Studying Memory

Objective 8-1: Define memory.

1. Learning that persists over time indicates the existence of ___________________ for that learning.

2. The ability to retrieve information not in conscious awareness but that was learned at an earlier time is called ___________________. The ability to identify previously learned items is called

3. If you have learned something and then forgotten it, you will probably be able to ___________________ it, (more/less) quickly than you did originally.

Objective 8-2: Explain how psychologists describe the human memory system.

4. Both human memory and computer memory can be viewed as ___________________ systems that perform three tasks: ___________________, ___________________ and ___________________. Unlike the computer, which processes (sequentially/simultaneously), our brain processes many things (sequentially/simultaneously).

The model called ___________________ views memory as emerging from interconnected ___________________.

5. The classic model of memory has been Atkinson and Shiffrin’s ___________________ -

_____________________. According to this model, we first record information as a fleeting ___________________ ___________________, from which it is processed into ___________________

_____________________. Memory, where the information is ___________________ through

rehearsal into ___________________ -
_____________________.

Objective 8-3: Distinguish between explicit and implicit memories.

6. The phenomenon of short-term memory has been clarified by the concept of ___________________ memory, which focuses more on the ___________________ processing of briefly stored information. This form of memory is sometimes called the ___________________ ___________________.

STUDY TIP: To remember the material in the first half of this chapter, you might find it helpful to use the concept of a three-part model as a retrieval cue. In this section, the modified three-stage information-processing model proposes that external events are processed through separate stages of sensory memory, short-term/working memory, and long-term memory. In the next section, the three processes of (1) getting information into the memory system (encoding), (2) retaining information over time (storage), and (3) getting information out of memory storage (retrieval) are described. Each process (encoding, storage, and retrieval) can occur at each memory stage (sensory memory, short-term memory, long-term memory).

The chart below applies what can happen at each stage to the example of getting the written words of a memorable poem in and out of memory. To bolster your understanding of these important concepts, you might try using this type of chart as the basis for an example you create.
APPLICATION:

8. Elderly Mr. Flanagan, a retired electrician, can easily remember how to wire a light switch, but he cannot remember the name of the president of the United States. Evidently, Mr. Flanagan’s __________ memory is better than his memory.
   a. implicit; explicit
   b. explicit; implicit
   c. declarative; nondeclarative
   d. explicit; declarative

Building Memories

Objective 8-4: Identify the information we process automatically.

9. Implicit memories include ______________ memory for skills and associations among stimuli formed by ________________.
   Give examples of material that is typically encoded with little or no effort.

APPLICATION:

10. The first thing Karen did when she discovered that she had misplaced her keys was to re-create in her mind the day’s events. That she had little difficulty in doing so illustrates ______________ processing.

Objective 8-5: Explain how sensory memory works.

11. Stimuli from the environment are first recorded in ______________ memory.

12. George Sperling found that when people were briefly shown three rows of letters, they could recall (virtually all/about half) of them. When Sperling sounded a tone immediately after a row of letters was flashed to indicate which letters were to be recalled, the participants were much (more/less) accurate. This suggests that people have a brief photographic, or ______________ memory lasting about a few tenths of a second.

13. Sensory memory for sounds is called ______________ memory. This memory fades (more/less) rapidly than photographic memory, lasting for as long as ________________.

Objective 8-6: Describe the capacity of our short-term and working memory.

14. Our short-term memory capacity is about ______________ chunks of information. This capacity was discovered by ________________.

15. Peterson and Peterson found that when was prevented ________________ by asking people to count backward, memory for letters was gone after 12 seconds. Without ________________ processing, short-term memories have a limited life.

16. The capacity of working memory (reflects/does not reflect) a person’s intelligence level.

APPLICATION:

17. Brenda has trouble remembering her new five-digit ZIP plus four-digit address code. What is the most likely explanation for the difficulty Brenda is having?
   a. Nine digits are at or above the upper limit of most people’s short-term memory capacity.
   b. Nine digits are at or above the upper limit of most people’s iconic memory capacity.
   c. The extra four digits cannot be organized into easily remembered chunks.
   d. Brenda evidently has an impaired implicit memory.

Objective 8-7: Describe the effortful processing methods that help us remember new information.

18. Memory may be aided by grouping information into meaningful units called ________________.

19. Memory aids are known as ________________ devices.

20. Using a jingle, such as the one that begins "one is a bun," is an example of the ________________.
21. Another memory aid involves forming words from the first letters of to-be-remembered words; the resulting word is called an _________________.

22. When people develop expertise in an area, they process information into _________________.

23. A pioneering researcher in verbal memory was _________________. In one experiment, he found that distributed rehearsal is more effective for retention; this is called the _________________.

24. Repeated self-testing is a good way to _________________. Practice. Henry Roediger and Jeffrey Karpicke called this the _________________.

Objective 8-8: Describe the levels of processing and their effect on encoding.

25. Encoding material on a basic level based on _________________. or the _________________. of words is called _________________. Encoding material _________________. based on the meaning of words, is called _________________. (Shallow /Deep) processing tends to yield the best retention.

26. Material that is not _________________. is difficult to process. We have especially good recall for information we can meaningfully relate to ourselves, called the _________________. - _________________. effect.

Memory Storage

Objective 8-9: Describe the capacity and location of our long-term memories.

27. In contrast to short-term memory—and contrary to popular belief—the capacity of permanent memory is essentially _________________.

28. Psychologist attempted to locate memory by cutting out pieces of rats' _________________. after they had learned a maze. He found that no matter where he cut, the rats (remembered / forgot) the maze.

Objective 8-10: Describe the role of the frontal lobes and hippocampus in memory storage.

29. Many brain regions send input to your _________________. lobes for working memory processing.

30. Amnesia patients typically have suffered damage to the _________________. of their limbic system. This brain structure is important in the processing and storage of _________________. memories. Damage on the left side of this structure impairs _________________. memory; damage on the right side impairs memory for _________________. designs and locations. The rear part of this structure processes _________________. memory.

31. The hippocampus seems to function as a zone where the brain (temporarily/permanently) stores the elements of a memory. However, memories (do/do not) migrate for storage elsewhere. The hippocampus is active during _________________. sleep, as memories are processed and filed for later retrieval. Sensory cortex areas also receive information from the outside world and send it to the _________________. and to other parts of the _________________. lobes.

APPLICATIONS:

32. Brad, who suffered accidental damage to the left side of his hippocampus, has trouble remembering

- visual designs.
- locations.
- all nonverbal information.
- verbal information.
33. After suffering damage to the hippocampus, a person would probably
a. lose memory for skills such as bicycle riding.
b. be incapable of being classically conditioned.
c. lose the ability to store new facts.
d. experience all of these changes.

34. The cerebellum is important in the processing of __________ memories. Humans and laboratory animals with a damaged cerebellum are incapable of simple ________________ conditioning.

35. Deep brain structures called the __________ , which are also involved in ________________ movement, facilitate formation of ________________ memories for skills.

36. The dual explicit-implicit memory system helps explain amnesia. We do not have explicit memories of our first three years for two reasons: explicit memory requires the use of words that nonspeaking children (have/have not) learned and the ________________ is one of the last brain structures to mature.

37. Emotions trigger hormones that (influence/ do not influence) memory formation by making more ________________ available to fuel brain activity.

38. Stress hormones provoke the ________________ to initiate a memory trace in the ________________ and ________________ to boost activity in the brain’s memory-forming areas.

39. Memories for surprising, significant moments that are especially clear are called ________________ memories. Like other memories, these memories (can/cannot) err.

APPLICATION:
40. Which of the following is the best example of a flashbulb memory?
a. suddenly remembering to buy bread while standing in the checkout line at the grocery store
b. recalling the name of someone from high school while looking at his or her yearbook snapshot
c. remembering to make an important phone call
d. remembering what you were doing on September 11,2001, when terrorists crashed planes into the World Trade Center towers

Objective 8-13: Explain how changes at the synapse level affect our memory processing.
41. Eric Kandel and James Schwartz have found that when learning occurs in the sea slug Aplysia, the neurotransmitter ________________ is released in greater amounts, making synapses more efficient.

42. After learning has occurred, a sending neuron needs (more/less) prompting to release its neurotransmitter, and the number of it stimulates may increase. This phenomenon, called ________________ - ________________ , may be the neural basis for learning and memory. Blocking this process with a specific ________________ , or by genetic engineering that causes the absence of an ________, interferes with learning. Rats given a drug that enhances ________________ will learn a maze (faster/more slowly).

43. After LTP has occurred, an electric current passed through the brain (will/will not) disrupt old memories and (will/will not) wipe out recent experiences.

44. To enhance memory, one approach focuses on drugs that boost the LTP-enhancing neurotransmitter ________________. Another approach involves developing drugs that boost production of
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5. __________, a protein that also enhances the LTP process.

Retrieval: Getting Information Out

Objective 8-14: Identify three measures of retention.
45. Researchers found that 25 years after graduation, people were not able to (recall/recognize) the names of their classmates but were able to (recall/recognize) 90 percent of their names and their yearbook pictures.
46. If you have learned something and then forgotten it, you will probably be able to it (more/less) quickly than you did originally. Additional rehearsal of learned material, called (increases/does not increase) retention.

APPLICATION:
47. Complete this analogy: Fill-in-the-blank test questions are to multiple-choice questions as
   a. encoding is to storage.
   b. storage is to encoding.
   c. recognition is to recall.
   d. recall is to recognition.

Objective 8-15: Describe how external cues, internal emotions, and order of appearance influence memory retrieval.
48. The best retrieval cues come from the associations formed at the time we ___________________ a memory.
49. The process by which associations can lead to retrieval is called ___________________.
50. Studies have shown that retention is best when learning and testing are done in (the same/different) contexts.
51. What we learn in one condition is best remembered in that condition, called ___________________ - ___________________ memory. For example, we tend to recall experiences that are consistent with our current emotional state, which is called
   ___________________ - ___________________ memory.

Describe the effects of mood on memory.

52. People who are currently depressed may recall their parents as ___________________.
People who have recovered from depression typically recall their parents about the same as do people who ___________________.
53. The tendency to remember the first and last items in a list best is called the ___________________.
54. People briefly recall the last items in a list quickly and well, called the ___________________ effect.
Following a delay, first items are remembered (better /less well) than last items, called the ___________________ effect.

APPLICATIONS:

55. The above figure depicts the recall of a list of words under two conditions. Which of the following best describes the difference between the conditions?
   a. In A, the words were studied and retrieved in the same context; in B, the contexts were different.
   b. In B, the words were studied and retrieved in the same context; in A, the contexts were different.
c. The delay between presentation of the last word and the test of recall was longer for A than for B.

d. The delay between presentation of the last word and the test of recall was longer for B than for A.

56. Being in a bad mood after a hard day of work, Susan could think of nothing positive in her life. This is best explained as an example of
   a. priming.
   b. the spacing effect.
   c. mood-congruent memory.
   d. shallow processing.

57. In an effort to remember the name of the classmate who sat behind her in fifth grade, Martina mentally recited the names of other classmates who sat near her. Martina's effort to refresh her memory by activating related associations is an example of
   a. priming.
   b. mnemonics.
   c. encoding.
   d. relearning

58. Walking through the halls of his high school 10 years after graduation, Tom experienced a flood of old memories. Tom's experience showed the role of
   a. state-dependent memory.
   b. context effects.
   c. implicit memory.
   d. echoic memory.

Forgetting

Objective 8-16: Explain why we forget.

59. Without the ability to _____________________, we would constantly be overwhelmed by information.

60. The disorder called _____________________ _____________________ involves an inability to form new memories. The disorder called

_______________________________ involves an inability to retrieve old memories.

61. People who cannot form new memories can learn _____________________ _____________________ and can be _____________________ _____________________ . However, they have no _____________________ memory of having learned these things.

62. The first type of forgetting is caused by _____________________ failure. This type of forgetting occurs because some of the information that we sense never actually _____________________.

63. One reason for age-related memory decline is that the brain areas responsible for _____________________ new information are (more/less) responsive in older adults.

64. Studies by Hermann Ebbinghaus and by Harry Bahrick indicate that most forgetting occurs (soon/a long time) after the material is learned.

65. This type of forgetting is known as _____________________ _____________________, which may be caused by a gradual fading of the physical _____________________.

66. When information that is stored in memory temporarily cannot be found, _____________________ failure has occurred.

67. Research suggests that memories are also lost as a result of _____________________, which is especially possible if we simultaneously learn similar, new material.

68. The disruptive effect of previous learning on current learning is called _____________________ _____________________.
   The disruptive effect of learning new material on efforts to recall material previously learned is called _____________________ _____________________.

69. John Jenkins and Karl Dallenbach found that if people went to sleep after learning, their memory for a list of nonsense syllables was (better/worse) than it was if they stayed awake.

70. In some cases, old information facilitates our learning of new information. This is called _____________________ _____________________.

71. Freud proposed that motivated forgetting, or _____________________, may protect a person from painful memories.

72. Increasing numbers of memory researchers think that
motivated forgetting is (less/more) common than Freud believed.

When Do We Forget?

APPLICATIONS:

73. At your high school reunion you cannot remember the last name of your homeroom teacher. Your failure to remember is most likely the result of ____________________________ failure.

74. Which of the following sequences would be best to follow if you wanted to minimize interference-induced forgetting in order to improve your recall on the psychology midterm?
   a. study, eat, test
   b. study, sleep, test
   c. study, listen to music, test
   d. study, exercise, test

75. When Carlos was promoted, he moved into a new office with a new phone extension. Every time he is asked for his phone number, Carlos first thinks of his old extension, illustrating the effects of
   a. proactive interference.
   b. retroactive interference.
   c. encoding failure.
   d. storage failure.

76. Lewis cannot remember the details of the torture he experienced as a prisoner of war. According to Freud, Lewis' failure to remember these painful memories is an example of
   a. repression.
   b. retrieval failure.
   c. state-dependent memory.
   d. flashbulb memory

77. After finding her old combination lock, Janice can't remember its combination because she keeps confusing it with the combination of her new lock. She is experiencing
   a. proactive interference.
   b. retroactive interference.
   c. encoding failure.
   d. storage failure.

Memory Construction Errors

Objective 8-17: Explain how misinformation, imagination, and source amnesia influence our memory construction, and describe how we decide whether a memory is real or false.

78. As memories are replayed, they are often modified. This process is called ____________________________

79. When witnesses to an event receive misleading information about it, they may experience a ____________________________ and misremember the event. A number of experiments have demonstrated that false memories (can/cannot) be created when people are induced to imagine nonexistent events; that is, these people later experience ____________________________.

This occurs in part because visualizing something and actually perceiving it ____________________________.
Describe what Loftus' studies have shown about the effects of misleading post-event information.

80. At the heart of many false memories is _______________________, which occurs when we ______________________ an event to the wrong source. This phenomenon helps explain _______________________, which is the sense that a current situation has already been experienced.

81. Because memory is reconstruction as well as reproduction, we (can/cannot) be sure whether a memory is real by how real it feels.

82. Memory construction explains why memories "refreshed" under ______________________ are often inaccurate.

APPLICATION:

83. Which of the following illustrates the constructive nature of memory?
   a. Janice keeps calling her new boyfriend by her old boyfriend's name.
   b. After studying all afternoon and then getting drunk in the evening, Don can't remember the material he studied.
   c. After getting some good news, elated Kareem has a flood of good memories from his younger years.
   d. Although Mrs. Harvey, who has Alzheimer's disease, has many gaps in her memory, she invents sensible accounts of her activities so that her family will not worry.

Objective 8-18: Describe the reliability of young children's eyewitness descriptions, and discuss the controversy related to claims of repressed and recovered memories.

84. Whether a child produces an accurate eyewitness memory depends heavily on how he or she is _______________________. Children are most accurate when it is a first interview with a ______________________ person who asks ______________________ questions.

85. Researchers increasingly agree that memories obtained under the influence of hypnosis or using other "memory work" techniques (are/ are not) reliable.

86. Memories of events that happened before age ______________________ are unreliable. As noted earlier, this phenomenon is called ______________________.

Improving Memory

Objective 8-19: Describe how you can use memory research findings to do better in this and other courses.

87. The SQ3R study technique identifies five strategies for boosting memory: ______________________, ______________________, ______________________, ______________________, and ______________________.

Discuss several specific strategies for improving memory.