CH. 5. study questions

1. What is meant by the technical term *stimulus class*? Give an example of a stimulus class using something other than "dogs".

2. What is meant by the technical term *response class?* Give an example that illustrates this idea.

Analysis and Interpretation

3. Why is it said that stimulus classes are the *cumulative* products of selection? Use the example of learning the "concept" dog in your answer.

4. What is the relation between experimental analysis and interpretation? Your answer should include a description of each.

5. Describe the second reason that the experimental analysis of complex behavior is difficult. Make sure that you understand this point?

Strategies of Interpretation

6. The three types of interpretation described here are v_____, o_____, and f_____ interpretation.

Verbal interpretation

7. What is verbal interpretation, and what distinguishes it from mere speculation? Do you understand why the account of the falling boulder illustrates interpretation?

8. Give a verbal interpretation of why one person might keep trying to solve a problem while another gives up almost immediately.

9. What is the chief disadvantage of verbal interpretation?

Organismic interpretation

10. What is organismic interpretation? Use an example of a study described earlier in the course to illustrate your answer.

11. What is one possible advantage of organismic interpretation?

Formal interpretation

12. What is formal interpretation? Use computer simulation to illustrate your answer. Distinguish between formal interpretation using computer simulation and computer models in cognitive psychology or artificial intelligence.

13. Indicate one possible advantage and disadvantage of formal interpretation relative to other interpretive methods.

Discriminative Stimulus Classes

14. Read the entire section, and then indicate what it means to say that the notion of "concept" is *theoretically incoherent*? Do you understand the discussion of flying in connection with this point? Do you understand the distinction between the "concepts" of dog and triangle?

Varieties of Stimulus Classes

15. Two sets of stimulus classes are recognized -- d_____ stimulus classes and f_____ stimulus classes. What is the major difference between these two sets of stimulus classes? Illustrate your answer with examples other than *dog* and *toy*.

16. What is the difference between *contingency-shaped* and *rule-governed* behavior? Illustrate your answer with possible examples of each. Can you determine from the form of a response, the nature of the biobehavioral processes that led to that response? Explain.

Interpretation of Discriminative Stimulus Classes

17. Review the basic conditions that produce selection by reinforcement, stimulus discrimination, and stimulus generalization.

Organismic interpretation

18. Briefly describe the purpose, training and test procedures, and results of the study illustrating an organismic simulation of "concepts". (See **Figure 5.3**.)

19. Does the foregoing study indicate that the formation of "concepts" requires new processes; e.g. "cognitive" processes? Explain your answer making use of the study of "concept" formation in pigeons.

Formal interpretation

20. Formal interpretation of a "concept" is illustrated by an adaptive network simulation. Be able to describe this simulation, including the training procedure, the structure of the network, and the method by which the strengths of connections between units are modified.

21. Three characteristics of the "concept" produced by the simulation are described. They are: f_____ b_____, p_____-d_____, and p_____ formation. Be able to describe each of these characteristics and to illustrate its meaning an example.

Fading

1. What are the distinguishing characteristics of a *fading* procedure? How does fading differ from shaping? In what way are they alike?

2. What are the effects of fading on discrimination formation? Cite data to support your answer, describing specific ways in which the discrimination was faded. (See **Figure 5.5**.)

3. Illustrate fading with an example of your own construction. Indicate how fading might affect performance in your example.

4. What biobehavioral processes might cause a fading procedure to facilitate discrimination formation? [Hint: How might blocking occur in a fading procedure?]

Functional Classes

5. What distinguishes *functional* stimulus classes from *discriminative* stimulus classes? Give examples of your own making that illustrate this distinction.

Functional Stimulus Classes

6. Describe the procedure and results from the study demonstrating the formation of functional stimulus classes in pigeons. What particular aspects of the findings provide the strongest evidence for the formation of a functional stimulus class? (See **Figure 5.6**.)

Equivalence Classes

Note: This material is difficult. Go through it carefully and refer frequently to the relevant figures.

7. May a stimulus be a member of both a discriminative stimulus class and a functional stimulus class? Explain your answer using the example of "pet" discussed in the first paragraph of this section.

8. Are all members of an equivalence class also members of a functional class? Are all members of a functional class also members of an equivalence class? Construct examples to illustrate your answers.

9. A c_____ d_____ may be illustrated by a m_____-to-s_____ (or *MTS*) procedure. Give an example of this procedure using the technical terms *sample stimulus* and *comparison stimulus*.

10. Give an example of your own construction that illustrates *identity matching* with a MTS procedure.

11. **Figure 5.8** describes the three contextual discriminations that were acquired. Make certain that you understand the procedures that this figure summarizes. What were the sample and comparison stimuli in each case? What was the response that was reinforced? What reinforced the response? To what do the first and second letters in each set (e.g., A-B) refer? (Hint: Do they refer to a single stimulus or to a set of stimuli?) How was fading used to produce final performance on all three contextual discriminations?

12. What is the definition of a *derived relation*? Illustrate the definition with one example from the Sidman and Tailby experiment (The experiment summarized in **Figure 5.8**.)

13. Suppose that subjects acquired X-Y and Q-R contextual discriminations. Give an example of a derived relation using these letters.

14. Study **Figure 5.10** to appreciate all of the derived relations produced by these three contextual discriminations. In particular, why might the derived B-D relation be a result of behavioral chaining? Why do these derived relations indicate the formation of equivalence classes?

15. What is the major importance of equivalence classes? Could a child be taught to read orally (see printed word - speak the word) as a derived relation?

Derived relations

16. Are derived relations based on equivalence classes necessarily reinforced in future environments? Are they often reinforced?

17. The formation of equivalence classes as a result of acquiring multiple contextual discriminations is dependent on three b_____ relations -- r_____, s_____, and t_____.

18. The reflexive relation is demonstrated by g_____ i_____ m_____. Give an example of a training and a testing procedure that would illustrate generalized identity matching. How was **reflexivity** (reflexive relations) demonstrated by the children in the Sidman & Tailby study?

19. If relations are **symmetric**, then what must occur after MTS training? What is the evidence in the Sidman & Tailby study that symmetry was required in order for some of the derived relations to appear? Follow the discussion closely so that you are certain that you understand why symmetry was necessary for these relations to occur.

20. In order for training to produce the derived relation of A-C after A-B and C-B training, two basic relations are necessary. What are they and be able to explain why they are required.

Origins of the basic relations

21. Read the entire section and then be able to write a short essay summarizing some of the main points of the section. Include these topics: (a) the possible effects of prior experience, (b) the role of verbal behavior, (c) the role of internal reinforcement (why is this thought to be important), and (d) the possible contribution of ***cross-modal generalization***.

22. What evidence for polysensory guidance of behavior exists with humans -- even infants? (See **Figure 5.11**.)

Response Classes

23. Does experience with multiple contextual discriminations produce response classes as well as stimulus classes? Explain using an example from the Sidman & Tailby experiment to illustrate your answer.

Origins of response classes

24. How might natural selection and selection by reinforcement (behavioral selection) produce response classes?

Selection by reinforcement and response classes

25. What does it mean to say that the neural mechanisms of reinforcement select a *class* of pathways? What effect does this have on the ability of the brain to function with unreliable components (neurons) and in some instances of brain damage due to injury or aging? Explain your answer.