1) Draw a sketch of the circadian rhythm system in a mouse. It does not need to be anatomically correct. Be sure to include: 1) SCN; 2) pineal gland; 3) melatonin; 4) ICER; 5) CREM; 6) PER (gene and protein). Include any feedback loops that exist.

2) How does information about (external) light affect the circadian rhythm? How does entrainment work? Can entrainment help explain how the body perceives seasonal changes?

3) What stimuli other than day length influence reproduction in animals. Briefly describe one example.

4) Describe one real example where keeping track of elapsed time is important to an animal's fitness.

5) What functions does testosterone perform in at least some animals? For which of these is testosterone essential, and which ones NOT essential?

6) Why don't prey animals perform their best in avoiding predation at every step of the predation process? What are the steps fo the predation process?

7) What are the costs of being cryptic? What are the costs of being aposematic? Why are Batesian mimics relatively uncommon compared to their models?

8) What predictions do the 4 competing hypotheses make about when and where gazelles will stott? Which predictions were confirmed by real observations?

9) Based on the number of families of lizards, the distribution of sit-and-wait (ambush) vs. widely-foraging types would appear to be evenly favored = 8:8. Why is this not likely to be an accurate reflection of the evolutionary history of foraging modes among lizards?

10) Describe an example of sensory exploitation used by predators to enhance prey capture.

11) List the major ways that individuals in social groups (or colonies) may benefit in terms of increased foraging success. Describe in detail the mechanism behind shared information about food location. What general characteristics do foods need to have to promote such information sharing (hint: what are the costs of sharing information)?

12) Define profitability as it used in foraging theory. How does profitability figure in rules that emerge from simple models of foraging?

13) What alternatives does a behavioral ecologist have when predictions about an animal's behaviors do not perfectly match its observed behaviors? Which of them makes the most sense to do first?

14) How does the 'patch residence' problem relate to the diet choice problem? What general behavioral principle is used to 'solve' both problems?