

Study Guide – Exam 1. GE/BI525 2008

I. Photosynthesis

1. Be able to define in general terms the light and dark reactions, where they take place within leaves and cells, and key products/reactants/enzymes (e.g., ATP, NADPH, Rubisco). You should be familiar with the relevant figures in the textbook (e.g. Fig. 3) but you won't be expected to memorize the names of membrane bound proteins, electron carriers, or other intermediary compounds not shown in the figures.
2. Review the dependence of photosynthesis on environmental variables, and the causal basis for sensitivity of photosynthesis in those variables.
3. Know the basics of A-ci curves, at the level of figure 6. You will not need to memorize the mathematical modeling in Box 1; any information pertaining to that box will be provided in the exam.
4. Have a sense for actual values and units for processes relevant to photosynthesis.

II. Respiration: Be able to describe the basic steps of dark respiration, relative energy yield, where processes occur, and generally how much a cost dark respiration exacts on whole plant carbon budgets.

III. Stomata: Know equations for stomatal conductance to water vapor and CO₂, and be able to compute stomatal conductance given values of independent variables.

IV. Water Relations

1. Review the concept and application of Water Use Efficiency
2. Understand the components of Water Potential
3. Review basic hydraulic anatomy of woody tissue, and the costs and benefits of sapwood anatomical traits.
4. Understand and be able to work with the energy balance and penman-monteith equations