

Intro Biochemistry
(Chapter 17 will not be on this
exam!)

Test 3 Review
11/06/06

Intro Metabolism Ch 14

- Catabolism and anabolism
- Energy currency of cell
- Stages of metabolism
- Forward and reverse paths
- Chemical reactions of cells
- Meaning of oxidation and reduction
- Meaning of free energy and K_{eq}

Sugars Ch 7

- Glucose, Fructose, Sucrose, Lactose, Galactose, Ribose, and cyclic forms (alpha and beta) -- that is, their structures
- Reducing sugars - aldehydes
- Is fructose a reducing sugar?
- Polymeric Forms - glycogen, starch, cellulose
- Glycoproteins

Carbohydrate Metabolism Ch 15

- Glycolysis
 - Sources of glucose and other intermediates
 - Committing and rate determining steps
 - Steps that produce ATP and NADH
 - High energy compounds
 - Regulators of glycolysis
 - Branch points and metabolic fates
 - How galactose and fructose enter glycolysis

Chapter 15

- Glycogen Breakdown and Synthesis
 - Regulation of process and enzymes involved
 - Hormonal control of insulin, glucagon, and epinephrine
 - Mostly occurs in liver
 - How phosphorylation controls this process -- see also section 6.3, page 175-7
- Pyruvate Metabolism
 - Aerobic vs. anaerobic

Chapter 15

- Ethanol metabolism
 - Caveats and how it affects other paths
- Gluconeogenesis
 - Cori cycle
 - Regulation
 - Key enzymes and energetic requirements
 - How it differs from glycolysis

Chapter 16

- Pyruvate dehydrogenase complex
 - Important cofactors
 - Regulation
- Citric acid cycle
 - Key enzymes
 - Regulation
 - Products
- Know how CAC feeds into Electron Transport Chain and the reducing equivalents that are used.
- Know the things in Ch 16 that relate to Ch 17, but will not test Ch 17.

Chapter 16

- Pentose phosphate pathway
 - Know first enzyme and its metabolic deficiency
 - Products NADPH and ribose-5-phosphate

Chapter 17 -- Removed from Exam 3

- Meaning of oxidation and reduction
- Source of reducing equivalents
- Flow of electrons through electron transport chain
- Know the two paths -- starting with either Complex I or Complex II
- Understand how the electron transport chain is coupled to oxidative phosphorylation
- Know how proton gradient is used to generate ATP via chemiosmotic model (the accepted model)
- Know how cytoplasmic NADH sends electrons to mitochondria
