Name_____ Biology II --- March 2012

Chapter 23 Question Guide

23-1: Specialized Tissues in Plants

1. What are the three principal ORGANS AND TISSUES of seed plants?

2. List three functions of roots.

3. List three functions of stems.

4. List two functions of leaves.

5. There are three main TISSUE SYSTEMS in plants. What are they?

6. Dermal tissue typically consists of what? _____
7. Where is the CUTICLE found and what is its function?

8. Compare dermal tissue in roots and leaves.

9. Complete the table below comparing types of vascular tissue.

TYPES OF VASCULAR TISSUE

Type	Function	Cell Types Within Tissue
	Transports water	
	Transports food	

10. What types of specialized cells does XYLEM contain?

11. What types of specialized cells does PHLOEM contain?

12. How can water move from one TRACHEID to the next?

13. How can materials move from one VESSEL ELEMENT to the next?

14. What do SIEVE TUBE ELEMENTS do?

15. What do COMPANION CELLS do?

16. What types of tissue lies between vascular and dermal tissue? _____
17. Complete the table about ground-tissue cells:

GROUND-TISSUE CELLS

Type of Cell	Structure	Function
	Cells with thin cell walls and large central vacuoles	
	Cells with strong, flexible cell walls	
	Cells with extremely thick, rigid cell walls	

18. What is MERISTEM?

19. What is DIFFERENTIATION?

20. What is APICAL MERISTEM and where is it located?

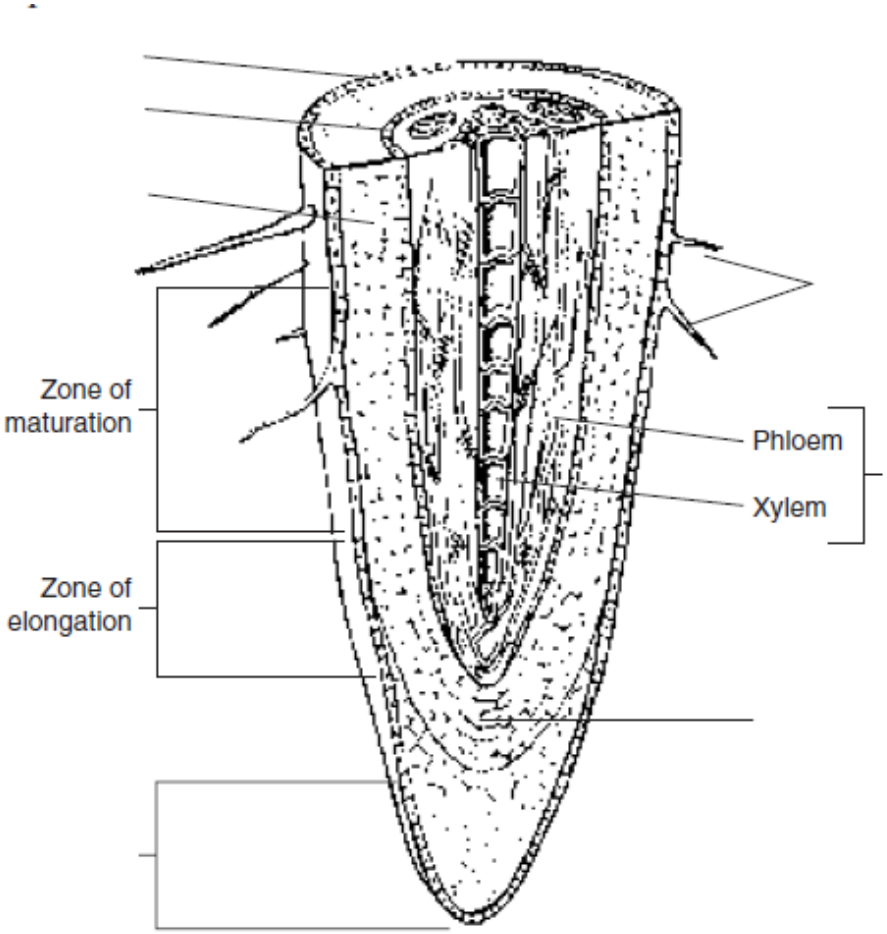
23-2: Roots

21. Complete the table about types of roots.

TYPES OF ROOTS

Type of Root	Description	Mainly in Dicots or Monocots?	Examples
	Long and thick primary roots that grow deep into the soil		
	Roots that are usually shallow and consist of many thin roots		

22. Label the structures of a root.



23. What is the structure of a mature root?

24. Through what structure does water enter a root? What is important about the composition of this structure?

25. What does the EPIDERMIS do?

26. What type of tissue is the CORTEX?

27. What does the ENDODERMIS do?

28. What is contained in the VASCULAR CYLINDER?

29. What is the function of the ROOT CAP?

30. What are two important root functions?

23-3: Stems

31. What are two important functions of stems?

32. Make a sketch and label the major external stem structures.

33. Match the stem structure with its function.

	Structure	Description
	Node	**A.** A region between nodes
	Internode	**B.** Contains undeveloped tissue that can produce new stems and leaves
	Bud	**C.** Where leaves are attached

34. How do monocot and dicot stems differ?

35. In a monocot stem, what does each bundle contain?

36. What is PRIMARY GROWTH, what tissue does it occur in, and what types of plants undergo primary growth?

37. What is secondary growth? Where does it take place in conifers and dicots?

38. Describe how SECONDARY GROWTH occurs.

39. What is “wood?”

40. What does HEARTWOOD consist of and what does it do?

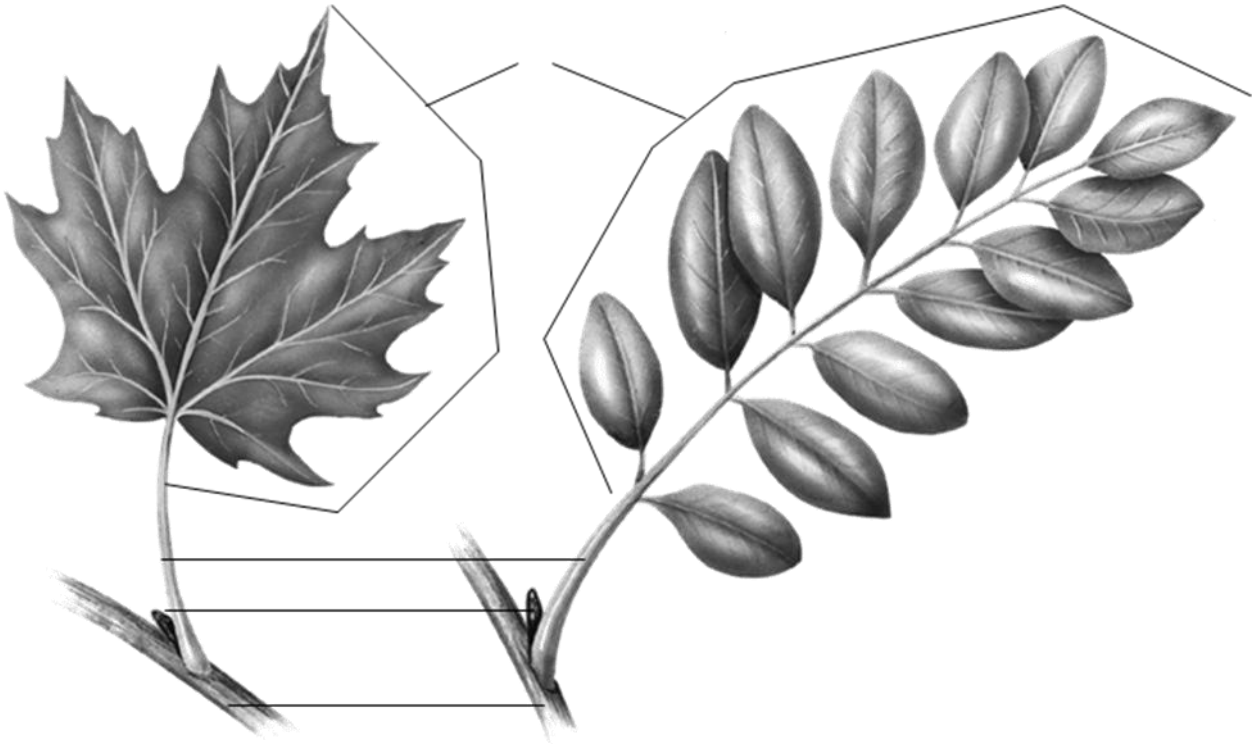
41. What is SAPWOOD and what does it do?

42. What does BARK consist of?

43. What is CORK and what does it do?

23-4: Leaves

44. Label the leaf structures below.



45. What is a BLADE?
46. What attaches the blade to the stem?
47. What is a difference between a SIMPLE LEAF and a COMPOUND LEAF?

48. What is the function of the cuticle?
49. Match the leaf structure with its description.

	Structure	Description
	Palisade Mesophyll	**A.** A bundle of xylem and phloem tissues
	Spongy Mesophyll	**B.** Specialized cells that control the opening and closing of stomata
	Vein	**C.** A layer of mesophyll cells that absorb much of the light that enters the leaf
	Stomata	**D.** Openings in the underside of the leaf
	Guard Cells	**E.** A loose tissue with many air spaces between its cells

50. What is transpiration?

51. Why must a plant keeps its stomata open at least part of the time?

52. How do plants open and close their guard cells?

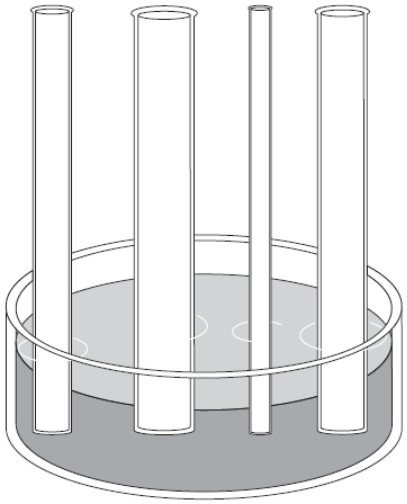
23-5: Transport in Plants

53. What factors combine to transport materials in plants?

54. What is the difference between COHESION and ADHESION?

55. What is CAPILLARY ACTION?

56. How does the thinness of a tube affect how high water will rise because of capillary action? Show your answer by drawing how high water might rise in each of the tubes in the illustration.



57. What two plant structures utilize capillary action?

58. What causes the process known as “transpiration pull?”

59. What happens when there is an excess of water in leaves?

60. What is WILTING?