DeAnza College

CHAPTER SEVENTEEN

The following is a list of important topics for students taking Chemistry 30B, by chapters in the course textbook (Chemistry, An Introduction to General, Organic & Biological Chemistry 12th Ed by Karen C. Timberlake). Exams and assignments will focus on helping students achieve these goals. Additional topics may be added during the semester and not all will be tested for on any given exam or assignment. Students are encouraged to use this outline to review chapters, prepare for exams, and determine if Chemistry 30B meets the student's personal objectives in studying chemistry.

CH 17: POLYNUCLEOTIDES & PROTEIN SYNTHESIS

2 lectures

Components of Nucleic Acids (section 17.1)

- ☐ Know the size, function, and two types of nucleic acids (DNA & RNA).
- ☐ Understand the structure and composition of nucleotides and nucleosides.
- ☐ Recognize which bases and sugars are in DNA & in RNA, assign their names or symbols.
- ☐ Assign the name and symbol to nucleosides and nucleotides made from these sugars and bases.

Primary Structure of Nucleic Acids (section 17.2)

- ☐ Know polynucleotides like DNA & RNA strands are polymerized with phosphodiester bonds.
- ☐ Know these bonds link the 3' alcohol of one sugar to the 5' of the next.
- ☐ Know polynucleotides are named or sequenced starting with the 5' end and ending with the 3'.
- ☐ Be able to write the sequence of a polynucleotide given it's structure.
- ☐ Know polynucleotides

DNA Double Helix (section 17.3)

- ☐ Know the number of purine molecules equals the number of pyridine molecules in DNA.
- ☐ Be able to write the complementary segment of DNA given the sequence in the other strand.
- ☐ Describe the function of DNA.
- ☐ Identify the daughter and parent DNA during replication.

RNA & Genetic Code (section 17.4)

- ☐ Write the name, code, and provide the function of three types of RNA.
- ☐ Be able to convert between the the three strands of polynuceotide involved in transcription (the mRNA sequence, a gene sequence in coding DNA, the complimentary template DNA sequence).
- ☐ Identify start and stop codons in a gene sequence or mRNA sequence.
- ☐ Using a lookup table, be able to identify the amino acid sequence described by a mRNA strand.

Protein Synthesis (section 17.5)

- ☐ Describe the two stages of protein synthesis.
- ☐ Translate between codons and anticodons.

Mutation (section 17.6)

- ☐ Know what environmental factors may cause mutation.
- ☐ Understand how a frameshift or substitution mutation differ.
- ☐ Describe how a frameshift or substitution mutation can effect protein synthesis.

Viruses (section 17.7)

- ☐ Describe how viruses function.
- ☐ Differentiate between the operation of a retrovirus and a normal virus.