The following are a few practice questions to illustrate the style of my exam questions. The mid-term exam itself will have 33 such questions, spanning lectures 1-13.

Good luck!

Craig

1. On which of the following points was Darwin incorrect:
   A. Sexual selection often operates through female choice.
   B. Relationships among taxa can be estimated from shared-derived traits.
   C. Ecologically diverse but related species on island archipelagos often represent adaptive radiation from a common ancestor derived from adjacent continents.
   D. Missing transitional forms in the fossil record will be discovered with further collecting and analysis.
   E. Inheritance works through blending of heritable factors.

2. "Descent with modification" as illustrated in the "*Origin of the species*" refers to:
   A. A phylogeny estimated using morphological characters in the fossil record.
   B. Speciation without extinction.
   C. Effects of directional selection within a single lineage.
   D. Diversification of phenotypically distinct forms via natural selection and from a common ancestor.
   E. Effects of environmental variation during development on adult phenotype.

3. Which of the following best defines a monophyletic group?
   A. A taxonomic group that contains the descendants of an ancestor, but not the ancestor itself.
   B. A taxonomic group that contains the ancestor and some of its descendants.
   C. A taxonomic group that contains the ancestor and all of its descendants.
   D. A taxonomic group characterized by numerous shared derived characters.
   E. A taxonomic group that contains the ancestor, but none of its descendants.

4. A formerly large, random-mating population switches to a high rate of inbreeding. As a consequence:
   A. Heterozygotes become more common.
   B. Migration rates will decrease.
   C. Genetic drift will be stronger.
   D. Recessive, deleterious traits are more evident in the population.
   E. Dominant traits will be selected against.

5. What sequence of events led to the "neo-Darwinian synthesis:
   A. Mendel's principles of inheritance and (ii) discovery of the structure of DNA
   B. Development of the concept of descent with modification through natural selection and (ii) Mendel's principles of inheritance.
   C. Discovery of the structure of DNA and (ii) sequencing of the human genome

D. Mendel's principles of inheritance and (ii) sequencing of the human genome
E. Development of the concept of descent with modification through natural selection and (ii) discovery of the structure of DNA

6. Directional selection differs from stabilizing selection in that:
A. Directional selection operates only in small populations whereas stabilizing selection is effective in both small and large populations
B. Directional selection favors intermediate over extreme phenotypes, whereas stabilizing selection favors one end of the phenotype distribution
C. Directional selection favors one end of the phenotype distribution, whereas stabilizing selection favors intermediate over extreme phenotypes
D. Directional selection requires new mutations whereas stabilizing selection operates on existing variation
E. Directional selection operates on existing variation, whereas stabilizing selection operates on existing variation.

7. Antagonistic co-evolution:
A. Applies when kin-selection does not favor altruistic behaviors
B. Occurs if one species affects the evolution of another, but not vice-versa
C. Can result in increased fitness as a phenotype involved in species interactions becomes rare
D. Is the direct result of conflict among males for access to females
E. Is responsible for melanism of mice living on dark lava flows

8. Relative to asexual (eg. "parthenogenetic" or "apomictic") reproduction, sexual reproduction increases genetic diversity within populations by:
A. Increasing mutation rate.
B. Promoting sexual selection.
C. Increasing mutation rate and recombination.
D. Independent assortment and recombination.
E. Sexual selection and recombination.

9. In the marsupial mouse (*Antechinus*), multiply mated females tend to have a higher proportion of surviving offspring that those that mate just once. This illustrates:
A. Sperm competition and indirect benefits of female choice.
B. The principle of natural selection.
C. Reduced fecundity (# ova) in females that mate just once.
D. Limitations on fertilization success.
E. Good luck.

10. The diversity of species concepts arises because:
A. Botanists favor the Biological species concept (BSC) whereas Zoologists are focused on the Phylogenetic species concept (PSC);
B. Prezygotic isolation (BSC) evolves before the evolution of distinct character states (PSC)
C. Distinct character states (PSC) evolve before prezygotic isolation (BSC)

D. Of inherent difficulty in unambiguously recognizing distinct evolutionary lineages during early stages of divergence
E. Evolutionary biologists are clueless

11. As seen in the *Ensatina* salamanders, secondary contact between previously isolated lineages can result in a stable hybrid zone. This reflects:
A. Complete speciation.
B. Reinforcement.
C. Hybrid speciation.
D. Fusion of previously separated lineages.
E. A balance between immigration from parental populations and selection against hybrids.

12. Which of the following best describes the unique importance of the fossil record:
A. It provides the only source of information on relationships among living taxa
B. It provides the only source of information on divergence times of living taxa
C. It provides the only source of information on phenotypes of extinct taxa
D. It provides the only source of information on evolutionary trends over time
E. It provides the only source of information on population sizes over time

Answer key to practice questions:

1. E
2. D
3. C
4. D
5. B
6. C
7. C
8. D
9. A
10. D
11. E
12. C