TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

1) Canadian actor Michael J. Fox has been diagnosed with an early on-set case of Alzheimer's disease.
Answer: True False

2) The preliminary symptoms of Parkinson's disease include; tremors, rigidity, and slow movement.
Answer: True False

3) As many as 1 in 10 individuals diagnosed with Parkinson's disease are under the age of 40.
Answer: True False

4) Mirror neurons suggest that the capacity of even young children to imitate others may be an inborn behaviour.
Answer: True False

5) A neuron's resting state has a negative electrical charge of about 10 millivolts (a millivolt is one one-thousandth of a volt).
Answer: True False

6) The speed with which an action potential moves down the axon is determined by the axon's size and the thickness of its myelin sheath.
Answer: True False

7) Neurotransmitters are always consistent in their actions. They perform in an identical manner regardless of their location in the nervous system.
Answer: True False

8) The longer and thicker the axon the more rapid the impulse.
Answer: True False

9) Neurons are complex structures. Due to the action potential, they may be connected with no more than one to two hundred other neurons.
Answer: True False

10) The speed with which an action potential moves down the axon is determined by the axon's size and the thickness of its myelin sheath.
Answer: True False

11) In the nervous system, neurotransmitters are stored in the neuron's dendrites.
Answer: True False

12) Acetylcholine and serotonin are both excitatory neurotransmitters in the central nervous system.
Answer: True False

13) The abilities to regulate or suppress pain and to experience pleasure are influenced by endorphins.
Answer: True False

14) The fMRI scan also has the potential to treat some psychological disorders.
Answer: True ✓ False

15) The limbic system contains three primary components: the thalamus, hypothalamus, and hippocampus.
Answer: True ✓ False

16) The limbic system consist of a series of doughnut-shaped structures that are involved in self-preservation, learning memory, and the experience of pleasure.
Answer: ✓ True False

17) The association areas of the brain are closely linked to such higher order mental processes as thinking, language, memory, and speech.
Answer: ✓ True False

18) Research has shown that the central core, or the primitive brain, is very similar in all vertebrates.
Answer: ✓ True False

19) Motor neurons carry information from the brain to the muscle groups, and sensory neurons carry information from the sensory organs to the brain.
Answer: ✓ True False

20) Neurons that connect sensory and motor neurons carrying messages between the two are called complimentary neurons.
Answer: True ✓ False

21) The structures of the brain are organized in such a way that older, more primitive parts of the brain regulate the newer areas of the brain.
Answer: True ✓ False

22) The nervous system is divided into three main parts: the spinal cord, the central nervous system and the peripheral nervous system.
Answer: True ✓ False

23) Neurons that connect sensory and motor neurons are called cognitive neurons.
Answer: True ✓ False

24) Behavioural genetics holds the promise of developing new diagnostic and treatment techniques for genetic deficiencies that can lead to physical and psychological difficulties.
Answer: ✓ True False

25) The endocrine system is a chemical communication network that sends messages via hormones.
Answer: True ✓ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

26) What is the approximate negative electrical charge of a neuron's resting state?
A) 30 millivolts B) 100 millivolts C) 70 millivolts D) 150 millivolts
Answer: B

27) Which of the following best describes a neurotransmitter?
A) A brain disease that results in loss of memory and motor control.
B) The part of the brain that controls speech and language functions.
C) The part of the neuron that receives information from other neurons.
D) A chemical substance that carries information in the nervous system.
Answer: D

28) If a particular behaviour is associated with a small portion of the motor area, then it must be:
A) A large scale behaviour, like waving your arms.
B) A precise behaviour, like threading a needle with your fingers.
C) Unknown-we know very little about how behaviours map onto the motor area.
D) A facial behaviour, like smiling or frowning.
Answer: A

29) What is the synapse?
A) A temporary impairment that causes a memory lapse.
B) The long slender tail that leads away from the neuron's cell body.
C) A gap between an axon's terminal button and another neuron's dendrite.
D) The neural structure that connects the two cerebral hemispheres.
Answer: C

30) Which of the following is NOT a primary region in the sensory area of the cortex?
A) A region related to vision. B) A region related to body sensations.
C) A region related to sexual behaviour. D) A region related to hearing.
Answer: C

31) What happened to railroad worker Phineas Gage, whose case study is presented in the chapter on biology and behaviour?
A) An explosive accident blasted a spike through his brain.
B) He was born with only half a brain, yet he was able to live a normal life.
C) A surgical accident left him with a permanent memory defect.
D) After a severe fall that injured most of his brain, he received a transplant.
Answer: A

32) Damaged or insufficient myelin sheath would cause which of the following?
A) Rapid nerve impulses. B) Accelerated nerve impulses.
C) Slowed nerve impulses. D) Exaggerated nerve impulses.
Answer: C

33) Although too much dopamine is thought to be involved in _____, having too little of it in certain parts of the brain is involved in _____.
A) aggression; eating disorders
B) movement; alcoholism
C) depression; Alzheimer's disease
D) schizophrenia; Parkinson's disease
Answer: D

34) The prologue describes the case of Canadian Michael J. Fox, who fought privately and secretly a disease for seven years. Fox was experiencing the beginning stages of which of the following?
A) Alzheimer's disease
B) Parkinson's disease
C) Asperger's syndrome
D) Klinefelter's syndrome
Answer: B

35) To acknowledge Michael J. Fox for his crusade to find a cure for this particular disease, the University of British Columbia bestowed upon him an honorary degree. Michael J. Fox was a crusader for which of the following?
A) Alzheimer's disease
B) Parkinson's disease
C) Asperger's syndrome
D) Klinefelter's syndrome
Answer: B

36) Which of the following describes the part of the neuron that receives chemical signals from other neurons?
A) dendrite
B) terminal button
C) synapse
D) axon
Answer: A

37) Which concept describes the portion of the nerve cell from which information is passed to other nerve cell?
A) myelin sheath
B) axon terminal
C) dendrite
D) cell body
Answer: B

38) The movement of the action potential along the axon resembles which of the following?
A) Pendulum swinging back and forth.
B) Ball bouncing up and down in place.
C) Rat trying to find the end of a maze.
D) Row of dominoes falling from beginning to end.
Answer: D

39) Researchers from many areas are interested in the relationship between behaviour and biology. Which of the following terms describes the study of the brain, nervous system, and behaviour?
A) cognitive science
B) neuroscience
C) behaviourism
D) biophysics
Answer: B

40) The medulla is critical for survival, since it controls which of the following?
A) thoughts and decision making B) body rhythms
C) vision D) breathing and heart beat
Answer: D

41) After a serious auto accident, your friend has difficulty sitting securely in her chair, and she often drops her fork or misses her mouth as she tries to feed herself. She may have suffered damage to which area of the brain?
A) reticular formation B) cerebellum
C) pons D) adrenal cortex
Answer: B

42) Roberta learned to play soccer in third grade. She remembered how awkward she felt moving across the soccer field and trying to control the ball at the same time. In high school, she became an expert at soccer dribbling. During a game she feels her muscles and balance system are on "automatic pilot." This advanced level of coordination and control is probably the work of which of the following?
A) cerebellum B) thalamus C) hypothalamus D) pons
Answer: A

43) Dr. Yee used the analogy of a switchboard operator to describe the part of the brain that not only activates other specific brain areas but may also screen other stimuli depending on the state of awareness which is needed. Which part of the brain is he referring to?
A) cerebellum B) reticular formation
C) pons D) frontal lobe
Answer: B

44) Carey Price started playing hockey early in life. He catches hockey pucks with ease that gives the appearance that his muscles and balance system are on "automatic pilot." This advanced level of coordination and control is probably the work of which of the following?
A) pons B) hypothalamus C) cerebellum D) thalamus
Answer: C

45) Which area of the brain is primarily associated with basic functions relating to emotions and self-preservation, such as eating and reproduction?
A) Cerebral cortex B) Limbic system C) Thalamus D) Cerebellum
Answer: B

46) Psychology students were in a heated discussion. One group maintained that attention deficit disorder was a result of poor child rearing, while the other group believed that it stemmed from genetic traits beyond the control of parents and teachers. The students were discussing a question regarding which of the following?

A) Intolerance of activity level based on changes in the demands of social structures.
B) The role of drug treatments in reducing hyperactivity.
C) Nature verses nurture.
D) Chemical agency as opposed to genetic changes.

Answer: C

47) In the endocrine system, a hormone is defined as which of the following?

A) Major organ
B) Electrical messenger
C) State of rest
D) Chemical messenger

Answer: D

48) Messages travel in _____ form within a neuron, and in _____ form between neurons.

A) chemical; electrical
B) electrical; electrical
C) electrical; chemical
D) chemical; chemical

Answer: C

49) Which of the following substances serves as a neurotransmitter at the nerve-muscle junction and also in the central nervous system?

A) acetylcholine (Ach)
B) curare
C) dopamine
D) gamma-amino butyric acid (GABA)

Answer: A

50) The myelin sheath wraps around which of the following?

A) cell bodies
B) axon
C) dendrites
D) synapses

Answer: B

51) Which of the following describes one of the important functions of the hypothalamus?

A) Distinguishing foreground from background.
B) Heart rate.
C) The maintenance of body temperature.
D) The sense of physical balance.

Answer: C

52) Jason suffers from the symptoms of depression. Some psychologists believe that his depression could be caused by a deficiency of which neurotransmitter?

A) dopamine
B) serotonin
C) GABA
D) endorphins

Answer: B

53) A person who has difficulty naming objects that appear only in the right visual field most likely has which of the following conditions?

A) Broca's aphasia
B) Split brain
C) Dyslexia
D) Wernicke's aphasia

Answer: B

54) Long-distance runners sometimes report a natural high and a reduction in pain sensitivity associated with the release of which of the following?

A) norepinephrine B) acetylcholine C) endorphins D) dopamine

Answer: C

55) People like Michael J. Fox, who was described in the prologue, are finding relief from the symptoms of Parkinson's disease by implanting a device in the brain that delivers weak electric shocks to areas of the brain that control movement and abnormal nerve signals. Which of the following describes what this procedure is known as?

A) Neuro-pituitary surgery.
B) Motor cortex ablation.
C) Endovascular surgery.
D) Deep brain stimulation.

Answer: D

56) Nerves are composed of many of which of the following?

A) excitatory potentials
B) neurons
C) action fibers
D) muscles

Answer: B

57) Regardless of how strong a stimulus is, neurons still fire with the same amount of electrical impulse. Which of the following describes this fact?

A) Dendrite-axon law.
B) Split-brain law.
C) All-or-none law.
D) Excitatory-inhibitory law.

Answer: C

58) All of the following statements describe Michael J. Fox EXCEPT which one?

A) Fox's early onset of Parkinson's Disease is extremely rare, affecting 1 in 500 people.
B) Times Magazine nominated Fox as one of the world's top 100 heroes and pioneers.
C) The Michael J. Fox Foundations has raised more than $115 million for research and treatment.
D) Fox began his very public crusade to find a cure for Parkinson disease.

Answer: A

59) Which of the following describes the likely consequence of a disabling injury to a man's sympathetic autonomic nervous system?

A) Intermittent drowsiness, with naps needed throughout the day.
B) Inability to walk without a cane or other aid.
C) Frustration at not achieving orgasm during intercourse.
D) Difficulty detecting sensory signals.

Answer: C

60) If Dr. Holosko wants to view the work of the brain as it processes different words visually and auditorially, which of the following will he use?
A) Transcranical magnetic stimulation to see the effects of a "virtual lesion."
B) An electroencephalogram to record electrical wave patterns.
C) Functional magnetic resonance imaging for a structural view.
D) A positron emission tomography scans to see the intensity of work in parts of the brain.
Answer: D

61) Which of the following describes why the pituitary gland is called the "master gland"?
A) Controls the endocrine system.
B) Has sufficient power to defend against micro-organisms.
C) Regulates the response of the brain to an internal imbalance.
D) Is solely responsible for homeostasis.
Answer: A

62) Which of the following describes the chemical substances that communicate information from one neuron to another?
A) hormones
B) neurotransmitters
C) axons
D) terminal bulbs
Answer: B

63) A behavioural neuroscientist would be most interested in which of these questions?
A) How do personality differences relate to romantic attraction?
B) In what ways does culture influence perceptual abilities?
C) Can the causes of behavioural disorders be linked to medical factors?
D) How does learning style affect language development in young children?
Answer: C

64) Sally is a skilled gymnast whose specialty is the balance beam. Which part of her brain is most responsible for her ability to perform?
A) reticular formation
B) cerebellum
C) limbic system
D) hypothalamus
Answer: B

65) Research suggests that there is a positive correlation between the thickness of an axon's myelin sheath and which of the following?
A) Size of the neurotransmitters in the terminal buttons.
B) Importance of the message that is transmitted.
C) The number of dendrites that receive messages.
D) Neuron's excitatory or inhibitory nature.
Answer: B

66) What would be expected that the symptoms of Alzheimer's disease will do?
A) Be unaffected by ACh levels.
B) Improve if ACh levels are increased.
C) Be improved by boosting the levels of endorphins.
D) Worsen if ACh levels are reduced.
Answer: B

67) Which of the following describes where neurotransmitters are stored?
A) In the cell body.
B) At the end of the dendrites.
C) Inside the myelin sheath.
D) In terminal buttons.
Answer: D

68) Where is the higher mental function located that distinguish human brains from other species?
A) In the cerebellum.
B) In the cerebral cortex.
C) In the thalamus and hypothalamus.
D) In the limbic system.
Answer: B

69) Which of the following best describes the functions of the hypothalamus?
A) information processing
B) cortical arousal
C) motor coordination
D) basic survival
Answer: D

70) Adriana and David are fraternal twins. Adriana is exceptionally outgoing and friendly, and David is extremely shy. What would behavioural geneticists most likely attribute their personality differences to?
A) Equal influence of environmental and inheritance factors.
B) Inherited factors.
C) Neither environmental nor inheritance factors.
D) Environmental factors.
Answer: B

71) Which of the following describes why it is difficult to study the specialized abilities of the left and right cerebral hemispheres in the brains of normal individuals?
A) It is difficult to identify the boundary between the two hemispheres.
B) The left side of the brain controls the right side of the body, and vice versa.
C) People won't submit for unnecessary brain surgery.
D) The two hemispheres share information quickly and completely.
Answer: D

72) What is the frontal lobe?
A) It contains the hippocampus.
B) It is a division of the limbic system.
C) It is involved in hearing.
D) It is involved in voluntary muscle movement.
Answer: D

73) Which describes the Lateralization of language ability?
A) It cannot be compared between the two genders.
B) It is stronger in women than in men.
C) It is stronger in men than in women.
D) It is equal between men and women.
Answer: C

74) Which analogy describes the function of myelin?
A) A portable battery charger.
B) Insulation packed around a hot water pipe.
C) Jumper cables used to boost a dead battery.
D) A vitamin taken to supply necessary nutrients.
Answer: B

75) Which of the following describes the important function of the autonomic nervous system?
A) Handling simple reflexes.
B) Maintaining alert consciousness.
C) Successfully resolving emergencies.
D) Making future plans.
Answer: C

76) Which of the following defines another name for a biopsychologist?
A) Medical psychologist
B) Psychic practitioner
C) Clinical diagnostician
D) Behavioural neuroscientist
Answer: D

77) Broca's area is primarily responsible for which function?
A) speech production
B) memory
C) emotions
D) speech comprehension
Answer: A

78) What does the hypothalamus and pituitary gland control when they are working together?
A) Metabolic rate
B) Emotional reactions
C) Sugar metabolism
D) Most other endocrine glands
Answer: D

79) Which of the following describes the neurons that transmit information from the perimeter of the body to the central nervous system?
A) interneurons
B) sensory (afferent) neuron
C) motor (efferent) neurons
D) spinal neurons
Answer: B

80) Which of the following describes the basic cell in the nervous system?
A) neuron
B) medulla
C) spinal cord
D) muscle
Answer: A

81) After being fired by the neuron, a neurotransmitter is absorbed into the axon terminal. Which of the following describes this process?
A) inhibition B) myelination C) endorphing D) reuptake
Answer: D

82) In which field of study do researchers attempt to identify the effects of heredity on psychological characteristics?
A) neurological psychology B) environmental biology
C) behavioural genetics D) evolutionary psychology
Answer: C

83) The "all-or-none law" refers to which fact about the nervous system?
A) People cannot function if parts of their brains are removed.
B) Neurons are either "on" or "off"; there is no in-between.
C) More intense stimuli provoke stronger action potentials.
D) Neurons will die if they do not have enough blood supply.
Answer: B

84) Which of the following statements describe an action potential?
A) All neurons have the same frequency of impulses they communicate.
B) Neurons differ in the frequency of impulses they communicate.
C) Through the same neuron, impulses can move at different strengths.
D) Through the same neuron, impulses can move at different speeds.
Answer: B

85) Which neurotransmitter is found in the parasympathetic nervous system as well as in the central nervous system?
A) acetylcholine B) norepinephrine C) GABA D) dopamine
Answer: A

86) Which of the following is the primary inhibitory neurotransmitter in the nervous system?
A) GABA B) Acetylcholine C) Dopamine D) Norepinephrine
Answer: A

87) The speed of transmission in a neuron will occur fastest if the myelin sheath around the axon is which of the following?
A) Absent. B) Uncovered.
C) Not highly concentrated. D) Highly concentrated.
Answer: D

88) What is a neuron?
A) A chemical substance transmitted in the bloodstream.
B) The basic unit of the nervous system.
C) One of many kinds of muscles found in the motor system.
D) The sensory apparatus involved in balance.
Answer: B

89) In the endocrine system, which organ controls the pituitary gland?
A) Parathyroid gland
B) Adrenal gland
C) Hypothalamus
D) Thymus
Answer: C

90) Surgeons have found that implanting a device in the brain that delivers weak electric shocks to areas of the brain that control movement and abnormal nerve signals may offer relief for people living with which of the following?
A) Klinefelter's syndrome
B) Alzheimer's disease
C) Parkinson's disease
D) Asperger's syndrome
Answer: C

91) The dendrite of a neuron performs which role?
A) Releases neurotransmitters into the synapse.
B) Performs the cell's metabolic activities.
C) Passes information along to other neurons.
D) Receives information from other neurons.
Answer: D

92) A group of Canadian researchers examine the effects of introducing a strong magnetic field in a small area of the brain. They wants to see how such a "virtual lesion" changes normal brain functioning. What type of scan is the research group using?
A) PET
B) TMS
C) fMRI
D) EEG
Answer: B

93) In order to study the brain wave activity of different areas of the brain, researchers use which of the following techniques?
A) CAT scan (computerized axial tomography)
B) NMR scan (nuclear magnetic resonance)
C) PET scan (positron emission tomography)
D) EEG (electroencephalogram)
Answer: D

94) People who are unusually short or tall may have abnormalities in which endocrine gland?
A) Pancreas
B) Thymus
C) Testis
D) Pituitary
Answer: D

95) The neurotransmitter acetylcholine has a major role in which behavioural function?
A) sexual arousal
B) memory
C) mood control
D) pleasurable feelings
Answer: B

96) A neurotransmitter affects particular neurons, but not others, depending upon whether the:
A) Receiving neuron is in its resting state.
B) Receiving neuron has a suitable receptor site.
C) Nerve impulse acts according to the all-or-none law.
D) Receiving neuron expects a message to arrive.
Answer: B

97) Which task could a "split-brain" patient perform if shown a ball in his left visual field?
A) Throw it but be unable to name it.
B) Refer to it in several different languages.
C) Name its color but not its shape.
D) Name it but be unable to throw it.
Answer: A

98) Which of the following does the activation of the autonomic nervous system require?
A) No conscious or voluntary action.
B) Reflexive reactions of the spinal cord.
C) Conscious, deliberate action.
D) Stimulation by the somatic system.
Answer: A

99) What is the protective coating around the neuron that speeds transmission of neural impulses?
A) myelin sheath
B) refractory coating
C) reticular formation
D) axon terminal
Answer: A

100) If you hear a sudden, loud noise, which of the following can immediately activate other parts of the brain to produce general bodily arousal?
A) medulla
B) hypothalamus
C) reticular formation
D) thalamus
Answer: C

101) Sequential information processing is a characteristic of the _____ hemisphere, and the recognition of patterns and drawings is characteristic of the _____ hemisphere.
A) right; left
B) left; left
C) right; right
D) left; right
Answer: D

102) The sympathetic and parasympathetic autonomic divisions have opposing effects on the behaviours they control. What is the most likely consequence of this arrangement?
A) The person will often be left in a state of confusion.
B) The body's level of emergency preparedness can be quickly changed.
C) Sensation and movement will sometimes become confused.
D) Afferent and efferent neurons will sometimes exchange their roles.
Answer: B

103) While watching her favourite television comedy, Laura falls fast asleep. Even though her boyfriend Rob tries hard to wake her, he simply cannot open her eyes. Which part of Laura's brain is Rob trying to activate?

A) thalamus
B) sensory cortex
C) Wernicke's area
D) reticular formation

Answer: D

104) Behaviour that is reflexive, or automatic and involuntary, is generally regulated by which of the following?

A) somatic nervous system
B) brain
C) peripheral nervous system
D) spinal cord

Answer: D

105) Shirley has no desire to breastfeed her newborn daughter, and she seems uninterested in her partner's offer to cuddle. Her doctor may want to consider low levels of which of the following as one explanation for Shirley's low desire?

A) Thyroxine
B) Somatotropin
C) Estrogen
D) Oxytocin

Answer: D

106) If a person's cerebellum were damaged in an accident, you would expect that person to have problems with which of the following?

A) seeing and hearing
B) breathing
C) speaking
D) muscle coordination

Answer: D

107) What is the language disorder in which speech sounds fluent, but makes no sense?

A) Wernicke's aphasia
B) split-brain syndrome
C) apraxia
D) Broca's aphasia

Answer: A

108) All of the following statements describe hormones EXCEPT which one?

A) Hormones produced by the thymus are important for immune system functions.
B) Most health experts now encourage menopausal women to undergo hormone replacement therapy.
C) The hormone oxytocin may be beneficial for social interactions, leading to greater trust among individuals.
D) Steroid use has been associated with heart attacks, strokes, and cancer.

Answer: B

109) Excitatory messages received across the synapse:

A) tell the receiving neuron to trigger an action potential.
B) stimulate the neuron to prevent an action potential.
C) have no effect on the receiving neuron.
D) cause the axon to vibrate physically.

Answer: A

110) You can move your pen skillfully across the page and do the latest dance step thanks to the functioning of which division of your nervous system?
A) somatic B) parasympathetic C) sensory D) sympathetic
Answer: A

111) The fact that your heart is beating reflects that the _____ division of the peripheral nervous system is operating; reading this question and selecting the correct answer reflects the operation of the _____ division.
A) somatic; autonomic B) parasympathetic; sympathetic
C) sympathetic; parasympathetic D) autonomic; somatic
Answer: D

112) The parasympathetic nervous system is responsible for which aspect of behaviour?
A) Taking care of the body's functions at rest. B) Preparing the body for emergencies.
C) The integration of sensory information. D) Facilitation of newly learned actions.
Answer: A

113) Which organ of the endocrine is considered the "master gland"?
A) Ovary B) Thyroid C) Testes D) Pituitary
Answer: D

114) Which of the following describes the part of the brain which consists of a bundle of nerve fibers connecting the halves of the cerebellum?
A) reticular formation B) pons
C) thalamus D) medulla
Answer: B

115) Injury to which of the following would leave a person with serious handicaps in both vision and hearing?
A) cerebellum B) hypothalamus
C) reticular formation D) thalamus
Answer: D

116) Electrical stimulation of which of the following, via an implanted electrode would likely trigger false visual or auditory sensations even when the sense organs themselves remain unstimulated?
A) reticular formation B) hypothalamus
C) cerebellum D) thalamus
Answer: D

117) Information from the eyes, ears, and skin which must be communicated to higher brain levels travels through which of the following?
A) cerebellum B) sensory cortex C) thalamus D) ventricles
Answer: C

118) What describes the brain organ that interacts most closely with the pituitary gland?
A) Pons B) Cerebral cortex C) Hypothalamus D) Thalamus
Answer: C

119) If estrogen can be used to replace the missing hormone in women, could testosterone be used for older men? A physician would probably advise which of the following?
A) That testosterone builds muscles and good health in older men.
B) That most men maintain high testosterone levels throughout life.
C) That all hormones are beneficial.
D) That testosterone can increase risk of heart attacks, strokes, cancer, and aggressive behaviour in older men.
Answer: D

120) Where in the neuron can hereditary information be found?
A) The myelin sheath B) The cell body
C) The dendrite D) The axon
Answer: B

121) The central nervous system (CNS) consists of which of the following?
A) Neurons located in sensory organs or that contact muscles.
B) The brain structures located centrally in the brain, covered by other neural tissue.
C) All neurons whose axons are covered by myelin sheath.
D) The brain and spinal cord.
Answer: D

122) The sympathetic portion of the nervous system controls which aspect of behaviour?
A) The memory and thought processes. B) The conscious decision making.
C) The automatic, emotional responses. D) The voluntary muscular reactions.
Answer: C

123) What can be concluded about the causes of gender differences?
A) The differences are caused by innate biological factors rather than learning or social experiences.
B) The differences are caused by differences in the early social experiences of girls and boys.
C) The differences are caused equally by biological/genetic factors and by early childhood experiences.
D) Causes of male/female gender differences cannot be identified with certainty because the data are correlational and descriptive.
Answer: D

124) Which feature of the neuron makes it distinct from other cells in the body?
A) The fact that it has a nucleus. B) Its ability to function well without oxygen.
C) Its ability to communicate with other cells. D) Its rapid rate of reproduction.
Answer: C

125) What physically holds the neuron in place?

A) The arteries
B) Other neurons
C) The glial cells
D) The muscle tissue

Answer: C

126) The field of behavioural genetics is concerned with which aspect of psychological functioning?

A) The impact of hormones on mood.
B) The connection between brain measures and thoughts.
C) The treatment of neurological disorders.
D) The effects of heredity on psychological characteristics.

Answer: D

127) All of the following describe brain functioning EXCEPT which one?

A) The issue of stem cell research is a controversial, ethical issue that produces varied opinions-even among psychologists.
B) Neurons in the central nervous system cannot be replaced; once they die, they are gone forever.
C) Stimulating the brain's production of dopamine may help to reduce the symptoms of Parkinson's disease.
D) Removing diseased areas of the brain can sometimes help relieve seizures.

Answer: B

128) Although "pleasure centers" are found at many brain sites, where is the most common place to find them?

A) The medulla.
B) In the cerebellum.
C) In the association areas of the cerebral cortex.
D) The limbic system.

Answer: D

129) The concept of neuroplasticity is best described by which statement?

A) The brain ceases to create changes after the age of one year.
B) People who have injured their brain in adulthood cannot regain their lost functions.
C) Each hemisphere has a specialized function not shared by the other hemisphere.
D) The neurons and synapses in the brain reorganize themselves throughout life.

Answer: D

130) Which feature of the synapse makes possible greater variety and flexibility in the nervous system?

A) The ability to manufacture enzymes
B) Hard-wired connections between neurons
C) The ability to resist chemical reuptake
D) The presence of a gap between neurons

Answer: D

131) Research involving rats with spinal cord injuries has demonstrated which of the following?
A) The spinal cord can be fused with sections for the occipital lobe.
B) The temporal lobe is able to compensate for movement restrictions.
C) Neurons transplanted from the peripheral nervous system may restore movement.
D) A section of the myelin sheath can be used to restore function.
Answer: C

132) Research with split-brain patients has shown which of the following?
A) The temporal lobe is not needed for hearing if the occipital lobe is intact.
B) An object shown to the right hemisphere only will be seen but cannot be named.
C) An object shown to the left hemisphere only will not be seen at all.
D) Mental stimulation can reunite the halves of their brain.
Answer: B

133) Which of the following is taking place when a neuron is at its resting state?
A) There is more negative ions inside the neuron than outside it.
B) There is an equal number of positive and negative ions inside the neuron.
C) There is an equal number of positive and negative ions outside the neuron.
D) There is fewer negative ions inside the neuron than outside it.
Answer: A

134) Which of the following describes how hormones differ from neurotransmitters?
A) They travel throughout the body and move at a slower rate
B) Conserve more energy as needed
C) Exchange chemical make up more readily
D) They are more robust and effective in escalating behaviour
Answer: A

135) Which organ in the endocrine system is also part of the nervous system?
A) Ovary B) Hypothalamus C) Thymus D) Parathyroid
Answer: B

136) Monica's doctor has requested a test that will show the amount and location of activity in her brain just after she is injected with a radioactive isotope. Which of the following procedures will be used?
A) TMS B) EEG C) CAT scan D) PET scan
Answer: D

137) Arnold is experiencing problems with walking and controlling his muscles. His doctor thinks he may have multiple sclerosis, a disease that occurs when which of the following takes place?
A) Too little serotonin is being released into the synapse.
B) Too much dopamine is released into the synapse.
C) The deterioration of the myelin sheath.
D) A neuron's dendrites shrink in size.
Answer: C

138) The advantage of transcranial magnetic stimulation (TMS) is that it can do which of the following?
A) Provide diagnostic information and treat brain disease or injury.
B) View and remove dysfunctional brain area.
C) Produce a picture of electrical activity in the brain.
D) Produce pictures of the brain and spinal cord.
Answer: A

139) What does the hierarchical organization of the nervous system explain?
A) Why lower regions of the brain control higher regions of the nervous system.
B) Why most primitive regions of the brain are no longer associated with important functions.
C) Why oldest regions of the brain are associated with more advanced functioning.
D) Why more recently evolved regions of the brain are associated with advanced functioning.
Answer: D

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

140) Why do psychologists study the brain and nervous system, and what is this field of study generally referred to?
Answer: Psychologists who specialize in considering the ways in which the biological structures and fur the body affect behaviour are known as behavioural neuroscientists (or biopsychologists). They seek to answer several key questions: How does the brain control the voluntary and involu functioning of the body? How does the brain communicate with other parts of the body? What the physical structure of the brain, and how does this structure affect behaviour? Are psychological disorders caused by biological factors, and how can such disorders be treated?

141) Draw a typical neuron and label its major parts accurately. Briefly describe the functions of the parts labeled on your diagram.
Answer: The drawing should contain: (a) dendrites, which should appear as clusters of branchlike extensions from the cell body; (b) the cell body, which should appear as a roundish structure in the center of the diagram; (c) the axon, which should appear as a long tube extending from the cell body; and (d) myelin sheath, which should appear bracketing portions of the axon. The diagram should also include a terminal button, a bulblike ending to the axon.

142) A neuron contains three primary structures: the cell body, axon, and dendrites. What are the functions of each of these structures?

Answer: A neuron is the basic building block of the nervous system, and it contains three primary structures. The first structure is the cell body: it contains the nucleus and houses inherited information that governs how the neuron functions. Thus, the cell body directs the growth and nourishment of the neuron. One of the most important and distinct features of the neuron is its ability to communicate to other nerve cells. The axon, the second structure, is important in this communication process. The axon is a tube-like extension of the cell body, and it is responsible for carrying messages away from the cell body of one neuron and toward other neurons. Axons vary in length, and they contain terminal buttons that send messages to other neurons via neurotransmitters. Dendrites represent the final structure, and they are also critical for interneuron communication. They are fibers along the outside of the cell body, and these fibers receive chemical messages from other neurons. Damage to any of these structures can lead to the neuron's inability to sustain itself or to communicate effectively.

143) Briefly explain how one neuron sends a message to another neuron.

Answer: When neurons are at rest, they have a negative electrical charge. When a message is received from another neuron, the neuron becomes more positive. As the charge reaches a critical level of positivity, an action potential occurs and the electrical message travels along the neuron's axon. Once the message passes any point of the axon, that section becomes negatively charged once again, and the neuron is unable to fire again immediately. When a nerve impulse reaches the end of the axon, the terminal buttons on the ends of the axon release neurotransmitters into the synapse. Dendrites of nearby neurons receive messages from the neurotransmitters that "fit" onto their particular receptor sites. If the concentration of excitatory neurotransmitters that have been received is higher, then the neuron fires. If the concentration of inhibitory neurotransmitters that have been received is higher, then the neuron will not fire.

144) The brain contains many different types of neurotransmitters, including dopamine and acetylcholine. Briefly describe the functions of dopamine and acetylcholine, including what happens when levels of these neurotransmitters are too high and/or too low.

Answer: Dopamine generates excitatory messages, and is typically found in the brain. It is responsible for movement, attention, and learning. When the level of dopamine in the brain is too high, then it is not unusual for a person to exhibit behaviours that are associated with schizophrenia or other severe mental disorders. When the level of dopamine is too low, a person is likely to manifest such symptoms of Parkinson's disease as shaky and uncoordinated movement. Acetylcholine can be found throughout the central and peripheral nervous systems. Within the autonomic nervous system, it generates excitatory messages; it produces inhibitory messages elsewhere. Acetylcholine plays an important function in muscle control and movement, communicating between the skeletal muscles and the nervous systems. Memory is also affected by acetylcholine levels. Lower levels of acetylcholine has been correlated with the development of Alzheimer's disease.

145) How does the EEG recording differ from those provided by the TMS scan?

Answer: The electroencephalogram (EEG) provides a recording of brain wave activity which can be used in understanding abnormal patterns of electrical patterns in the brain. Recordings are made by placing electrodes on the outside of a person's skull, and then a machine measures electrical wave patterns. Recent advances in EEG technology have enabled psychologists to transform the electrical activity into a "picture" of the brain. Such innovation allows psychologists to be more precise in how they diagnose disorders of the brain.

146) What is aphasia, and what is the difference between Broca's aphasia and Wernicke's aphasia?

Answer: The term aphasia generally refers to problems with language, and there are two major forms of aphasia. Broca's aphasia is associated with laboured speech that often does not follow the rules of grammar. For example, all the words they want to say are spoken, but they are spoken in a disorganized and grammatically inappropriate way. Often, though, people with this form of aphasia struggle to find the words they want to say, and their speech is broken and incomplete. Wernicke's aphasia is associated with problems in understanding what other people are saying, as well as with problems in producing language. People who suffer from this form of aphasia often speak quite fluently, showing no gaps between words or ideas. However, the content of their speech does not make sense, potentially leading to frustration in the audience trying to understand what is being said.

147) Identify the major functions of these three brain structures: hypothalamus, cerebellum, and the reticular formation.

Answer: The hypothalamus is a small structure in the brain that maintains the body's internal balance or homeostasis. For example, the hypothalamus works to keep the body at a constant temperature, triggering perspiration when the body is hot and shivers when the body is cold. The hypothalamus is also involved in basic behaviours such as eating, self-protection, and sexual behaviour.

148) You have been asked to prepare a brief summary for your school's newspaper that describes research on the differences between the left and right hemispheres. What would you generally say in this summary?

Answer: Research on lateralization and split-brain patients has shown that the left and right hemispheres do specialize in different types of information and functions. The left hemisphere appears to specialize in skills that relate to verbal competence (e.g., speaking, thinking, and reasoning), and the right hemisphere specializes in nonverbal tasks (e.g., music and emotional expression). Although there does appear to be differences in the specialization of the brain's hemispheres, these differences are small. And such lateralization can vary across culture. For example, language functions are often specialized in men's left hemisphere. For women, in contrast, language functions are more equally distributed between both hemispheres. As another example, when native speakers of Japanese process information about vowel sounds, there is greater activity in the left hemisphere. Among North and South Americans and Europeans, the activity is primarily in the right hemisphere. What psychologists do not agree on, however, is why those differences exist or where they come from. The degree of specialization varies across individuals, and it is likely the case that the left and right hemispheres work together much of the time to process information that the brain receives.

149) How could a right-handed patient recovering from split brain surgery be unable to describe an object placed in their left hand while blindfolded?

Answer: Stimulus tactile stimulus of the object in the left hand is sent to the sematosensory cortex in the right hemisphere. Most right handed people use the left hemisphere for speech. Although the right hemisphere may have the information, it cannot send it to the left hemisphere due to the surgery.

150) Briefly describe the peripheral nervous system and its four divisions.

Answer: The peripheral nervous system (PNS) extends from the central nervous system (brain and spinal cord) to the extremities of the body through a system of neurons with long axons and dendrites. The two major divisions of the PNS are the somatic and autonomic divisions. The somatic division is responsible for voluntary movements and for the transmission of information to and from such areas as the eyes, ears, and fingers. The autonomic division regulates organs that are necessary for survival, like the heart and lungs. It operates even without our awareness, because it would be disastrous if we forget to remind ourselves to breathe or our heart to beat. The autonomic division is further subdivided into the sympathetic and parasympathetic divisions, and these subdivisions are most noticeable during emergencies. The sympathetic division prepares the body for emergencies and helps us to either fight stressors or to flee from them. If you were inside a burning house, for example, the sympathetic division would produce the necessary arousal that would allow you to either run out of the house for safety, or to find a fire extinguisher to help battle the blaze. The parasympathetic division restores the body to its resting state once an emergency has ended. Once it is clear that your house was not on fire, your breathing and heart rate return to normal, and you eventually feel a sense of calm. The parasympathetic system is also responsible for storing nutrients and oxygen for the body to use should another emergency arise.

151) Describe some of the major contributions in the field of behavioural genetics that further our understanding of the nature and nurture debate in psychology.

Answer: Behavioural geneticists study the ways in which behaviour and cognition are affected by heredity. That is, they approach the understanding of human behaviour and cognition from a nature perspective, arguing that much of what psychologists study can be understood by understanding a person's genetic makeup. Our genetic makeup predisposes us to act in particular ways to our environment, or to even prefer one kind of environment over another. Behavioural geneticists do not contend that heredity is the only influence on behaviour and cognition, but they do believe heredity is very important.
Research in behavioural genetics has substantially contributed to our understanding of how hur behave and think. For example, research has shown that there may be a genetic component to c abilities, personality traits (e.g., novelty-seeking and sociability), sexual orientation, and disord (e.g., schizophrenia and autism). Research has also revealed strategies for identifying, treating, or coping with inherited behaviours. Gene therapy has allowed scientists to explore ways of treating genetic diseases, and genetic counseling has helped people understand the kinds of risks they may pass on to their offspring. Behavioural genetics is a relatively new subfield in psychology, and its popularity and importance will continue to grow.

152) In what ways are hormones and neurotransmitters similar to and different from each other?

Answer: Both hormones and neurotransmitters communicate chemical messages to cells in the body. However, they vary in how quickly they travel and in their modes of transmission. Whereas neurotransmitters move between neurons very rapidly (less than a second), hormones require several minutes to reach their target cells and to have their intended effect. Neurotransmitters travel to specific neurons in a network; hormones, in contrast, flow in the bloodstream and move throughout the whole body. Only those cells that are receptive to the hormone's message will be activated. Finally, the messages that hormones transmit relate closely to growth in the body. The endocrine system is responsible for producing hormones, a primary component of which is the pituitary gland. The pituitary releases hormones that regulate growth, and people with extreme deviations from normal height often have abnormalities in this gland. Without neurotransmitters and hormones, the various systems of the body would be unable to function effectively, leading to many problems in behaviour and cognition.

1) FALSE
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13) TRUE
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25) FALSE
26) B
27) D
28) A
29) C
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31) A
32) C
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