

Use the following to answer questions 1-3:

Different theorists down the ages have placed mental processes in various parts of the body. Choose the appropriate body region for each theorist.

- a. pineal gland
- b. heart
- c. brain

1. Aristotle ____

2. Descartes ____

3. modern neuroscientists ____

Use the following to answer questions 4-7:

The nineteenth century saw an increase in scientific interest in the functions of the brain. Match the scientist(s) with the MOST appropriate phrase.

- a. conduction aphasia
- b. recovery of function
- c. electrical excitability of the cortex
- d. left hemisphere localization for speech

4. Dax ____

5. Wernicke ____

6. Flourens ____

7. Fritsch and Hitzig ____

Use the following to answer questions 8-11:

Following Broca, several other investigators extended knowledge regarding the association of brain damage and language and movement disorders. For each individual, choose the MOST appropriate alternative from the list below.

- a. apraxia
- b. hierarchical organization
- c. fluent aphasia
- d. alexia

8. Wernicke ____

9. Dejerine ____

10. Liepmann ____

11. Hughlings-Jackson ____

Use the following to answer questions 12-15:

The history of neuropsychology has been influenced by a variety of hypotheses regarding the functional organization of the human brain. For each hypothesis, choose the individual MOST closely associated with that idea from the list below.

- a. Goltz
- b. Ramón y Cajal
- c. Hughlings-Jackson
- d. Golgi

12. antilocalization ____

13. hierarchical organization ____

14. nerve net hypothesis ____

15. neuron hypothesis ____

Use the following to answer questions 16-19:

Match the individual(s) in each question with the MOST appropriate term from the list.

- a. chemical neurotransmission
- b. electrical stimulation of muscle contractions
- c. ionic conduction of nerve impulse
- d. synapse

16. Galvani ____

17. Hodgkin and Huxley ____

18. Sherrington ____

19. Loewi ____

Use the following to answer questions 20-23:

For each discipline listed below, choose the MOST appropriate alternative from the list.

- a. positron emission tomography
- b. failed in developing a functional atlas of the human brain
- c. intelligence quotient
- d. stereotaxic device

20. neurosurgery ____

21. psychometrics ____

22. brain imaging ____

23. phrenology ____

24. Distinguish between sulci and gyri in the cerebral cortex.
25. Distinguish between the functions of the spinal cord, brain stem, and forebrain.
26. What was Descartes's view of the mind–body problem?
27. What are the implications of Darwin's theory that all animals had a common ancestor for the study of nervous system functions?
28. Why is aphasia following a stroke usually associated with paralysis or difficulty with movement on the right side of the body?
29. What was Broca's main contribution to the concept of lateralization of function in the human brain?
30. What was Wernicke's main contribution to the concept of a modular functional organization of the human brain?
31. Describe how the concept of hierarchical organization, as stated by Hughlings-Jackson, was consistent with the apparently disparate research findings of localizationist and antilocalizationist theories of brain function.
32. Briefly discuss what John Hughlings-Jackson meant by his concept of “hierarchical organization.”
33. What contributions have been made by the study of split-brain subjects to our understanding of the organization of cognitive abilities?
34. Sketch and label the main parts of a neuron.
35. Of what historical significance were the experiments of Fritsch and Hitzig?

36. What is the definitive evidence that refutes the nerve net hypothesis of the nervous system?
37. What does it mean for the cortex to be organized topographically?
38. What is a “Hebb synapse”?
39. How did Penfield contribute to our historical knowledge regarding brain and behavior?
40. Discuss the ways statistics are useful in dealing with individual differences in neuropsychological experiments.
41. Describe the contributions of psychometrics to the field of neuropsychology.

Answer Key

1. b
2. a
3. c
4. d
5. a
6. b
7. c
8. c
9. d
10. a
11. b
12. a
13. c
14. d
15. b
16. b
17. c
18. d
19. a
20. d
21. c
22. a
23. b
24. Gyri are folds or bumps in the cortex, while sulci are creases or indentations in the cortex.
25. The spinal cord conveys information into the brain and sends information from the brain to the muscles about movement. The brainstem mediates regulatory functions like eating and drinking, and the forebrain mediates cognitive functions.
26. Descartes believed the mind and body were separate entities. He viewed the nonmaterial mind as controlling the material body through the pineal body in the brain.
27. Darwin's theory inspired the study of nervous system functions in different species for comparison with one another. If all animals, including humans, have a common ancestor, then there will be similarities across species in brain structure and function.
28. Damage to the frontal lobe usually results in motor impairment of movements with the contralateral side of the body. Since damage to the left frontal lobe is associated with aphasia, it would be associated with motor impairments on the right side of the body.
29. Broca's clinical studies established that speech was associated with damage to the third frontal convolution of the cortex in the left frontal lobe. This is probably the first documented lateralized function in the human brain.
30. Wernicke created the first model of how the brain produces language where damage to the left temporal lobe would result in the inability to understand language, even though speech movements from Broca's area were intact and hearing preserved. This introduced the idea that independent modules handled different aspects of language processing even though they worked together.

31. In the hierarchical organization model of Hughlings-Jackson, he suggested that behaviors were represented in each level of the hierarchy, such that damage at one level leaves a simpler form of the behavior from the lower parts of the hierarchy. This was consistent with both localizationist and antilocalization research results.
32. Hughlings-Jackson suggested that the spinal cord, brainstem, and forebrain had developed successively, in that order, during evolution and that earlier-evolved animals and animals with injuries at higher levels would have simpler behaviors than those with the spinal cord, brainstem and forebrain intact.
33. Such studies have allowed for the study of the behavioral capacity of each hemisphere in isolation from the other, and these studies have revealed the relative lateralization of cognitive processes related to language in one hemisphere and spatial processing in the other hemisphere.
34. See Figure 1.9 *Major Parts of a Neuron* in the text.
35. Their studies demonstrated that the cerebral cortex is electrically excitable and that such electrical stimulation in different cortical areas produced movements in specific body regions contralateral to the hemisphere stimulated. This demonstrated topographical organization of the motor cortex.
36. Electron microscopy studies in the twentieth century showed that each neuron is a physically separate entity.
37. It means that a mapping of specific areas of the cortex is possible for information from or being sent to a particular body region. Such a mapping on the cortex represents a specific spatial transformation of the topography of the body surface.
38. A Hebb synapse is a synapse that has been altered to become more efficient on the basis of use, as in a synapse that takes part in a neural network that stores memory.
39. During neurosurgery Penfield electrically stimulated the exposed cerebral cortex of his patients and replicated data that had previously only been recorded from lab animals. This facilitated comparisons between invasive neurosurgical studies of the brains of lab animals and human brains.
40. Statistics have allowed for seeing patterns of abilities in large samples, as in the use of frequency distributions. Such summaries of data led to the discovery of the normal distributions of abilities and allow for the more accurate quantification of individual differences in ability associated with brain dysfunction in various specific brain regions.
41. The standardization of measures of various abilities developed for IQ testing has been employed to objectively evaluate the effects of dysfunction in specific brain regions. These data provided the first details of functional models of the human brain.

1. Which subdivision of the peripheral nervous system is responsible for the transmission of sensory signals from the body to the contralateral side of the brain?
 - A) the somatic
 - B) the autonomic
 - C) the spinal
 - D) the parasympathetic

2. The brain is organized so that the _____ mediates cognitive functions, the _____ is responsible for regulatory functions like eating and sleeping, and the _____ is responsible for communication with the motor system.
 - A) medulla, pons, midbrain
 - B) left hemisphere, right hemisphere, midbrain
 - C) forebrain, brainstem, spinal cord
 - D) amygdala, hippocampus, hypothalamus

3. Who thought that mental processes came from the heart, not the brain?
 - A) Plato
 - B) Aristotle
 - C) Hippocrates
 - D) Galen

4. If someone believes in a material brain that interacts with a nonmaterial mind, that person would be BEST called a _____.
 - A) monist
 - B) philosopher
 - C) dualist
 - D) psychologist

5. According to Descartes, which human brain structure was the locus of the mind?
 - A) the prefrontal lobe
 - B) the pineal body
 - C) the medial forebrain bundle
 - D) the cerebellum

6. In terms of the similarity of their ideas about nature, who is Alfred Wallace BEST paired with?
 - A) Pierre Flourens
 - B) Marc Dax
 - C) Paul Broca
 - D) Charles Darwin

7. Gall and Spurzheim were the first to propose the general theory that _____.
A) different parts of the brain had different functions
B) brains were composed of individual units called neurons
C) people use only a small fraction of their brains
D) head circumference is positively correlated with intelligence
8. Today, when neuroscientists use the term “mind,” most are using it as shorthand for:
A) spirit and soul.
B) nonmaterial aspects of experience.
C) heart function.
D) the collective functions of the brain.
9. A craniotomy was used for which purpose?
A) to surgically remove parts of the cerebral cortex
B) to excise subdural hematomas from the meninges of the brain
C) to measure the bumps and depressions of the skull
D) to observe the anatomical structures of an individual in a manner similar to the CAT scanner
10. From studying several cases of brain damage, who proposed that speech was located in the third convolution of the left frontal lobe?
A) Carl Wernicke
B) Paul Broca
C) Jean Baptiste Bouillaud
D) Santiago Ramón y Cajal
11. So-called fluent aphasia, associated with damage to the left temporal lobe, was first accurately described and located by _____.
A) Marc Dax
B) Paul Broca
C) Carl Wernicke
D) Pierre Marie

12. By studying individuals with damage to particular brain regions, memory researchers have found that different aspects of memories seem to be stored in different parts of the brain. As yet, however, the researchers have not determined how these elements are combined into an integrated memory of an event or stimulus. This is referred to as the _____ problem.
- A) mnemonic
 - B) levels-of-processing
 - C) source
 - D) binding
13. Who first presented compelling evidence that the nervous system is composed of individual cells and is not a “nerve net”?
- A) Golgi
 - B) Hughlings-Jackson
 - C) Ramón y Cajal
 - D) Goltz
14. Who coined the term “synapse”?
- A) Bernstein
 - B) Galvani
 - C) Huxley
 - D) Sherrington

Answer Key

1. A
2. C
3. B
4. C
5. B
6. D
7. A
8. D
9. C
10. B
11. C
12. D
13. C
14. D

1. All animals along a particular branch of a cladogram:
 - A) share specific physical or behavioral traits.
 - B) are genetically identical to one another.
 - C) are genetically unrelated to one another.
 - D) are behaviorally dissimilar.

2. The full set of a species' genes is known as its:
 - A) genome.
 - B) phenome.
 - C) chromosome.
 - D) nucleosome.

3. Modern chimpanzees and humans share about _____ percent of their genes.
 - A) 75
 - B) 95
 - C) 87
 - D) 99

4. The fossil evidence suggests that _____ was the first hominid to walk upright.
 - A) *Australopithecus*
 - B) *H. habilis*
 - C) *H. erectus*
 - D) *H. americanus*

5. The first hominids to walk upright probably appeared about _____ million years ago.
 - A) 1–2
 - B) 3–5
 - C) 6 – 8
 - D) 9–10

6. I left footprints over 3 million years ago. I was found by R. A. Dart. He named me:
 - A) *Homo habilis*.
 - B) Bigfoot.
 - C) *Homo erectus*.
 - D) *Australopithecus*.

7. I made simple stone tools. I am about 2 million years old. Louis Leakey found me in the Olduvai Gorge. My name is _____.
- A) *Australopithecus*.
 - B) *Homo erectus*.
 - C) *Homo habilis*.
 - D) *Homo sapiens*.
8. Which of the following is MOST ancient?
- A) *H. erectus*
 - B) *A. africanus*
 - C) *A. robustus*
 - D) *H. habilis*
9. Mammals with EQs larger than 1.0 would most likely have a _____ brain than is expected for mammals of that particular body weight.
- A) smaller
 - B) larger
 - C) more complex
 - D) less complex
10. The average weight of the human brain is between _____ ml.
- A) 800 and 1000
 - B) 1300 and 1400
 - C) 5000 and 10,000
 - D) 500 and 600
11. Choose the correct ordering of encephalization quotients for the following list of species (from highest to lowest).
- A) chimpanzee, human, monkey, cat
 - B) human, monkey, chimpanzee, cat
 - C) human, chimpanzee, monkey, cat
 - D) human, cat, chimpanzee, monkey
12. The encephalization quotient of modern humans is _____ that of chimpanzees.
- A) equal to
 - B) two times
 - C) three times
 - D) five times

13. Which of the following has the highest EQ?
- A) dolphin
 - B) elephant
 - C) cat
 - D) rat
14. The encephalization quotient relates a mammalian species':
- A) number of gyri to number of sulci.
 - B) actual brain size to the brain size of humans.
 - C) actual brain size to its expected brain size.
 - D) average brain weight to average body weight.
15. The evolutionary adaptation by which juvenile features of predecessor species become the adult features of descendent species is:
- A) phylogeny.
 - B) monotony.
 - C) neoteny.
 - D) ontogeny.
16. Falk has suggested that the opportunity for brain expansion in the hominids is directly related to:
- A) bipedalism.
 - B) development of more dispersed blood flow.
 - C) tool making.
 - D) language development.
17. The anatomical structures of rat or monkey brains:
- A) are functionally, but not structurally, similar to those of the human brain.
 - B) are structurally, but not functionally, similar to those of the human brain.
 - C) are structurally and functionally similar to the human brain.
 - D) cannot be compared to those of the human brain.
18. The MOST recent stage of hominid evolution has involved the:
- A) development of tool use.
 - B) development reading and writing.
 - C) development of agriculture.
 - D) development of artistic relics.

19. Homeobox genes dictate both _____ in fruit flies and _____ in the human nervous system.
- A) brain segmentation; cortical laminations
 - B) body segmentation; central nervous system segmentation
 - C) cortical segmentation; ocular development
 - D) cortical laminations; increased parietal lobe development
20. The study of nonhuman species is NOT useful in _____.
- A) understanding basic mechanisms of brain function
 - B) producing models of human neurological disorders
 - C) describing evolutionary adaptations
 - D) developing treatments for aphasia
21. A phylogenetic lineage refers to a:
- A) known sequence of fossil records describing the evolution of a species.
 - B) hypothetical sequence of animals representing consecutive stages in evolutionary history.
 - C) sequence of living animals having identical neurobiological and cognitive abilities.
 - D) listing of animals that have almost but not quite evolved.
22. Which of the following evolutionary sequences is correct, based on the phylogenetic lineage described in the textbook?
- A) striate cortex, large temporal lobes, large parietal lobes, large frontal lobes
 - B) large temporal lobes, large parietal lobes, large frontal lobes, striate cortex
 - C) striate cortex, large temporal lobes, large frontal lobes, large parietal lobes
 - D) large temporal lobes, striate cortex, large frontal lobes, large parietal lobes
23. Which of the following is phylogenetically furthest from humans?
- A) hedgehog
 - B) bush baby
 - C) rhesus monkey
 - D) opossum
24. According to the textbook, the brain region whose growth is MOST associated with the evolution of modern humans is the:
- A) cerebellum.
 - B) limbic system.
 - C) temporal lobe.
 - D) parietal lobe.

25. The larger frontal lobes in primates have come to be associated with:
- A) emotional processing.
 - B) visual functions.
 - C) balance and coordination.
 - D) complex social behaviors.
26. Relative to animals with poor vision, animals that have high-acuity color vision and good depth perception would be expected to have:
- A) a relative expansion of the occipital cortex.
 - B) a relative expansion of the frontal cortex.
 - C) a relative shrinkage of the occipital cortex.
 - D) no differences in cortical structure.
27. The human genome is comprised of:
- A) about 20,000 genes.
 - B) about 200,000 genes.
 - C) about 2 million genes.
 - D) about 23 genes.
28. Variables that influence whether and how a gene is expressed do NOT include:
- A) nutrition.
 - B) neglect.
 - C) education.
 - D) phrenological profile
29. Each human somatic cell contains _____ chromosomes comprised of _____ autosomes and _____ sex chromosomes.
- A) 46 pairs of; 23; 2
 - B) 46; 44; 2
 - C) 23 pairs of; one pair of; 22 pairs of
 - D) 23; 22; 2
30. Genetic mutations are:
- A) usually disruptive.
 - B) usually beneficial.
 - C) sometimes both disruptive and beneficial.
 - D) only known to be neutral.

31. Tay-Sachs disease is inherited through a _____ gene and Huntington's disease is inherited through a _____ gene.
- A) dominant; recessive
 - B) recessive; dominant
 - C) recessive; recessive
 - D) dominant; dominant
32. Down syndrome is an _____, while Tay-Sachs disease involves an _____.
- A) inherited dominant allele; abnormality in chromosome number
 - B) inherited dominant allele; inherited dominant allele
 - C) inherited recessive allele; inherited dominant allele
 - D) abnormality in chromosome number; inherited recessive allele
33. Phenotypic plasticity accounts for:
- A) the way that identical genotypes produce identical phenotypes.
 - B) the way that identical genotypes do not produce identical phenotypes.
 - C) the way that clones always look identical to the parent whose genotype is used.
 - D) the way that environmental differences don't alter the phenotype of identical twins.
34. Phenotypic plasticity is due in part to:
- A) changes in a genotype.
 - B) a genome's capacity to express a large number of phenotypes.
 - C) the variability of the Y chromosome.
 - D) errors in chromosome number.
35. The epigenetic code is a second code governing protein production through environmental influences that:
- A) turn on all genes.
 - B) turn off all genes.
 - C) block (suppress) the expression of some genes and unlock the expression of others.
 - D) alter some genetic sequences.
36. A common epigenetic mechanism that suppresses gene expression is:
- A) gene mutation.
 - B) chromosomal trisomy.
 - C) latent allele dominance.
 - D) DNA methylation.

37. According to Mendelian genetics theory experience _____, but it appears that through epigenetic mechanisms it _____.
- A) is often inherited; is never inherited
 - B) cannot be inherited; can be inherited
 - C) can be inherited in one subsequent generation; can be inherited across many generations
 - D) is sometimes inherited; is only inherited

Answer Key

1. A
2. A
3. D
4. A
5. B
6. D
7. C
8. B
9. B
10. B
11. C
12. C
13. A
14. C
15. C
16. B
17. C
18. B
19. B
20. D
21. B
22. C
23. D
24. D
25. D
26. A
27. A
28. D
29. B
30. C
31. B
32. D
33. B
34. B
35. C
36. D
37. B

Use the following to answer questions 1-4:

Match each hominid with the appropriate alternative from the list.

- a. toolmakers
- b. appeared in the past 200,000 years
- c. larger brain and migrated to Europe and Asia
- d. smaller brain but probably used tools

1. *A. africanus* _____

2. *H. habilis* _____

3. *H. erectus* _____

4. *H. sapiens* _____

Use the following to answer questions 5-8:

Place each of the milestones in an evolutionary context by matching the event with the appropriate time frame from those alternatives listed.

- a. 30,000 years ago
- b. 15,000 years ago
- c. 7000 years ago
- d. 2 million years ago

5. toolmakers _____

6. reading and writing _____

7. agriculture _____

8. cave paintings (art) _____

Use the following to answer questions 9-12:

Match each term with its definition below.

- a. dominant allele
- b. recessive allele
- c. codominance
- d. X chromosome

- 9. contributes to female physical and behavioral characteristics ____
- 10. routinely unexpressed as a trait ____
- 11. both alleles' traits are expressed completely ____
- 12. routinely expressed as a trait ____
- 13. Describe how protein mutations can be used as “molecular clocks” to compare the evolution of species.
- 14. What are the main differences between *H. erectus* and *Australopithecus*?
- 15. Place approximate dates of emergence on the following: *H. habilis*, *H. erectus*, *H. sapiens*, cave paintings, agriculture, and reading and writing.
- 16. Place the following in evolutionary order: *H. sapiens*, *H. neanderthalensis*, *A. africanus*, *H. habilis*, and *H. erectus*.
- 17. What is meant by the term “encephalization quotient”? How is it calculated? What is the approximate value for humans?
- 18. Identify three hypotheses that explain the evolutionary increase in hominid brain size.
- 19. Distinguish within species comparisons and between species comparisons as they pertain to studying brain–behavior relationships.

20. Discuss some of the drawbacks to the idea that a correlation between brain size and intelligence is all one really needs to consider when trying to determine differences in intelligence in different species.
21. Define species-typical behaviors.
22. Why might IQ tests be considered superficial or narrow measures of intelligence?
23. What are three types of animal studies that have made significant contributions to our understanding of the brain and behavior?
24. How does the field of human neuropsychology benefit from the study of nonhuman animals?
25. Describe the proposed evolutionary relationship between variations in cortical lobe structural developments and the complexity of behavior.
26. Distinguish between a genotype and phenotype.
27. Distinguish between autosomes and chromosome 23.
28. Name three genetic engineering techniques, and describe a unique benefit or feature about each.

Answer Key

1. d
2. a
3. c
4. b
5. d
6. c
7. b
8. a
9. d
10. b
11. c
12. a
13. Based upon evidence that Old World and New World Monkeys diverged phylogenically thirty million years ago and that there are twenty-four differences in their albumin amino acids, the molecular change is estimated to be one amino acid every 1.25 million years. Using this rate as a metric, it has been estimated that humans and chimpanzees diverged five to eight million years ago based upon the number of differences in the albumin amino acids between the two.
14. *H. erectus* had a much larger brain than *Australopithecus* and probably used more complex tools. Tool use in *Australopithecus* is implied in the structure of their hands.
15. *H. habilis*: 2 million years ago; *H. erectus*: 1.6 million years ago; *H. sapiens*: 200,000 years ago; cave paintings: 30,000 years ago; agriculture: 15,000 years ago; reading and writing: 7000 years ago
16. The evolutionary order is 1) *A. africanus*, 2) *H. habilis*, 3) *H. erectus*, 4) *H. neanderthalensis*, and 5) *H. sapiens*.
17. The encephalization quotient (EQ) is a measure of the ratio of brain weight compared with body weight for members of each species. The human EQ is estimated to be 7.30.
18. One hypothesis is that climate changes and associated increased challenges in acquiring food led to increased brain size. A second hypothesis is that increased brain size was favored due to increases in lifestyle complexity. A third hypothesis is that a slowed maturation rate favored larger brains.
19. Within species comparisons provide measures of variability in brain–behavior relationships in one species, while between species comparisons are based upon comparisons between samples of individuals from different species.
20. Brain size is very hard to measure accurately; it increases greatly during development and decreases in advanced age and due to disease. In addition, if the neuron is the significant cell in the brain for information processing, then the number of neurons in a brain and the complexity of their functional connections would be expected to be more likely to correlate with intelligence than simply the gross size of a brain.
21. These are behaviors typical of all members of a species.
22. Most IQ tests only measure performance in a small range of human abilities. Functional brain imaging studies have revealed individual and independent neural networks associated with different abilities measured by different intelligence tests. This implies that one intelligence test is not assessing all types of neural networks.

23. Three types of studies include: those seeking to understand basic neural mechanisms; those directed toward developing animal models of human neurological conditions; and those describing evolutionary and genetic influences on brain development.
24. Through the development of nonhuman animal models of specific human neurological conditions, neuropsychologists have been able to manipulate multiple, potentially causal variables to assess their roles and ultimately formulate treatments for these conditions in humans.
25. Correspondences between cortical lobe structural developments in the four cortical lobes and increased behavioral complexity have been pro-social. For example, phylogenic increases in the frontal lobes in the rhesus monkey are believed to be related to its more complex, group social lifestyle.
26. A genotype is one's genetic makeup and a phenotype includes one's resulting physical and behavioral traits.
27. Chromosomes 1 to 22 are autosomes whose genetic contributions are to physical appearance and behavior, while chromosome pair 23 contributes to the physical and behavioral sexual characteristics.
28. Three such techniques are: selective breeding, which involves selectively breeding individuals with one specific trait with individuals with that same trait; cloning, which involves production of a second individual from the genotype of the first "parental" individual; and transgenic techniques, which involve implanting or removing specific genes from the embryo to modify its genotype.

1. From the fossil record, it seems that monkey-like mammals or primates showed evidence of increasingly _____ that was unmatched.
 - A) longer tails
 - B) larger brains
 - C) more hair
 - D) longer jaws

2. Which is NOT a type of research that is currently being performed to reconstruct the story of human evolution?
 - A) qualitative
 - B) behavioral
 - C) archaeological
 - D) epigenetics

3. The MOST appropriate alternative for *Homo habilis* is _____.
 - A) chimpanzees
 - B) Louis Leakey
 - C) human adults, young chimps
 - D) southern ape

4. The MOST appropriate alternative for *Australopithecus* is _____.
 - A) chimpanzees
 - B) Louis Leakey
 - C) human adults, young chimps
 - D) southern ape

5. The MOST appropriate alternative for Jane Goodall is _____.
 - A) chimpanzees
 - B) Louis Leakey
 - C) human adults, young chimps
 - D) southern ape

6. The MOST appropriate alternative for neoteny is _____.
 - A) chimpanzees
 - B) Louis Leakey
 - C) human adults, young chimps
 - D) southern ape

7. The ancestor of all hominids is thought to be an animal somewhat like _____.
A) the chimpanzee
B) *Homo habilis*
C) *Australopithecus*
D) *Homo afarensis*
8. The theory that the genus *Homo* (human) began in Africa is based primarily on data from which of the following?
A) the fossil record
B) tools presently used in various locations around the world
C) the DNA of extinct hominids
D) historical records
9. The _____ has the largest encephalization quotient.
A) elephant
B) rat
C) chimpanzee
D) dolphin
10. Animals are used in neuropsychological research for all of the following reasons EXCEPT _____.
A) to show the need to understand basic brain mechanisms
B) to show the usefulness of designing animal models of human neurological disorders
C) to describe the ontogenetic development of the brain
D) to describe evolutionary and genetic influences on brain development
11. According to research by Hodos and Campbell, humans have inherited a complex striate cortex from which mammalian ancestor?
A) the bush baby
B) the opossum
C) the tree shrew
D) the rhesus monkey
12. We each receive _____ chromosomes from our father and _____ chromosomes from our mother.
A) 46; 46
B) 23 pairs of; 23 pairs of
C) 46 pairs of; 46 pairs of
D) 23; 23

13. Recessive alleles that are not visible in a parent's phenotype can be present in their genotype and are more likely to be expressed in their child's ____.
- A) phenotype if either parent contributes a dominant allele for that trait.
 - B) genotype if both parents contribute recessive alleles for that trait.
 - C) phenotype if both parents contribute recessive alleles for that trait.
 - D) genotype if both parents contribute dominant alleles for that trait.
14. If both parents contribute dysfunctional *HexA* genes (chromosome 15) to a child, the child is likely to exhibit ____; if only one parent contributes this allele, the child is ____ to exhibit this disorder.
- A) Huntington's disease; still going
 - B) Tay-Sachs disease; unlikely
 - C) Huntington's disease; unlikely
 - D) Tay-Sachs disease; still going
15. Consideration of epigenetics helps describe how one genome can code for:
- A) only one phenotype due to DNA dominance.
 - B) different phenotypes due to DNA-environment interactions.
 - C) only one phenotype due to a lack of mutations within the DNA.
 - D) different phenotypes due to mutations within the DNA.

Answer Key

1. B
2. A
3. B
4. D
5. A
6. C
7. C
8. A
9. D
10. C
11. C
12. D
13. C
14. B
15. B

1. Following damage to his frontal lobes, subject L. D. had lasting impairments in:
 - A) visual perception.
 - B) attention.
 - C) motor-skill acquisition.
 - D) balance.

2. Neuropsychology uses information from many disciplines. Which discipline is NOT one of those?
 - A) ethology
 - B) pharmacology
 - C) biophysics
 - D) mycology

3. Communication between cerebral hemispheres occurs via the:
 - A) somatic nerves.
 - B) lateral fissure.
 - C) arcuate fasciculus.
 - D) corpus callosum.

4. The folds or bumps characteristic of the cerebral cortex are called:
 - A) gyri.
 - B) sulci.
 - C) lobes.
 - D) nuclei.

5. The corpus callosum is the largest of the brain's:
 - A) subcortical nuclei.
 - B) commissures.
 - C) cortical lobes.
 - D) sensory nerves

6. The brain and spinal cord together make up the _____ nervous system.
 - A) autonomic
 - B) peripheral
 - C) central
 - D) somatic

7. Which of the following supported a cardiac hypothesis of behavior?
- A) Plato
 - B) Galen
 - C) Aristotle
 - D) Hippocrates
8. Descartes was an articulate proponent of _____.
- A) monism
 - B) dualism
 - C) the cardiac hypothesis
 - D) nonmaterialism
9. If a person believes that brain function is only the source of some behaviors, it is accurate to refer to that person as a:
- A) mentalist.
 - B) behaviorist.
 - C) materialist.
 - D) dualist.
10. With respect to the “mind–brain” problem, followers of Wallace and Darwin would MOST likely consider themselves to be _____.
- A) mentalists
 - B) materialists
 - C) dualists
 - D) agnostics
11. Two individuals developed similar theories of evolution at about the same time. Charles Darwin was one; the other was _____.
- A) William Osler
 - B) Pierre Flourens
 - C) Pierre Marie
 - D) Alfred Wallace
12. Materialism is the philosophical position that all behavior can be explained by the:
- A) workings of the physical nervous system and body alone.
 - B) interaction of the physical brain and nonphysical soul.
 - C) motivated pursuit of material well-being.
 - D) flow of cerebrospinal fluid between ventricles and muscles.

13. Darwin's principle that all animals' nervous systems evolved from that of a common ancestor predicted that:
- A) all living things can in theory be traced back to the same ancient unknown ancestor.
 - B) over time, nervous systems have come to have increasingly more in common at the neural level.
 - C) functionally different structures in different species share common ancestral genes and mechanisms.
 - D) brain-behavior relationships have remained largely unchanged during the course of evolution.
14. Although the phrenologists were misguided in many respects, Gall actually did report, more or less accurately, the first case of _____ following left frontal damage.
- A) cortical blindness
 - B) hysterical paralysis
 - C) loss of the ability to speak
 - D) personality change
15. Early support for lateralization and localization of function came from postmortem studies of:
- A) humans who had recovered function following stroke.
 - B) decorticate dogs trained on memory tasks.
 - C) regional differences in cell density.
 - D) humans with language disorders.
16. Although all of the individuals listed made contributions to our knowledge of the lateralization of language functions in the brain, _____ is generally credited with the MOST important findings.
- A) Dax
 - B) Bouillaud
 - C) Marie
 - D) Broca
17. The hypothesis that the ability to speak depends on the left frontal lobe is an example of:
- A) antilocalizationism.
 - B) lateralization of function.
 - C) mentalism.
 - D) phrenology.

18. The cortical area MOST closely associated with speech comprehension is the _____ lobe.
- A) temporal
 - B) frontal
 - C) occipital
 - D) parietal
19. Apraxia is the inability to:
- A) learn a new motor skill.
 - B) produce articulate speech.
 - C) make sequences of movements.
 - D) combine sensory stimuli into a coherent perception.
20. The currently used medical diagnosis “persistent vegetative state” MOST closely reflects the nervous system's:
- A) hierarchical organization.
 - B) conduction aphasia.
 - C) localization of function.
 - D) Hebb synapse.
21. A person who cannot understand how the brain ties together past perceptions and actions in a unified memory is pondering:
- A) apraxia.
 - B) the binding problem.
 - C) aphasia.
 - D) the neuron theory.
22. The scientist who discovers how a unitary perception is made from multiple streams of sensory information will have solved the:
- A) mind–body problem.
 - B) binding problem.
 - C) problem of other minds.
 - D) laterality conundrum.
23. Sherrington's studies of the reflex arc in dogs led him to conclude that:
- A) there are gaps between individual communicating neurons.
 - B) communicating neurons are directly connected with one another.
 - C) all neural communication is electrical in nature.
 - D) reflexes are coordinated by the pineal body, even in dogs.

24. The scientific discipline BEST associated with the development of intelligence tests is:
- A) neurology.
 - B) psychosurgery.
 - C) psychometrics.
 - D) neuropsychology.

Answer Key

1. B
2. D
3. D
4. A
5. B
6. C
7. C
8. B
9. D
10. B
11. D
12. A
13. D
14. C
15. D
16. D
17. B
18. A
19. C
20. A
21. B
22. B
23. A
24. C