1. The study of the physiological basis of cognition is known as
   a. cognitive psychology.
   b. neuroscience.
   c. cognitive neuroscience.
   d. neuropsychology.

   ANSWER: c
   POINTS: 1
   DIFFICULTY: EASY
   REFERENCES: Introduction

2. Barbara has recently been diagnosed with a rather aggressive form of abdominal cancer. Her oncologist is interested in determining the best way to treat her so that the tumors can be eliminated. Her gastroenterologist is focused on relieving her symptoms and giving her normal digestive functioning. Barbara is also seeing a psychologist, whose goal is to help her stay calm, relaxed, and keep her anxiety as minimal as possible while keeping her spirits up. The fact that these doctors are considering Barbara's situation with different goals and from different perspectives is similar to the idea of_____presented in your textbook.
   a. unitary explanations
   b. idiographic evaluation
   c. nomothetic examination
   d. levels of analysis

   ANSWER: d
   POINTS: 1
   DIFFICULTY: MODERATE
   REFERENCES: Why Study Cognitive Neuroscience?

3. Your author points out that studying the mind requires both_____and_____experiments.
   a. nomothetic; idiographic
   b. behavioral; physiological
   c. brain; body
   d. observational; correlational

   ANSWER: b
   POINTS: 1
   DIFFICULTY: EASY
   REFERENCES: Why Study Cognitive Neuroscience?

4. Early studies of brain tissue that used staining techniques and microscopes from the 19th century described the "nerve net." These early understandings were in error in the sense that the nerve net was believed to be
   a. continuous.
   b. composed of discrete individual units.
   c. composed of cell bodies, axons, and dendrites.
   d. composed of neurotransmitters rather than neurons.

   ANSWER: a
   POINTS: 1
   DIFFICULTY: MODERATE
   REFERENCES: Neurons: Communication and Representation

5. The neuron doctrine is
   a. in agreement with nerve net theory.
   b. unrelated to nerve net theory.
   c. synonymous with nerve net theory.
   d. in disagreement with nerve net theory.

   ANSWER: d
   POINTS: 1
   DIFFICULTY: EASY
   REFERENCES: Neurons: Communication and Representation

6. The key structural components of neurons are
   a. cell body, cellular membrane, and transmitters.
   b. axon, dendrites, and glands.
   c. cell body, dendrites, and axon.
   d. transmitters, dendrites, and nodes of Ranvier.

   ANSWER: c
   POINTS: 1
   DIFFICULTY: EASY
   REFERENCES: Neurons: Communication and Representation

7. Which of the following neural components is NOT found at the receiving end of neurons?
   a. Cell body
   b. Dendrite
   c. Receptor
   d. Axon

   ANSWER: d
   POINTS: 1
   DIFFICULTY: DIFFICULT
   REFERENCES: Neurons: Communication and Representation

8. A synapse is
   a. a tube filled with fluid that conducts electrical signals.
   b. the structure that contains mechanisms to keep a neuron alive.
   c. the structure that receives electrical signals from other neurons.
   d. the gap that separates two different neurons.

   ANSWER: d
   POINTS: 1
   DIFFICULTY: EASY
   REFERENCES: Neurons: Communication and Representation

9. Groups of interconnected neurons are referred to as
   a. myelin sheaths.
   b. potentiated somas.
   c. neural circuits.
   d. spreading activations.

   ANSWER: c
   POINTS: 1
   DIFFICULTY: MODERATE
   REFERENCES: Neurons: Communication and Representation

10. Action potentials occur in the
    a. cell body.
    b. synapse.
    c. neurotransmitters.
    d. axon.

    ANSWER: d
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Neurons: Communication and Representation

11. Recordings from single neurons are conducted using which of these pieces of equipment?
    a. Positron emission tomography scanner
    b. Functional magnetic resonance imaging scanner
    c. Microelectrode
    d. Neurotransmitter

    ANSWER: c
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Neurons: Communication and Representation

12. If the intensity of a stimulus that is presented to a touch receptor is increased, this tends to increase the_____in the receptor's axon.
    a. rate of nerve firing
    b. size of the nerve impulses
    c. speed of nerve conduction
    d. all of these

    ANSWER: a
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Neurons: Communication and Representation

13. When recording from a single neuron, stimulus intensity is represented in a single neuron by the
    a. size of the action potentials.
    b. size of the synapse.
    c. firing rate of the neurotransmitters.
    d. firing rate of the action potentials.

    ANSWER: d
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Neurons: Communication and Representation

14. Which of the following statements best describes how neurons communicate with one another?
    a. The end of one neuron makes direct contact with the receiving end of another neuron.
    b. A chemical process takes place in the synapse.
    c. An electrical process takes place in the receptors.
    d. Action potentials travel across the synapse.

    ANSWER: b
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Neurons: Communication and Representation

15. You are walking down the street and see a really nice car drive by. You notice many features of it: its color, movement, shape, location, and so forth. All of these features are processed
    a. in one localized area of the brain.
    b. by the grandmother cells in the brain.
    c. in different parts of the brain.
    d. through fMRI potentials.

    ANSWER: c
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Neurons: Communication and Representation

16. The layer of neurons that lines the back of the eye is called the
    a. retina.
    b. grandmother cell.
    c. reference electrode.
    d. feature detector.

    ANSWER: a
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Neurons: Communication and Representation

17. Neurons that respond to specific qualities (e.g., such as orientation, movement, and length) that make up objects are called
    a. retinal cells.
    b. feature detectors.
    c. dendrites.
    d. receptors.

    ANSWER: b
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Representation by Neurons

18. If kittens are raised in an environment that contains only verticals, you would predict that most of the neurons in their visual cortex would respond best to the visual presentation of a
    a. brick wall.
    b. chain link fence.
    c. solid wall.
    d. picket fence.

    ANSWER: d
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Representation by Neurons

19. The idea of a grandmother cell is consistent with
    a. distributed coding.
    b. specificity coding.
    c. subtraction techniques.
    d. primary receiving areas.

    ANSWER: b
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Representation by Neurons

20. A grandmother cell responds
    a. only to a specific stimulus.
    b. to strong positive emotion.
    c. to both positive and negative emotion.
    d. to a variety of stimuli.

    ANSWER: a
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Representation by Neurons

21. When conducting an experiment on how stimuli are represented by the firing of neurons, you notice that neurons respond differently to different faces. For example, Arthur's face causes three neurons to fire, with neuron 1 responding the most and neuron 3 responding the least. Roger's face causes three different neurons to fire, with neuron 7 responding the least and neuron 9 responding the most. Your results support_____coding.

    a. specificity

    b. distributed

    c. sparse

    d. divergence

    ANSWER: c

    POINTS: 1

    DIFFICULTY: DIFFICULT

    REFERENCES: Representation by Neurons

22. The concept of distributed neural coding proposes that a specific object, like a face, is represented across a number of

    a. microelectrodes.

    b. stimuli.

    c. modalities.

    d. neurons.

    ANSWER: d

    POINTS: 1

    DIFFICULTY: EASY

    REFERENCES: Representation by Neurons

23. A specific person's face is represented in the nervous system by the firing of

    a. a feature detector that fires specifically to that face.

    b. a group of neurons that all respond only to that face.

    c. a group of neurons each responding to a number of different faces.

    d. a receptor in the retina that responds when the face is present.

    ANSWER: c

    POINTS: 1

    DIFFICULTY: DIFFICULT

    REFERENCES: Representation by Neurons

24. Which of the following statements is the most accurate with regard to specificity coding?
    a. It is probably accurate, which explains why the human nervous system contains over one hundred quadrillion neurons.
    b. Research has found that specificity encoding does occur for lower animals, such as dogs and cats, but has not found this phenomenon to exist in human beings.
    c. It is unlikely to be correct because there are too many stimuli in the world to have a separate neuron for each.
    d. Specificity coding is one of the areas that is only theoretical and not applied, and thus there is no way to know if it truly exists in human beings.

    ANSWER: c
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Representation by Neurons

25. Which of the following is consistent with the idea of localization of function?
    a. Specific areas of the brain serve different functions.
    b. Neurons in different areas of the brain respond best to different stimuli.
    c. Brain areas are specialized for specific functions.
    d. All of the above.

    ANSWER: d
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

26. Recording from single neurons in the brain has shown that neurons responding to specific types of stimuli are often clustered in specific areas. These results support the idea of
    a. cortical association.
    b. dissociation.
    c. localization of function.
    d. the information processing approach.

    ANSWER: c
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

27. Paul Broca's and Carl Wernicke's research provided early evidence for
    a. distributed processing.
    b. localization of function.
    c. prosopagnosia.
    d. neural net theory.

    ANSWER: b
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

28. The temporal lobe is
    a. the first place in the cerebral cortex where visual information is received.
    b. important for language, memory, hearing, and vision.
    c. important for higher functions such as language, thought, and memory, as well as motor functioning.
    d. where signals are received from the auditory system.

    ANSWER: d
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

29. The occipital lobe is
    a. the part of the cerebral cortex where the visual cortex is located.
    b. important for language, memory, hearing, and vision.
    c. important for higher functions such as language, thought, and memory, as well as motor functioning.
    d. where signals are received from the sensory system for touch.

    ANSWER: a
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

30. The_____lobe of the cortex receives information from all of the senses and is responsible for coordination of the senses, as well as higher cognitive functions such as thinking and problem solving.
    a. subcortical
    b. frontal
    c. occipital
    d. parietal

    ANSWER: b
    POINTS: 1
    DIFFICULTY: EASY
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

31. Which part of the brain is important for touch, pressure, and pain?
    a. Occipital lobe
    b. Hippocampus
    c. Temporal lobe
    d. Parietal lobe

    ANSWER: d
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

32. A 10-month-old baby is interested in discovering different textures, comparing the touch sensations between a soft blanket and a hard wooden block. Tactile signals such as these are received by the_____lobe.
    a. parietal
    b. occipital
    c. frontal
    d. temporal

    ANSWER: a
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

33. Josiah is trying to speak to his wife, but his speech is very slow and labored, often with jumbled sentence structure. Josiah may have damage to his
    a. Broca's area.
    b. Parahippocampal place area (PPA)
    c. Extrastriate body area (EBA)
    d. Wernicke's area.

    ANSWER: a
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

34. Damage to Wernicke's area is in which lobe of the brain?
    a. Temporal
    b. Occipital
    c. Parietal
    d. Frontal

    ANSWER: a
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Organization: Neuropsychology and Recording from Neurons

35. Brain-imaging techniques can determine all of the following EXCEPT
    a. areas of the brain activated during cognitive tasks.
    b. localization of brain activity in response to a specific stimulus.
    c. the structure of individual neurons.
    d. patterns of blood flow in the brain.

    ANSWER: c
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Organization: Brain Imaging

36. Brain imaging has made it possible to
    a. determine which areas of the brain are involved in different cognitive processes.
    b. view individual neurons in the brain.
    c. show how environmental energy is transformed into neural energy.
    d. view propagation of action potentials.

    ANSWER: a
    POINTS: 1
    DIFFICULTY: MODERATE
    REFERENCES: Organization: Brain Imaging

37. Hemoglobin molecules in areas of high brain activity
    a. gain some of the ferrous molecules they are transporting.
    b. lose some of the ferrous molecules they are transporting.
    c. gain some of the oxygen they are transporting.
    d. lose some of the oxygen they are transporting.

    ANSWER: d
    POINTS: 1
    DIFFICULTY: DIFFICULT
    REFERENCES: Organization: Brain Imaging

38. Which of the following brain imaging techniques, discovered in 1908, is now a standard technique for detecting tumors and other brain abnormalities?

a. Magnetic resonance imaging (MRI)

b. Computed tomography (CT)

c. X-ray imaging

d. Positron Emission Tomography (PET)

ANSWER: a
POINTS: 1
DIFFICULTY: DIFFICULT
REFERENCES: Organization: Brain Imaging

39. The fusiform face area (FFA) in the brain is often damaged in patients with

a. Broca's aphasia.

b. Wernicke's aphasia.

c. prosopagnosia.

d. Alzheimer's disease.

ANSWER: c
POINTS: 1
DIFFICULTY: MODERATE
REFERENCES: Organization: Brain Imaging

40. Sarah has experienced brain damage making it difficult for her to understand spatial layout. Which area of her brain has most likely sustained damage?

a. Fusiform face area (FFA)

b. Parahippocampal place area (PPA)

c. Extrastriate body area (EBA)

d. Functional magnetic area (FMA)

ANSWER: b
POINTS: 1
DIFFICULTY: MODERATE
REFERENCES: Organization: Brain Imaging

41. Ramon is looking at pictures of scantily clad women in a magazine. He is focusing on their body parts, particularly their chest and legs. Which part of Ramon's brain is activated by this viewing?

a. Fusiform face area (FFA)

b. Parahippocampal place area (PPA)

c. Extrastriate body area (EBA)

d. Functional magnetic area (FMA)

ANSWER: c
POINTS: 1
DIFFICULTY: DIFFICULT
REFERENCES: Organization: Brain Imaging

42. The idea that specific cognitive functions activate many areas of the brain is known as

a. localization of function.

b. distributed processing.

c. modularity.

d. aphasia.

ANSWER: b
POINTS: 1
DIFFICULTY: EASY
REFERENCES: Organization: Brain Imaging

43. Groups of neurons or structures that are connected within the nervous system are called_____.

a. synaptic vesicles

b. neuronal bridges

c. neural networks

d. fused conduits

ANSWER: c
POINTS: 1
DIFFICULTY: DIFFICULT
REFERENCES: All Together Now: Neural Networks

44. In a procedure called diffusor tensor imaging (DTI), the way in which_____diffuse(s) along the length of a nerve fiber is measured to determine how different nerves communicate with each other.

a. water

b. electricity

c. neurotransmitters

d. sodium ions

ANSWER: c
POINTS: 1
DIFFICULTY: DIFFICULT
REFERENCES: All Together Now: Neural Networks

45. Which of the following procedures can be used to help determine the exact way in which nerve fibers communicate with each other?

a. fMRI

b. DTI

c. PET

d. EMG

ANSWER: b
POINTS: 1
DIFFICULTY: MODERATE
REFERENCES: All Together Now: Neural Networks

46. Describe how neurons communicate. Mention the key components of the neurons that are involved. Explain the process whereby the electrical signal (the information) is transferred from one neuron to another.

ANSWER: Answer not provided
POINTS: 1
REFERENCES: Neurons: Communication and Representation

47. Explain how action potentials change in response to stimulus intensity. Use an example from one's visual system to illustrate this process.

ANSWER: Answer not provided
POINTS: 1
REFERENCES: Neurons: Communication and Representation

48. Explain the purpose of feature detectors in creating mental representation of objects.

ANSWER: Answer not provided
POINTS: 1
REFERENCES: Representation by Neurons

49. Describe how localization of function and distributed representation work together in everyday cognitive processes. Use the example of seeing your prom date at a high school reunion to illustrate your answer.

ANSWER: Answer not provided
POINTS: 1
REFERENCES: Organization: Neuropsychology and Recording from Neurons
Organization: Brain Imaging

50. Describe three physiological techniques for investigating human cognition. What can each technique tell us about the brain and human cognition? Also, give at least one limitation of each of the three techniques.

ANSWER: Answer not provided
POINTS: 1
REFERENCES: Neurons: Communication and Representation
Organization: Brain Imaging

51. Define both localization of function and distributed representation. Discuss whether these are opposing or complementary concepts.

ANSWER: Answer not provided
POINTS: 1
REFERENCES: Organization: Brain Imaging