

BIOL 221 – Concepts of Botany; Dr. Hardy
Exam 1 Guide

Topic 01 – Introduction to Botany

Reading: Evert & Eichhorn (2013) Chapter 1 & 3 (pp 38-62)

- I. Plants are more important to you than you know
 - A. The naked truth (about plant fibers)
 - 1. Cotton is king
Cotton facts and extraction process
 - 2. Flax was king
Flax fiber facts and extraction process
 - 3. Pineapple fiber
Pineapple fiber facts and extraction process
 - B. Biomass in the ecosystem
 - C. Your mass
 - D. Your caloric intake
 - E. Wood fueled human development
 - F. Human intellectual development driven by paper
 - G. Plants as shelter
 - H. Plants set the landscape, atmosphere
 - I. Medicines and recreational drugs
 - J. Forensics
 - K. The future...
- II. Cycad stories
 - A. Vegetative morphology
 - B. Reproductive morphology
 - C. Economic botany
 - D. Biogeography and conservation
 - E. Cycads and Guam dementia

Topic 02 – Primary Body

Reading: Evert & Eichhorn (2013) Chapter 22, 24, 25

- I. Introduction
 - A. Primary vs. secondary body
 - 1. Primary body and primary growth
 - 2. Secondary body and secondary growth
 - B. Polarity and Apical Meristems Established in Embryo
 - 1. The embryo & seed of angiosperms
 - 2. Embryogenesis
 - C. Dormancy & Germination
 - D. Seed & Seedling Examples
 - 1. Legumes (dicot angiosperms)
 - 2. Grasses (monocot angiosperms)
- II. Vegetative Morphology

- A. Shoot System
 - 1. Organ types, form & function
 - 2. Architecture
- B. Root System
 - 1. Organ type, form & function
 - 2. Architecture
- III. Vegetative Anatomy
 - A. Plant Cells are Different
 - B. Tissues & Tissue Systems
 - C. Root Anatomy
 - 1. In Transverse Section
 - 2. In Longitudinal Section
 - 3. Lateral Roots
 - D. Stem Anatomy
 - 1. In Transverse Section
 - 2. In Longitudinal Section
 - E. Leaf Anatomy
 - 1. In Transverse Section

Topic 03 – Secondary Body

Reading: Evert & Eichhorn (2013) Chapter 26 and the
Info Box on Bamboo on p. 603 of Chapter 25

- I. Vascular cambium
 - A. Formation
 - B. Bifacial
 - C. Annual rings
 - D. Rays
 - E. Fusiform and ray initials
 - F. Vascular cambium in roots
- II. Cork cambium
 - A. Formation
 - B. Properties of cork
 - C. Lenticels
 - D. Multiple cork cambia and layered periderms
- III. Morphology of woody trunk
- IV. Morphology of woody twig

Topic 4 – Plant Modifications

- I. Modifications of Shoot Organs
 - A. Leaves
 - B. Stems
- II. Modifications of Roots

Topic 05 – Arborescent Monocots

- I. Introduction
 - A. Monocot evolution
 - B. Yet some are arborescent
- II. Arborescent Monocot Examples
 - A. Palm Trees
 - 1. Primary thickening meristem
 - 2. Diffuse growth in length below
 - 3. Secondary thickening meristem in some
 - B. Banana “Trees”
 - 1. Primary thickening meristem
 - 2. Leaf growth to form pseudostem