Answer Key
Learning

1. **D—**The sound of the tuning fork is a conditioned stimulus (CS) and salivation is the conditioned response (CR). Before conditioning, the sound of the tuning fork had been a neutral stimulus.

2. **A—**Negative reinforcement is the strengthening of behavior by the removal or avoidance of some aversive event.

3. **C—**The second best answer is 'positive punishment' here. Positive punishment is the addition of an aversive consequence after an undesired behavior to decrease future responses. However, the behavioral response being conditioned is not whether to urinate or not but whether to wake up or not. The best choice would still be classical conditioning which involves pairing a neutral stimulus (full bladder) with an unconditioned stimulus (alarm) to transform the neutral stimulus into a conditioned stimulus.

4. **B—**Edward Toleman used a similar experiment to reach the conclusion that these rats must have learned their way around the maze during the first half of the experiment. The learning occurred without any conditioning. This represented a major break with the strict behaviorism of Skinner. Toleman believed that their dramatic improvement in maze-running time was due to latent learning. He suggested they made a mental representation, or cognitive map, of the maze during the first half of the experiment and displayed this knowledge once they were rewarded.

5. **B—**The dog running to the kitchen has learned to associate a neutral stimulus (the can-opener) with an unconditioned stimulus (food). The can-opener is now a conditioned stimulus.

6. **C—**Preparedness is a concept developed to explain why certain associations are learned more readily than others.

7. **D—**All four statements are correct. Each is an important aspect of reinforcement schedules in operant conditioning, and each makes sense if you think about it. 1) Continuous reinforcement works best when teaching a new behavior. When first learning a behavior, a clear association between the behavior and the reward assists learning. 2) Variable schedules are more resistant to extinction. Once a subject becomes accustomed to a fixed schedule a break in the pattern quickly leads to extinction. 3) Ratio schedules tend to yield higher rates of response than interval schedules. This makes intuitive sense. If a rat gets a treat every five times they press a bar, they will press the bar more often. 4) Variable schedules tend to yield more consistent rates of responding than fixed schedules. If the subject doesn't know when the next treat is coming, it makes sense to keep emitting the response to ensure it's been emitted enough times to earn the reward.

8. **B—**Primary reinforcers are biological in nature. Food, drink, and physical pleasure are primary reinforcers. However, most human reinforcers are secondary, or conditioned. Examples include money, praise, grades in schools, and applause.

9. **D—**In most classical conditioning procedures the CS is presented first. This is forward conditioning.

10. **C—**A discriminant stimulus is any stimulus that signals the presence of reinforcement.

11. **D—**In operant conditioning, extinction occurs when reinforcement is no longer delivered to a previously reinforced behavior. The behavior gradually declines and disappears.

12. **A—**Latent inhibition in classical conditioning refers to the observation that a familiar stimulus takes longer to acquire meaning (as a signal or conditioned stimulus) than a new stimulus.

Dogs which are low in latent inhibition would more easily associate a new conditioned response to a previously conditioned stimulus.

13. C—Second-order conditioning or higher-order conditioning is a form of learning in which a stimulus is first made meaningful or consequential for an organism through an initial step of learning, and then that stimulus is used as a basis for learning about some new stimulus.

14. A—The difference between reinforcement and punishment is that reinforcement is designed to increase the probability of a behavior and punishment is designed to reduce the probability of a behavior. Negative punishment occurs when a behavior (response) is followed by the removal of a stimulus, such as taking away kitchen privileges following an undesired behavior, to decrease the probability of the behavior.

15. A—In operant conditioning positive reinforcement occurs when a behavior is either rewarding in itself or the behavior is followed by another stimulus that is rewarding, increasing the frequency of that behavior. If a rat in a Skinner box gets food when it presses a lever, its rate of pressing will go up.

16. D—Chaining involves reinforcing individual responses occurring in a sequence to form a complex behavior. In shaping successive approximations are reinforced, moving through increasingly accurate approximations of a response desired by a trainer.

17. D—Abstract learning is a type of learning that involves understanding concepts rather than simply learning to exhibit a behavior in order to secure a reward.

18. B—Insight learning is a type of learning or problem solving that happens suddenly through understanding the relationships of various parts of a problem rather than through trial and error.

19. C—Conditioned taste aversion occurs when an animal associates the taste of a certain food with symptoms caused by a toxic, spoiled, or poisonous substance or by an illness. Generally, taste aversion is developed after ingestion of food that causes nausea, sickness, or vomiting. It is an example of classical conditioning or Pavlovian conditioning. Conditioned taste aversions can develop through association of a neutral stimulus (eating the food) and the unconditioned stimulus (illness) so that eating the food acts as a conditioned stimulus in the future.

20. C—Long-term potentiation is a persistent strengthening of synapses based on recent patterns of activity.

21. A—A variable ratio reinforcement schedule is the type which is most resistant to extinction, although original conditioning takes longer. Variable interval schedules are more resistant to extinction than fixed interval and fixed ratio schedules but not as resistant as a variable ratio schedule.

22. C—Negative reinforcement increases the probability of a behavior because it causes a decrease in an aversive stimulus.

23. B—Very often a phobia is the result of classical conditioning. However, the avoidance behavior results from operant conditioning. Regarding the phobia itself, the original fear of almost falling down is associated with being on a high place, leading to a fear of heights. In other words, the CS (heights) associated with the aversive UCS (almost falling down) leads to the CR (fear). The avoidance behavior, on the other hand, is the result of negative reinforcement in which a behavior pattern is promoted because it reduces an aversive stimulus.

24. A—Within the realm of classical (Pavlovian) conditioning, disinhibition is a fundamental process of associative learning characterized by the recurrence of a conditioned response after extinction trials have eliminated said response

elicited by the presentation of a novel stimulus. Disinhibition is the temporary increase in strength of an extinguished response due to an unrelated stimulus effect. This differs from spontaneous recovery, which is the temporary increase in strength of a conditioned response, which is likely to occur during extinction after the passage of time.

25. C—A learning set is a readiness or predisposition to learn developed from previous learning experiences. In the laboratory context an organism learns to solve each successive problem in fewer trials. New problems can be solved more quickly when the learner is allowed to practice similar problems. Learning set is the psychological concept encompassing the idea of 'learning to learn'.

26. A—Positive punishment works by presenting a negative consequence after an undesired behavior is exhibited, making the behavior less likely to happen in the future. Choice 'B' is an example of negative punishment. Choices 'C' and 'D' are both examples of negative reinforcement.

27. C—Bandura's social cognitive learning theory states that there are four stages involved in observational learning. This question is addressing the first step: attention. Learning is influenced by characteristics of the model, such as how much one likes or identifies with the model, and by characteristics of the observer, such as the observer's expectations or level of emotional arousal. The last three stages are retention, imitation, and motivation.

28. D—Observational learning is learning that occurs through observing the behavior of others. It is a form of social learning which takes various forms, based on various processes. Observational learning differs from imitative learning in that it does not require a duplication of the behavior exhibited by the model. For example, the learner may observe an unwanted behavior and the subsequent consequences, and thus learn to refrain from that behavior. Specific types of observational learning without imitation include stimulus enhancement, in which individuals become interested in an object from watching others interact with it, and goal emulation, in which individuals are enticed by the end result of an observed behavior and attempt the same outcome but with a different method.

29. B—In his seminal work on taste aversion, Garcia demonstrated that the particular stimulus used in classical conditioning does matter. In his experiment, Garcia showed that rats could learn to avoid flavored water if it were associated with radiation induced nausea but he could not form an association between a buzzer and nausea. This is due to the instinctive predisposition to associate nausea with drinking something poisonous.

30. A—Fear conditioning is thought to depend upon an area of the brain called the amygdala. Ablation or deactivating of the amygdala can prevent both the learning and expression of fear.

31. D—The mesolimbic pathway is a collection of dopaminergic neurons that project from the ventral tegmental area to the nucleus accumbens. It is one of the component pathways of the medial forebrain bundle, which is a set of neural pathways that mediate brain stimulation reward.

32. B—Latent learning and over-justification both directly challenge the tenets of Skinnerian behaviorism. Latent learning is a form of learning that is not immediately expressed in an overt response; it occurs without reinforcement of the behavior or conditioned associations. The over-justification effect occurs when an expected external incentive such as money or prizes actually decreases a person's motivation to perform a task. Regarding choice I, observational learning, many kinds of observational learning, such as mobbing behavior by birds, are explicable in terms of behaviorism. Choice IV, negative reinforcement, is a core concept of Skinnerian behaviorism.

33. A—Sensitization is an increase in behavior due to exposure to a noxious (painful) stimulus.

34. C—Sensitization and habituation are both forms of non-associative learning, learning that does not require linking or associating stimuli together. It is considered the simplest type of learning.

35. D—In the actual experiment conducted by John Seward in 1949, one of the classics demonstrating latent learning, the exploratory group learned to go down the rewarded arm much faster than the group that had not previously explored the maze. At the time of the experiment, interest in latent learning arose largely because the phenomenon seemed to conflict with the widely held view that reinforcement was necessary for learning to occur. The question asks which results would be predicted by Skinnerian behaviorism, in other words, the point of view prevalent in the years prior to this experiment. Skinnerian behaviorism would predict the exploritory group to respond more slowly, actually, than the second group to reward conditioning because of the principle of immediacy. If you answered choice 'C', that's not too bad. This one is subtle. The principle of immediacy in reinforcement holds that an immediate consequence is more effective than a delayed consequence in reinforcement. The exploritory group experienced a period of behavior with no reward, so they should respond more slowly to conditioning. In other words, Skinnerian behaviorism would predict the exploritory group to learn more slowly. But this is not what happened! The exploritory group learned faster as a result of latent learning, learning requiring no reinforcement.

36. A—The CR will be acquired at a slower rate than if there had been no prior trials to diminish the orientation response. What occurred in those trials diminishing the orientation response is called habituation. Habituating a stimulus makes it more difficult to associate the stimulus with an unconditioned stimulus. This is known as latent inhibition.

37. D—Presynaptic facilitation and long-term potentiation are two different mechanisms for neural plasticity. In presynaptic facilitation, the change is occuring to the presynaptic neuron. However, long-term potentiation is more prevalent of the two. Long-term potentiation represents an increase in the sensitivity of a postsynaptic neuron as a result of repeated stimulation by a presynaptic neuron.

38. C—In Skinnerian behaviorism, stimulus control is the controlling principle underlying human behavior. Traits and motives or other cognitive constructs are not relevant but are themselves the result of conditioning. What determine individual behaviors are reinforcement history and stimuli.

39. A—The Law of Effect states that responses that lead to reward are strengthened, occurring more quickly and reliably, while responses that are unrewarded, or even punished, are weakened. This is a tenet of strict behaviorism. The break from the behaviorist view of social learning, in which reinforcement contingencies were defined objectively, was apparent in the Rotter's Social Learning and Clinical Psychology, which appeared in 1954. Rotter defines reinforcement contingencies subjectively, in terms of an individuals cognitive expectations.

40. D—In the Pavlovian framework, classical conditioning occurs according to the contiguity model. The CS is eventually substituted for the US. The contingency model is a cognitive framework. The CS signals to the organism that the US will follow. There is a thought process.

41. B—There are two basic forms of learning according to Bandura, learning by response consequences and learning by modeling. Learning by response consequences is similar to operant behaviorism of Skinner but with a cogni-

tive component. Modeling involves learning through vicarious experience as well as imitation. Modeling also covers learning through precept -- deliberate teaching and learning often involving linguistic communication.

42. **D**—According to Bandura, in addition to expectations regarding the relationship of a particular behavior and an outcome, a person must have the expectancy that he or she can reliably produce the behavior in question. This is the concept of self-efficacy. An example of self-efficacy in the phenomenon of learned helplessness. Research subjects who have been exposed to unsolvable puzzles are hindered in solving subsequent puzzles they would normally be able to solve.

43. **C**—Gambling and lottery games are good examples of a reward based on a variable ratio schedule. In operant conditioning, a variable-ratio schedule is a schedule of reinforcement where a response is reinforced after an unpredictable number of responses. This schedule creates a steady, high rate of responding. Comparing different reinforcement schecules, behaviors that have been conditioned with a variable ratio reinforcement schedule are the most difficult to extinguish.

44. **D**—In a reinforcement schedule, variable versus fixed refers to the predictability of the reinforcer. Variable reinforcers reward on an unpredictable schedule. Whether it is a variable ratio or variable interval schedule refers to whether the number of behaviors or the amount of time is varied, respectively. The sales agent can't predict the number of behaviors between rewards. Thus it is a variable ratio schedule.

45. **A**—Although Bandura's Bobo doll experiment is mainly known for demonstrating how effectively aggressive behavior can be transmitted through observational learning and imitation, as a theoretical breakthrough it's importance was to show that imitation occurred without reinforcement.

46. **C**—One observes stimulus discrimination when one stimulus ("CS1") elicits one CR and another stimulus ("CS2") elicits either another CR or no CR at all. This can be brought about by, for example, pairing CS1 with an effective US and presenting CS2 with no US.

47. **B**—Latent inhibition refers to the observation that a familiar stimulus takes longer to acquire meaning (as a signal or conditioned stimulus) than a new stimulus.

48. **B**—While extinction, when implemented consistently over time, results in the eventual decrease of the undesired behavior, in the short-term the subject might exhibit what is called an extinction burst. An extinction burst will often occur when the extinction procedure has just begun. This usually consists of a sudden and temporary increase in the response's frequency.

49. **A**—Habituation usually refers to a reduction in innate behaviours, rather than behaviours developed during conditioning. Extinction refers to reduction of behaviors developed during conditioning.

50. **D**—It's good to have a clear, scientific definition of learning to encompass everything from classical conditioning to cognitive models of learning.