

Exam 4 Review Sheet for Monday, August 5 Exam and Additional Material for Final Chem 1020, Summer 02, Robertson

Our exam will include material from chapters 18, 19, 20 and 21. **Only material that I have covered in class, have assigned homework problems on, or mention on this review sheet will be tested.**

On Monday, you should be able to: (I do not claim that this is an exhaustive list.)

Chapter 18

- List and explain the modes of action for toxic substances. Give examples of each.
- In regard to the above be able to identify the following terms:

corrosive	strong acids and bases	
metabolic	CO, CN	heavy metals
neurotoxins	acetylcholine, cholinesterase	different types of neurotoxins
teratogens	different types	sensitive periods
mutagens	mode of action and examples	
carcinogens	characteristics and stages, examples, changes in death rates in the past 20 years	carcinomas, sarcomas, lymphomas, leukemia, seminomas

- Give examples of chemical warfare agents
- Identify the importance of the Delaney Amendment and the Ames test with regard to carcinogens.

Chapter 19

- Describe the regulatory classification system of drugs.
- List commonly used OTC pain relievers (aspirin, acetaminophen, ibuprofen, naproxen, and ketoprofen) and identify their structures. Be able to give advantages and disadvantages of each. Be able to write the reaction for the production of aspirin from salicylic acid.
- Identify the structures of narcotic analgesics such as morphine and codeine derived from opium as well as synthetics such as heroin, meperidine, and propoxyphene. Rank OTC and narcotic analgesics as to effectiveness.
- Define and describe endorphins and enkephalins (review from previous chapter).
- Give sample ingredients and side effects of common antacids.
- Associate generic and brand names of new OTC medications that regulate stomach acidity.
- List classes of OTC laxatives and give examples.
- List classes of ingredients found in cough and cold and give examples.
- List types of drugs used to treat cardiovascular conditions and give descriptions of action and examples.
- List classes of antibacterial drugs, identify modes of action and give examples. Identify structures.
- Recognize the names of different neurotransmitters. Describe the mode of action of neurotransmitters and how they are affected by drugs such as depressants, anti-depressants and stimulants.
- Identify structures of stimulants such as amphetamines, caffeine, nicotine, and cocaine. Give mode of action (what neurotransmitters are affected?) and the effects of each.
- Explain the general action of antidepressants with regard to neurotransmitter action. Identify the structure of Prozac and explain its specific mode of action.
- Identify structures of depressants such as the barbiturates and benzodiazepines. Give general effects of barbiturates and neurotransmitter action.
- Describe the metabolism of ethanol, its site of absorption, and neurotransmitter action.

- Describe effects of marijuana and give its major active ingredient.
- Discuss and summarize the change in cancer incidence, type, and mortality in the past twenty years.
- Describe types of chemotherapy treatments for cancer. Give examples of each type.
- Describe the action of HIV and how AZT attempts to stop the spread of the virus.

Chapter 20

- List water sources and discuss the water problems we have in the United States. Identify major aquifers and the problems we have with them today..
- Differentiate the types of water usage.
- Define pollution with regard to water.
- List, explain and give examples of the 8 major categories of water pollution.
- Define and list sources of wastewater.
- Explain the different types of wastewater treatment.

Chapter 21

- List and explain the layers of the atmosphere.
- List the components of unpolluted air.
- List and explain the major areas of air pollution in the troposphere and give examples: CO, NO_x, SO_x, Particulates, and VOC's. Determine which are primarily made-made. Be able to write significant reactions, discuss the significance of each problem, and possible remedies.
- Explain the global problems of ozone depletion and world-wide warming. Identify what types of compounds are implicated in each problem. Be able to give reactions for the CFC's with UV light and how they contribute to ozone depletion. Be able to explain the mechanism of the greenhouse effect.

Chapter 22

- Give the approximate world's population and % growth.
- Discuss the problem of exponential (constant %) growth.
- List and define the components of soil, the horizons, and the different particle sizes.
- Explain why soils become acid, why this may be a problem, and how we can change the pH.
- List the classes of nutrients needed for plant life. Be able to explain the different nutrients in commercial fertilizers and how they are prepared.
- Define pesticides.
- List important classes of insecticides and herbicides and give the mechanism of action.
- Define organic farming and transgenic crops.