CHEM 131 STUDY GUIDE for the EXAM #3

Exam time Thurs Dec 16, 8-10:20 am

After you take exam #3 you can take an optional final exam that covers chapters 11-16, 19 (the material from exam #1 and #2). If you improve on this optional exam you can boost your scores from exam 1 and 2. This exam will take about an hour and will be similar questions from exam 1 and 2 (used those study guides to study for this exam)

For exam #3 We will cover selected sections of chapter 17 (carbohydrates), chapter 18 (Lipids) and chapter 21 (Nucleic acids). There will be no material from the previous 2 exams.

From Chap 17 study sections all sections. Memorize and be able to draw the structure of d-glucose (in both the open chain and cyclic form (both $\alpha$ and $\beta$). If given the open chain form of any of the other sugars be able to draw the cyclic form by contrasting it with the glucose structure. Be familiar with the structures of d-fructose, Maltose, Sucrose and amylose, amylpectine, and cellulose. Recognize the anomeric carbon in a sugar. Know if a given sugar is reducing or non-reducing. Recognize and be able to identify the type of Glycosidic links between sugars (alpha & beta).

Know the differences between starch (amylose, amylopectin), cellulose, glycogen and what their function is biologically.

Problems will be similar to those on the carbohydrate work sheet.

Problems worth doing from the text: 2, 4, 6, 8, 12, 16, 18, 22, 26, 36, 40, 44, 50, 52, 54,

From Chap 18 study sections 18.1-18.4 and 18.6. Know the structure of fats, oils and phosphotriglycerides. Know the saponification reaction and how soap is made.

Problems worth doing: 6, 10, 12, 14, 18, 20, 28, 32

From Chapter 21 study sections 21.1-21.4 and 21.6. Know the structure of DNA/RNA and how each base pair hydrogen bonds. Know the biological functions of DNA,RNA (messenger, and Transfer) and how the process of transcription/translation works. In class #3 on DNA will be typical of exam questions.

Problems worth doing: 2, 10, 12, 14, 26, 28, 32, 34, 38,

For Oxidation states and energy in organic chemistry (pg 412). Know how to recognized an oxidized organic molecule and a reduced organic molecule (more hyrdogens) Know the potential energy differences between the different levels of oxidation states of carbon (Alkanes down to carbon dioxide). Which functional groups make good fuels? Recognize the structures of the energy molecules ATP and NADH.
Reactions to know be able to draw products of the reactions listed below

Saponafication of Fats/Oil
Digestion (hydrolysis) of di and poly saccharides.