Neuroscience Exam

AP Psychology

Mr. Beward

Multiple Choice (30 questions, 60 points)—Please provide the BEST answer to each of the following questions. Good Luck and Merry Christmas!

1. When a person is suffering from severe pain, the type of drug best able to alleviate the pain is
   1. An opiate
   2. A barbiturate
   3. A stimulant
   4. A depressive
   5. A hallucinogen
2. Damage to a person’s occipital lobe would most likely affect a person’s
   1. Balance
   2. Ability to develop plans
   3. Vision
   4. Fine motor movements
   5. Language processing
3. Which of the following neurotransmitters have been linked to Parkinson’s disease and schizophrenia?
   1. Acetylcholine
   2. Dopamine
   3. GABA
   4. Norepinephrine
   5. Serotonin
4. Damage to which of the following brain structures may cause the inability to detect the emotional significance of facial expressions, especially those detailing fear?
   1. Hippocampus
   2. Thalamus
   3. Cerebellum
   4. Hypothalamus
   5. Amygdala

Questions 5 and 6 refer to the illustration below:

1. Which of the following brain regions is indicated by the arrow?
   1. Cerebellum
   2. Amygdala
   3. Hypothalamus
   4. Hippocampus
   5. Pons
2. What is the primary function of the brain region indicated by the arrow?
   1. Memory formation
   2. Sleeping, waking, and dreaming
   3. Problem solving
   4. Regulation of body temperature
   5. Emotional responses
3. Which of the following parts of the brain is most responsible for decision-making?
   1. Reticular formation
   2. Corpus callosum
   3. Hypothalamus
   4. Cerebral cortex
   5. Pituitary gland
4. A brain tumor that results in obesity would most likely be located in the
   1. Left frontal lobe
   2. Base of the brain stem
   3. Area of the hypothalamus
   4. Reticular activating system
   5. Somatosensory cortex
5. People who have experienced severe damage to the frontal lobe of the brain seldom regain their ability to
   1. Make and carry out plans
   2. Recognize visual patterns
   3. Process auditory information
   4. Process olfactory information
   5. Integrate their multiple personalities
6. For most people, speech functions are primarily localized in the
   1. Right cerebral hemisphere
   2. Left cerebral hemisphere
   3. Occipital lobe
   4. Corpus callosum
   5. Cerebellum
7. Which of the following is a brain-imaging technique that produces the most detailed picture of brain structures?
   1. EEG
   2. MRI
   3. PET
   4. CAT
   5. EMG
8. Which of the following will NOT increase behavior and mental activity?
   1. Caffeine
   2. Cocaine
   3. Benzedrine
   4. Amphetamines
   5. Barbiturates
9. Which of the following areas of the body has the most sensory neurons?
   1. Back
   2. Foot
   3. Ears
   4. Lips
   5. Wrist
10. Stimulation of portions of the left temporal lobe of the brain during surgery will cause the patient to
    1. See lights
    2. Lose the sense of smell
    3. Jerk the left arm
    4. Extend the tongue
    5. Hear sounds
11. The role of the parasympathetic nervous system of the autonomic nervous system is to
    1. Facilitate the body’s fight or flight response
    2. Prepare the body to cope with stress
    3. Promote rapid cognitive processing
    4. Prompt the body to use its resources in responding to environmental stimuli
    5. Establish homeostasis after a fight or flight response
12. Which of the following occurs when a neuron is stimulated to its threshold?
    1. The movement of sodium and potassium ions across the membrane creates an action potential
    2. The neuron hyperpolarizes
    3. Neurotransmitters are released from the dendrites
    4. The absolute refractory period of the neuron prevents it from responding
    5. The neuron’s equilibrium potential is reached
13. The thalamus provides information for all of the following senses EXCEPT
    1. Smell
    2. Hearing
    3. Taste
    4. Vision
    5. Touch
14. Which of the following best describes the firing of neurons?
    1. A protoplasmic transfer of ions
    2. A finely graded response
    3. An all-or-nothing response
    4. An osmotic process
    5. A symbiotic function
15. In its effect on the central nervous system, alcohol is most accurately classified as a
    1. Depressant
    2. Narcotic
    3. Psychoactive
    4. Stimulant
    5. Hallucinogen
16. Activation of the sympathetic branch of the autonomic nervous system results in
    1. An increase in salivation
    2. An increase in digestion
    3. An increase in respiratory rate
    4. A decrease of heart rate
    5. A decrease in pupil dilation
17. Which of the following is INCORRECTLY matched with the hormone it secretes?
    1. Thyroid gland…thyroxine
    2. Adrenal gland…epinephrine
    3. Pituitary gland…prolactin
    4. Pancreas…insulin
    5. Ovary…testosterone
18. Hunger and eating are primarily regulated by which of the following?
    1. Androgens
    2. Estrogens
    3. The hypothalamus
    4. The kidneys
    5. The medulla
19. The occipital lobe contains
    1. The primary visual cortex
    2. The prefrontal cortex
    3. The somatosensory cortex
    4. The pons
    5. Sensory and motor connections to other brain regions
20. Dopamine, acetylcholine and norepinephrine are all
    1. Hormones secreted by the endocrine glands
    2. Secretions of the exocrine glands
    3. Drugs used to treat memory disorders
    4. Enzymes involved in the degradation of interneuron signals
    5. Neurotransmitters that inhibit or excite a neural signal across a synapse
21. The primary effect of the myelin sheath is to
    1. Increase the velocity of conduction of the action potential along the axon
    2. Increase the velocity of conduction of the action potential across the synapse
    3. Facilitate the incoming stimulus signals at sensory receptors
    4. Reduce the amount of unused neurotransmitter in the synaptic cleft
    5. Protect the terminal buttons of the neuron from destruction by enzymes
22. For most people, which of the following is an activity based in the right hemisphere of the brain?
    1. Muscular control of the right hand
    2. Simple spatial reasoning
    3. Arithmetic reasoning
    4. Language comprehension
    5. Speech
23. Which of the following is true of the reticular activating system?
    1. It is the major system of the brain for controlling emotions
    2. It functions primarily in the control of motor responses
    3. It regulates levels of arousal
    4. It regulates body temperature
    5. It controls the uptake of pituitary hormones
24. Of the following correlations, which shows the strongest relationship between two variables?
    1. -.79
    2. +1.10
    3. .00
    4. +.20
    5. +.68
25. The term operationalize means to
    1. Utilize more than one independent variable
    2. Create an experiment
    3. Define a correlation
    4. Define variables clearly
    5. Define the statistical procedures
26. Which of the following is the best example of a correlational study?
    1. A psychologist gives one group of rats a drug and another group a placebo to see the effect of the drug on learning
    2. A psychologist examines a client’s background to help provide therapy
    3. A psychologist analyzes case studies to determine what traits people vary on
    4. A psychologist attempts to determine if there is a relationship between IQ and income
    5. A psychologist gives students two forms of exams, before and after taking a course, to determine if the course improved learning

Free Responses (write both, 20 points each, 40 total points)

1. You see a patient who reports the following: He has lost all of senses except for smell. He feels no pain and experiences no pleasure from any type of stimulation. His blood sugar levels remain ridiculously high and he has no startle reflex. Despite his high blood sugar levels, he reports having lost 30 pounds in the last month. Please explain what may behind each of the circumstances and how would you suggest that he deal with the situations.
2. Please explain how each of the following substances influences human behavior. Then discuss what would happen if a person either had too much or too little of the substance in their body.
   1. Nicotine
   2. Acetylcholine
   3. GABA
   4. Insulin
   5. Adrenaline