

## **CHAPTER 2**

### **INNATE BEHAVIOR PATTERNS AND HABITUATION**

1. In the terminology of control systems theory, the setting on a house's thermostat can be called
  - a. the comparator
  - b. the reference input
  - c. the actual input
  - d. the action system

Page(s): 27-28                      Type: factual

Answer: b

2. When you quickly pull your hand away from a painful stimulus, this reflex
  - a. does not involve a feedback loop
  - b. is controlled by the brain's cerebral cortex
  - c. involves sensory neurons, interneurons, and motor neurons
  - d. all of the above

Page(s): 28-29                      Type: factual

Answer: c

3. In control systems theory, the action system is activated
  - a. when the actual input does not match the reference input
  - b. when the comparator is turned off
  - c. when there is no disturbance
  - d. when there is no output

Page(s): 27-28                      Type: factual

Answer: a

4. Unlike a kinesis, a taxis is
  - a. an example of a tropism
  - b. a movement or change in orientation of the entire organism
  - c. a learned behavior
  - d. a directed movement

Page(s): 30                          Type: factual

Answer: d

5. In applying the terminology of control systems theory to the humidity-seeking behavior of the wood louse, the humidity level in the creature's current location can be called

- a. the actual input
- b. the reference input
- c. a disturbance
- d. the output

Page(s): 30                          Type: conceptual

Answer: a

6. In applying the terminology of control systems theory to the humidity-seeking behavior of the wood louse, the goal of finding an area with high humidity can be called

- a. the actual input
- b. the reference input
- c. a disturbance
- d. the output

Page(s): 30                          Type: conceptual

Answer: b

7. A fixed-action pattern
- a. will stop immediately if the behavior is not appropriate for the situation
  - b. is a sequence of behaviors that occur in a rigid order
  - c. both a and b
  - d. neither a and b

Page(s): 30-31                      Type: conceptual

Answer: b

8. In humans, contagious yawning is an example of a
- a. kinesis
  - b. taxis
  - c. fixed action pattern
  - d. reaction chain

Page(s): 31                      Type: conceptual

Answer: c

9. A male stickleback will be aggressive toward other male sticklebacks that invade its territory. Of the following, which will tend to elicit the strongest aggressive response?

- a. a female stickleback
- b. an object that has the rough shape of a stickleback
- c. an object that has a red patch on the bottom
- d. a fish of another species

Page(s): 31-32                      Type: conceptual

Answer: c

10. A reaction chain differs from a fixed action pattern in that it
- a. is innate
  - b. is a sequence of behaviors
  - c. is more adaptive to the current environmental conditions
  - d. may be found in only one species

Page(s): 32                      Type: conceptual

Answer: c

11. A reaction chain
- a. consists of an alternating sequence of stimuli and responses
  - b. is innate
  - c. both a and b
  - d. neither a nor b

Page(s): 32-33                      Type: conceptual

Answer: c

12. To support the theory that language is an innate human ability, researchers have shown that
- a. a specific part of the human brain is essential for speech
  - b. a specific part of the human brain is essential for language comprehension
  - c. human languages throughout the world have certain features in common
  - d. all of the above

Page(s): 34                      Type: factual

Answer: d

13. Ekman's research on facial expression of emotions has found that
- a. animals and people express emotions in similar ways
  - b. children learn to recognize the emotional expressions of adults in their first year of life
  - c. adults can recognize emotions such as happiness or surprise in the face of a person from a different culture
  - d. all of the above

Page(s): 34                      Type: factual

Answer: c

14. To qualify as a “human universal,” a behavior must
- be innate
  - be found in human cultures throughout the world
  - look exactly the same in human cultures throughout the world
  - all of the above

Page(s): 35                      Type: conceptual

Answer: b

15. Habituation
- can be observed in some one-celled organisms
  - can occur in the orienting response
  - can exhibit stimulus generalization
  - all of the above

Page(s): 36-38                      Type: factual

Answer: d

16. The habituation of a response to a very strong stimulus
- will proceed rapidly
  - will proceed slowly
  - will not exhibit generalization
  - will not exhibit overlearning effects

Page(s): 37                      Type: factual

Answer: b

17. A loud noise is repeatedly presented to a rat, and after 20 trials the rat's startle reaction has completely disappeared (habituated). If a slightly different noise is now presented, it is most likely that
- there will be no startle reaction at all
  - there will be no habituation to this new stimulus
  - habituation of the startle reaction will take more than 20 trials
  - habituation of the startle reaction will take less than 20 trials

Page(s): 38                      Type: applied

Answer: d

18. Kandel's research on *Aplysia* has shown that the physiological network underlying the gill-withdrawal reflex
- involves single synapses between sensory neurons and motor neurons
  - involves two synapses: between sensory neurons and interneurons, and between interneurons and motor neurons
  - both a and b
  - neither a nor b

Page(s): 39-40                      Type: factual

Answer: b

19. Kandel's research on *Aplysia* has shown that the habituation of the gill-withdrawal response
- always occurs in a single trial
  - dissipates with time
  - is completely different from habituation in higher organisms
  - all of the above

Page(s): 39-40                      Type: factual

Answer: b

20. Kandel's research on *Aplysia* has shown that the habituation of the gill-withdrawal response
- is caused by a decrease in the sensitivity of the motor neurons to transmitter released by the sensory neurons
  - is caused by a decrease in the amount of transmitter released by the sensory neurons
  - is caused by an increase in the amount of transmitter released by the sensory neurons
  - is caused by an increase in the activity of interneurons

Page(s): 39-40

Type: factual

Answer: b

21. Overlearning in habituation (or below-zero habituation) can occur if
- habituation trials continue after the response has disappeared
  - habituation trials are widely spaced over time
  - an intense stimulus is used
  - several different stimuli are used

Page(s): 37-38

Type: factual

Answer: a

22. Which of the following statements is not an accurate summary of the findings from research on habituation in mammals?

- Short-term and long-term habituation may involve different brain pathways.
- Cells in the auditory cortex may "habituate" to tones of specific pitches.
- The startle response habituates if a loud noise is presented repeatedly.
- Habituation is most evident in the later (motor) portions of the startle response pathway.

Page(s): 41

Type: conceptual

Answer: d

23. In the Solomon and Corbit opponent-process theory, the a-process is said to be
- a pleasant emotional reaction
  - an unpleasant emotional reaction
  - unaffected by repeated trials
  - slow to reach its maximum level

Page(s): 42-43

Type: conceptual

Answer: c

24. In the Solomon and Corbit opponent-process theory, the b-process is said to be
- a pleasant emotional reaction
  - an unpleasant emotional reaction
  - unaffected by repeated trials
  - slow to reach its maximum level

Page(s): 42-43

Type: conceptual

Answer: d

25. According to opponent-process theory, in parachute jumping the strengthening of the b-process over trials
- causes the individual to be less terrified with experience
  - causes the aftereffects of a jump to last longer with experience
  - both a and b
  - neither a nor b

Page(s): 45

Type: applied

Answer: c

26. According to opponent-process theory, opiate addiction is so difficult to end because
- the a-process is strengthened with repeated opiate use
  - the aversive b-process can be temporarily reduced with another opiate injection
  - both a and b
  - neither a nor b

Page(s): 46

Type: conceptual

Answer: c

Short Essay Questions

27. Describe the basic concepts of control systems theory, and illustrate them using a concrete example of a closed-loop feedback system, either animate or inanimate. Pages 27-28.
28. Describe the spinal reflex arc, and explain how feedback is involved in this simple reflex. Pages 28-29.
29. What properties do kinesiometers and taxes have in common, and how do they differ? Give one example of each. Pages 29-30.
30. Discuss one example of an innate behavior pattern that is initiated by a sign stimulus. For this particular behavior pattern, which characteristics of the stimulus are most important in eliciting the response, and which are not? Pages 31-32.
31. Describe an experiment that offers strong evidence that a squirrel's nut-burying behavior is innate, not learned. Page 31.
32. In what sense are reaction chains more adaptable than fixed action patterns? Give a concrete example to illustrate this adaptability. Pages 32-33.
33. Describe some of the evidence supporting the view that language is an innate human ability. Page 34.
34. What have psychologists learned about how people's emotions are expressed in facial expressions, and how others interpret these expressions? Page 34.
35. Define the concept of a "human universal," and give some examples. Page 35.
36. Describe four general principles of habituation--properties that are found across a wide range of species. Pages 35-36.
37. Explain how psychologists can use the phenomenon of habituation to study the perceptual abilities of infants. Page 38.
38. Explain why some researchers have chosen to study habituation in simple creatures such as *Aplysia*. What are the advantages and disadvantages of using such simple organisms? Pages 39-40.
39. Briefly describe the neural pathways involved in the gill-withdrawal response in *Aplysia*. What changes take place in this system during habituation of the gill-withdrawal response? Pages 39-40.
40. Describe research on the physiological basis of habituation in mammals. In what ways are the findings similar to those from *Aplysia*, and in what ways are they different? Page 40-41.
41. Describe the temporal pattern of a typical emotional response, according to the opponent-process theory of Solomon and Corbit. What underlying processes are hypothesized to be involved, and how do they change with repeated presentations of the same stimulus? Pages 42-44.
42. Show how the Solomon and Corbit opponent-process theory has been applied to drug addiction. Use this theory to account for the different reactions experienced by a first-time user and an experienced user. Page 45.