Exam 3’s new topics (ca. 50 questions of final is on these topics; ca. 25 questions are cumulative from Exam 1 and Exam 2 material)

**Topic 08 - DNA, RNA, and Proteins**

I. DNA
   A. Deoxyribonucleic Acid
   B. Polymerization
   C. Double helix
   D. DNA replication

II. Transcription
   A. Process
      1. Initiation
      2. Elongation
      3. Termination
   B. Transcript Destiny
      1. tRNA
      2. rRNA
      3. mRNA
         a. mRNA maturation

III. Translation
   A. Background
      1. The Genetic Code, Triplets and Codons
      2. tRNA, anticodons and amino acids
      3. Ribosome
   B. Process
      1. Initiation
      2. Elongation
      3. Termination

**Topic 09 - Evolution**

I. Populations
   A. Evolution is change over time
   B. Populations are the units of evolutionary change.

II. Evolution
   A. Forces of evolution
      1. Mutation
      2. Genetic Drift
      3. Nonrandom Mating
      4. Migration (gene flow)
      5. Natural Selection
Topic 10 – Origins of Cetaceans

I. Cetaceans
   A. What
   B. Mammalian Heritage

II. Evolutionary Origins
   A. Phylogenetic Evidence
   B. Anatomical Evidence
   C. Paleontological Evidence

III. Analogous Transformations
   A. Sirenians
   B. Pinnipeds
   C. Otters

IV. Summary
   A. Terrestrial origin for cetaceans
   B. Analogous transitions have occurred or are occurring in a variety of lineages
   C. Degree of modification in various structures depends on age of lineage