. Organelles that digest proteins through the release of enzymes

_____7. Network of membranes that connects the cell membrane or cell wall to the nucleus

_____8. Organelle that stores substances and alters their chemical structure

## Part Two: True or False

***Instructions:*** **Write T for true or F for false.**

_____1. The cytoplasm is the jellylike substance between the cell membrane or cell wall and the nuclear membrane.

_____2. The nucleus controls cell activity.

_____3. Chloroplasts are often found in animal cells.

_____4. The tiny "organs" found within cells that perform specific functions are called organelles.

_____5. In plant cells, the nucleus is responsible for photosynthesis.

## Part Three: Short Answer

***Instructions:*** **Complete the following.**

1. List three organelles found in both plant and animal cells.

2. What is the difference between a prokaryotic cell and a eukaryotic cell?

3. Why are the mitochondria considered the "powerhouse" of a cell?

# Root Anatomy

## Part One: Matching

***Instructions:*** **Match the term with the correct definition.**

a. apical meristem
b. epidermis
c. root cap
d. adventitious root
e. trichome
f. Casparian strip
g. seminal root
h. pericycle
i. napiform root
j. plasmodesmata

_____1. The cells that compose the skin of the root

_____2. A type of taproot highly specialized for the storage of starches

_____3. A protective covering for the tip of the root

_____4. The place where new cells divide in the root

_____5. A layer of cells just to the inside of the endodermis that have meristematic properties

_____6. The cytoplasmic channels that connect adjacent cells

_____7. The root that is initiated by a germinating seed

_____8. A band or strip encircling cells of the endodermis

_____9. The root that arises from a stem

____10. A distinctive growth on the epidermis (e.g., the root hair)

## Part Two: Multiple Choice

***Instructions:*** **Write the letter of the correct answer.**

_____1. The first root to come out of a seed is a _____.

a. fibrous root
b. seminal root
c. secondary root
d. tap root

_____2. A root system that has one large primary root and many secondary roots branching from that root is a _____.

a. fibrous root system
b. fleshy root system
c. tap root system
d. woody root system

_____3. A root system in which all of the roots are about the same size is a _____.

a. fibrous root system
b. fleshy root system
c. tap root system
d. woody root system

_____4. _____ describes the intracellular route of water absorption.

a. A path through the spaces between cells
b. A path directly into the xylem
c. A path directly into the phloem
d. A path through the cells between the epidermis and the xylem

_____5. A healthy root generally appears _____.

a. about the same color as the soil it is growing in and smells minty
b. brown or tan in color and smells bad
c. reddish and smells fresh
d. white or nearly white in color and smells fresh

## Part Three: Short Answer

***Instructions:*** **Complete the following.**

1. Name three characteristics of a healthy root system.

2. Name three functions of roots.

# Stem Anatomy

## Part One: Matching

***Instructions:*** **Match the term with the correct definition.**

a. apical meristem
b. bud scale
c. bud scale scar
d. bulb
e. cambium
f. corm
g. internode
h. lateral bud
i. leaf scar
j. lenticel
k. node
l. phloem
m. rhizome
n. stolon
o. terminal bud
p. tuber
q. xylem
r. scape
s. heartwood
t. translocation

_____1. A mark on the stem where the leaf used to be
_____2. A specialized stem that is usually lying horizontally above the soil
_____3. A specialized stem made of a short flat stem with many fleshy leaves attached
_____4. The location on the stem where leaves and buds are attached
_____5. The tube-shaped cells inside of a stem that carry food down from the leaves
_____6. An actively growing tip found inside a terminal or lateral bud
_____7. The mark on the outside of a stem that allows gas to be exchanged
_____8. An area on a stem that lies between two leaves or buds
_____9. A small protective structure that can be seen on the outside of a bud
____10. A specialized stem with a tip that is swollen with stored food
____11. A mark on the stem that shows the location of last year's bud
____12. Cells on the inside of a stem that carry water and minerals up from the root
____13. An area on the inside of a stem where new xylem and phloem are made
____14. A specialized stem that is thick and runs horizontally underneath the soil
____15. A bud that is found on the side of the branch in conjunction with a leaf
____16. A bud that is found at the tip of a branch
____17. A bulb-shaped specialized stem that is made of a solid stem with no leaves
____18. The darker wood to the center of the tree
____19. The movement of materials through vascular tissues
____20. A flowering stem that emerges from the crown or roots of a plant

## Part Two: Multiple Choice

***Instructions:*** **Write the letter of the correct answer.**

_____1. A(n) _____ plant has its xylem and phloem arranged in a circle.

a. angiosperm
b. dicot
c. gymnosperm
d. monocot

_____2. _____ tissue gives rise to xylem and phloem.

a. Cambium
b. Dermal
c. Fundamental
d. Ground

_____3. A thick underground stem that lies horizontally is _____.

a. corm
b. rhizome
c. runner
d. stolon

_____4. One year's growth of the stem be determined _____.

a. by the number of leaves
b. by the position of the terminal bud
c. by the growth rings in the stem
d. by looking at the distance between bud scale scars

_____5. Small spots on the stem that allow a stem to exchange gases are _____.

a. fissures
b. lenticels
c. pith
d. stomata

## Part Three: Short Answer

***Instructions:*** **Complete the following.**

Name five functions of stems.

# Leaf Anatomy and Morphology

## Part One: Matching

***Instructions:*** **Match the term with the correct definition.**

a. epidermis
b. leaf blade
c. midrib
d. petiole
e. palisade layer
f. simple leaf
g. compound leaf
h. margin
i. netted veins
j. dichotomous venation

_____1. The single dominant vein in the middle of the blade

_____2. The layer of cells that compose the top and bottom surface of the leaf

_____3. The leaf stem

_____4. The edge of a leaf

_____5. A leaf that has only one blade on its petiole

_____6. The large broad flat surface of a leaf

_____7. A branched pattern of veins

_____8. A spreading vein pattern displayed by a few plants

_____9. A leaf with multiple blades

____10. A layer of cells standing on end and packed tightly that are responsible for most of the photosynthesis

## Part Two: Multiple Choice

***Instructions:*** **Write the letter of the correct answer.**

_____1. The _____ part of the leaf allows gas exchange.

a. fissures
b. lenticels
c. pith
d. stomata

_____2. The _____ type of mesophyll is loosely packed with many air spaces.

a. cuticle
b. epidermal
c. palisade
d. spongy

_____3. The _____ control the opening and closing of the stomata.

a. bundle sheath cells
b. guard cells
c. phloem cells
d. thylakoid cells

_____4. The _____ is the waxy upper layer of the leaf.

a. apex
b. base
c. cuticle
d. margin

_____5. _____ is the typical vein pattern of monocot plants.

a. Branched
b. Netted
c. Parallel
d. Palmate

## Part Three: Short Answer

***Instructions:*** **Complete the following.**

1. What is the difference between compound and simple leaves?