Bio 221 – Concepts of Botany Name: _____
Dr. Hardy
Exam 1 (29 Feb 2012)

Instructions:

-Do not open this test packet until Dr. Hardy asks you to do so.
-You will keep this test packet and can record your answers on it for later checking against the key.
- I only want the scantron sheet.

-Scantron answer bubbles should be completely filled in with a number 2 pencil.
-This includes your complete last name plus first and middle initials.
-Choose THE BEST answer.
-50 questions, 50 points

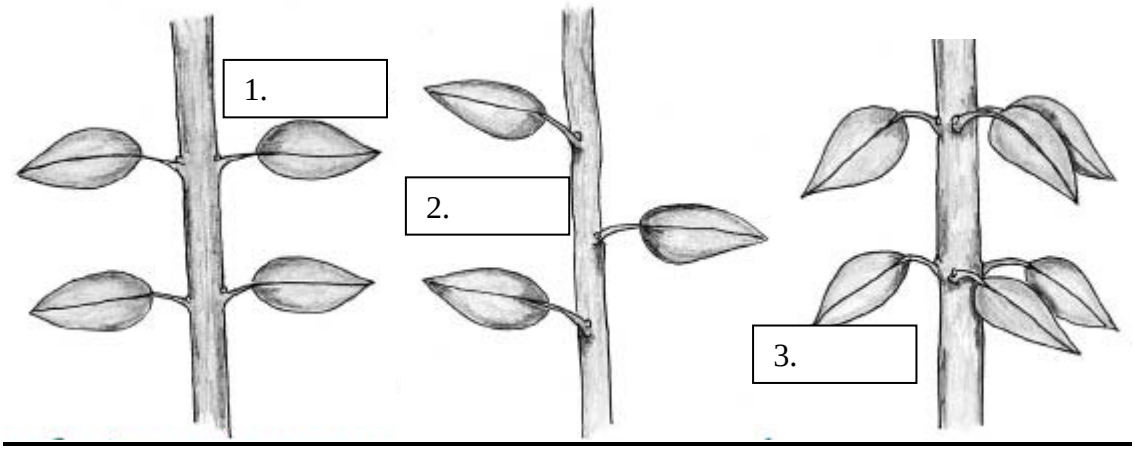
1. What lies at the very tip of a root?
    a. root hairs
    b. the region of maturation
    c. the root cap
    d. the region of cell division
    e. the root apical meristem

2. What specifically prevents water from entering the root vasculature via the apoplastic pathway?
    A. epidermis.
    B. pericycle.
    C. cortex.
    D. phloem.
    E. endodermis.

3. In traversing the root to the central xylem vessels, the last living tissue that water passes through before entering the xylem is (assuming the most direct route) the
    A. pericycle.
    B. endodermis.
    C. cortex.
    D. phloem.
    E. epidermis.

4. In addition to anchoring a plant, roots usually function directly in which of the following processes?
    A. photosynthesis
    B. production of new leaves
    C. production of bud scales
    D. absorption of inorganic nutrients in solution
    E. all of these answers are correct.

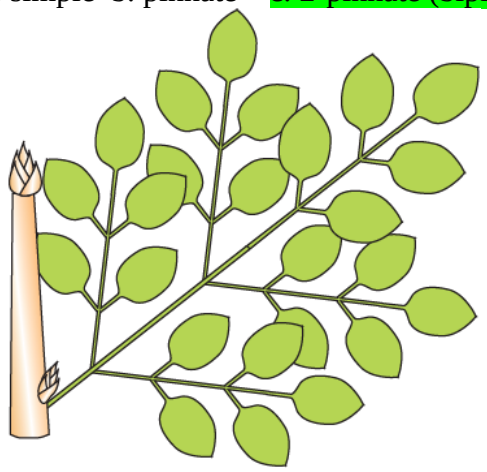
5. Which is the correct order of leaf arrangement (phyllotaxy) adjectives, from left (1) to right (3)?



    A. alternate, opposite, whorled.
    B. opposite, whorled, alternate.
    C. alternate, whorled, opposite.
    D. opposite, alternate, whorled.
    E. neither of the above.

6. Which best describes the leaf or leaves below?

a. simple b. pinnate c. 2-pinnate (bipinnate) d. 3-pinnate (tripinnate) e. palmate



7. The narrow stalk of the typical leaf that attaches the blade to the stem, and facilitates a leaf blade being oriented at right angles to the sun is a/an

A. stipule.
B. axillary bud.
C. terminal bud.
D. midrib.
E. petiole.

8. Stem branches arise from what?

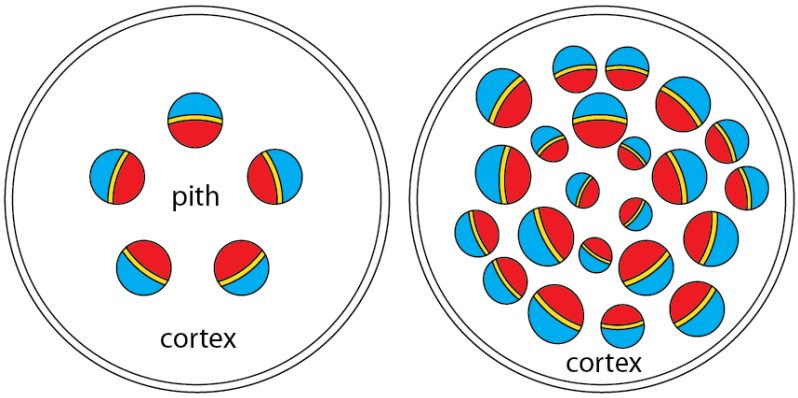
a. the pericycle.
b. the shoot apical meristem.
c. axillary buds.
d. auxiliary buds.
e. internodes.

9. Paired appendages associated with or near a petiole where the petiole attaches to a stem are

A. bundle scars.
B. primordia.
C. stipules.
D. cuticles.
E. leaf scars.

10. The pictures below depict....

A. a root cross-section from a dicot (left) and monocot (right).
B. a root cross-section from a monocot (left) and dicot (right).
C. a stem cross-section from a dicot (left) and monocot (right).
D. a stem cross-section from a monocot (left) and dicot (right).
E. a leaf cross-section from a monocot (left) and a dicot (right).



11. Photosynthesis in the leaf takes place primarily in the ...

A. mesophyll parenchyma
B. phloem
C. xylem
D. bundle fibers
E. epidermis

12. Sugars produced by leaves must make their way to the _____ before being transported to the roots where they are needed.

A. mesophyll
B. phloem
C. xylem
D. bundle fibers
E. epidermis

13. The most conspicuous and abundant organelle easily visible at the light microscope level in cells of the palisade mesophyll would be

A. vacuoles.
B. nucleoli.
C. mitochondria.
D. chloroplasts.
E. ribosomes.

14. Stomata are part of this tissue.

A. spongy mesophyll
B. palisade mesophyll
C. vascular bundles
D. epidermis
E. phloem parenchyma

15. The _____ is an important component of a conifer's or a dicot's ability to form a(n) _____.

a. atactostele; secondary thickening meristem.
b. eustele; secondary thickening meristem.
c. atactostele; vascular cambium.
d. protostele; vascular cambium.
e. eustele; vascular cambium.

16. An annual ring of wood

A. consists primarily of cells produced by the cork cambium.
B. consists of one year's growth of xylem and phloem.
C. consists of one year's growth of xylem.
D. includes cortex and pith tissue.
E. conducts food basipetally (towards the base).

17. The leaf "fibers" from agave and pineapple are actually what?

A. bast.
B. trichomes.
C. vascular bundles.
D. individual fiber cells.
E. collenchyma strands.

18. Rays consist primarily of

A. dead cells.
B. long-lived parenchyma.
C. tracheids.
D. vessel elements.
E. sieve tubes.

19. Wood cell walls are composed primarily of cellulose and

A. lignin.
B. pectin.
C. starch.
D. glucose.
E. suberin.

20. This meristematic tissue/region is responsible for the production of outer bark.

A. procambium
B. phellem
C. cork cambium
D. phelloderm

21. Lenticels and stomata function in gas exchange.

A. True B. False

22. Retardation of water loss by cork cells is provided by

A. suberin.
B. lignin.
C. mucigel.
D. stomata.

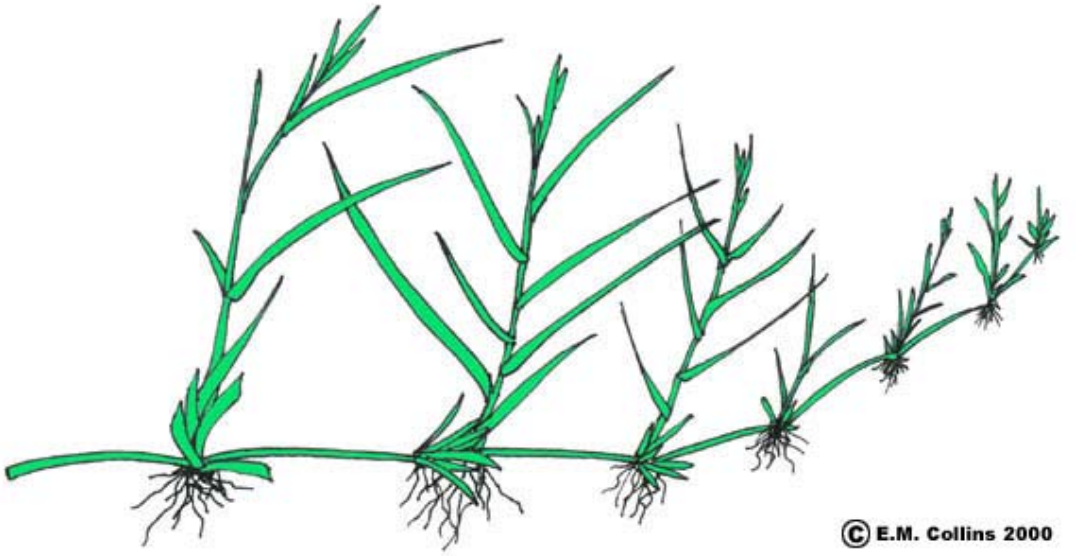
23. Which is an important function of the secondarily thickened and lignified cell walls of tracheary elements such as tracheids and vessel elements?
    a. mechanical support for the body of a plant.
    b. mechanical support to allow for tremendous negative pressures generated inside them.
    c. all of the above.

24. Which "stem" axis sits above the cotyledons?
    a. the hypocotyl
    b. the epicotyl
    c. the plumule
    d. the radicle

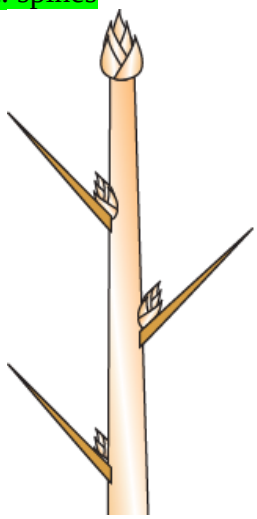
25. In a young seedling the part of the stem below the cotyledons is called the
    A. epicotyl.
    B. hypocotyl.
    C. plumule.
    D. radicle.
    E. coleoptile.

26. Commercially, cotton fibers are removed from seeds by the process of ...
    A. Retting B. Decortication C. Ginning.

27. The above-ground horizontal stem of this grass below is a ...
    a. tuber b. tuberous root c. rhizome d. runner e. prop root

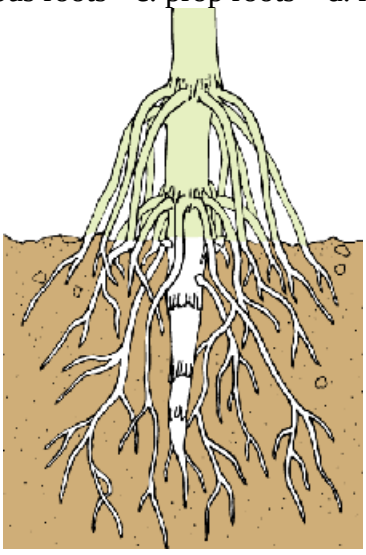


28. What are these pointy structures below?
a. prickles b. thorns c. spines



29. What are those numerous structures that buttress the upright mangrove below?
a. tuberous roots b. axillary branches c. prop roots d. prickles e. thorns

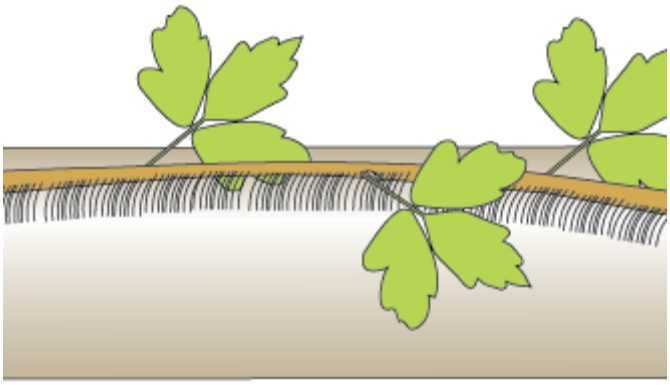
30. What are those numerous structures at the base of the above-ground corn stem that buttress the upright corn plant below?
a. tuberous roots b. adventitious roots c. prop roots d. A and B e. B and C



31. Poison-ivy is diagrammed horizontally below climbing a tree. The structures used by the vine to climb trees give the poison-ivy stem a "hairy appearance" but these are not hairs. What are they?

a. tuberous roots b. leaves c. adventitious roots d. Stem branches

<< Bottom of tree



Top of tree >>

32. A simple device people use to warn others about the danger of poison-ivy is "Leaves of three, let them be!" Based on the diagram above, what does "Leaves of three..." mean?

a. along the stem there are clusters of three leaves at each node.
b. each leaf is pinnately compound.
c. each leaf is trifoliate.
d. the leaves 3-pinnately (tripinnately) compound.
e. none of the above.

33. The juicy leaves of *Aloe* are said to be ...

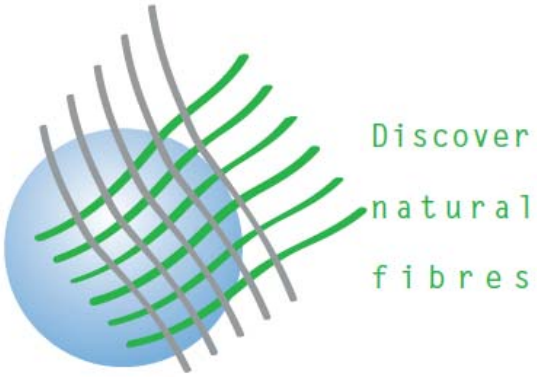
a. succulent b. tuberous c. tubers d. cladophylls e. stolons

34. Wine corks come from the....

a. inner bark of bamboo.
b. outer bark of bamboo.
c. inner bark of the cork oak.
d. outer bark of the cork oak.
e. the epidermis of the cork oak.

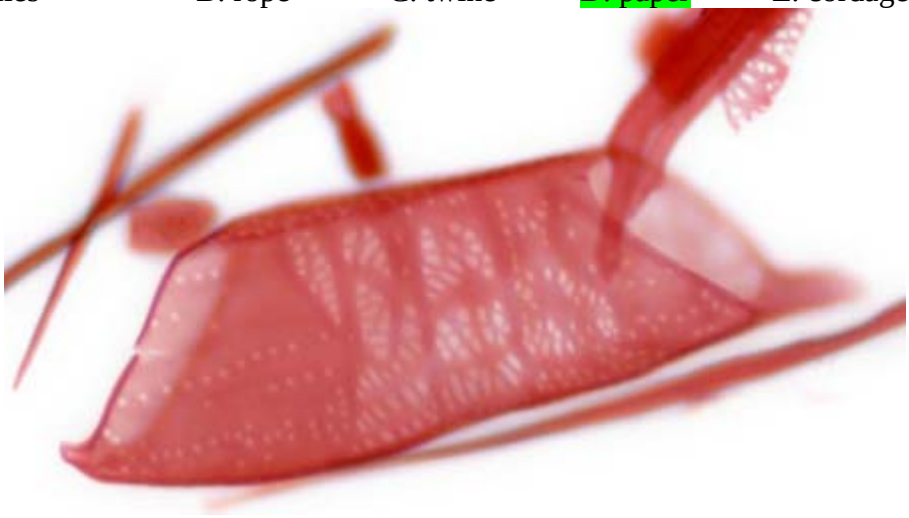
35. According to their IYNF website, which year did the United Nations declare as The International Year of Natural Fibers?

A. 2011 B. 2010 C. 2009 D. 2008 E. 2007



36. The following micrograph was taken from a maceration of secondary xylem. Which material are these fibers likely to be used for?

A. textiles B. rope C. twine D. paper E. cordage



37. This mummy below was likely to have been wrapped in which type of fiber?

A. Pineapple B. Cotton C. Flax D. Linen E. Milkweed

38. How many cotyledons does a dicot have?
A. One B. Two C. Three D. Four E. none

39. The cotyledon(s) of pea ....
A. stay below the soil upon germination.
B. emerge from the soil upon germination.

40. The cotyledon(s) of maize ....
A. stays below the soil upon germination.
B. emerges from the soil upon germination.

41. Cereals have how many cotyledons?
A. One B. Two C. Three D. Four E. none

42. Pulses have how many cotyledons?
A. One B. Two C. Three D. Four E. none

43. The first thing to emerge from a germinating seed is..
A. epicotyl
B. hypocotyl
C. cotyledon(s)
D. radicle
E. endosperm

44. What protects the shoot apical meristem in the emerging maize seedling?
A. the crook (hooked portion) of the epicotyl
B. the crook (hooked portion) of the hypocotyl
C. the crook (hooked portion) of the radicle
D. the coleorhiza
E. the coleoptile

45. Why are legume seeds particularly rich in protein?
A. endosperm
B. rhizobia
C. symbiosis
D. A and C
E. B and C

46. What is the hilum the scar from?
A. the micropyle
B. the style
C. the stigma
D. the funiculus
E. the integuments

47. The vessels and tracheids in earlywood are
A. Larger diametered than those of latewood.
B. Smaller diametered than those of latewood.
C. Equal in diameter to those of latewood.

48. How many leaflets does a palmate leaf have?
A. One
B. Two or more
C. Three or more
D. Four or more
E. Five or more

49. A tuber is primarily what (by volume)?
A. root
B. stem
C. leaf or leaves
D. None of the above.

50. A bulb is primarily what (by volume)?
A. root
B. stem
C. leaf or leaves
D. None of the above.