BrainBliTz Trial Exam 1

1- Most of the neurons in the human central nervous system are _____.
A) sensory neurons
B) motor neurons
C) interneurons
D) peripheral neurons

2- For a neuron with an initial membrane potential at -70 mV, an increase in the movement of potassium ions out of that neuron's cytoplasm would result in the _____.
A) depolarization of the neuron
B) hyperpolarization of the neuron
C) replacement of potassium ions with sodium ions
D) replacement of potassium ions with calcium ions

3- The "undershoot" phase of hyperpolarization is due to _____.
A) slow opening of voltage-gated sodium channels
B) sustained opening of voltage-gated potassium channels
C) rapid opening of voltage-gated calcium channels
D) slow restorative actions of the sodium-potassium ATPase

4- Which neurotransmitter is considered the brain's most common inhibitory neurotransmitter?
A) Dopamine
B) Acetylcholine
C) GABA
D) Glutamate

5- which category of neuron would be most involved in learning and tuning signals in a neural circuit?
A) Excitatory pyramidal cells
B) Inhibitory interneurons
C) Both equally
D) none of the above

6- Which of the following would y result in seizures?
A) Balanced activity between excitatory and inhibitory neurons
B) Enhanced activity of both excitatory and inhibitory neurons by an equal amount
C) Unbalanced activity between excitatory and inhibitory neurons
D) none of the above

7- which of the following best describes that Drugs of abuse act as imposters?
A) They can block neurotransmitter action.
B) They are natural components.
C) They have the ability to induce pleasure.
D) They can cause severe headaches.

8- Protoplasmic astrocytes are present in..
A) Grey matter with open association with neurons.
B) white matter with close association with neurons.
C) Grey matter with close association with neurons.
D) d-Grey matter without association with neurons.

9- How many lobes of the brain 4 lobes are parts of the semantic system?
A) 1
B) 2
C) 3
D) 4

10- Which receptors the endorphins can stimulate?

a) Opioid receptors
b) Photoreceptor cell
c) Thermo receptor
d) Rods and Cons

11- If the eye has poor visual acuity it is called:

A) Estropia
B) Extropia
C) Amblyopic
D) Cataract

12- The release of neurotransmitter at a chemical synapse in the central nervous system is dependent upon which of the following?

A) Synthesis of acetylcholinesterase
B) Hyperpolarization of the synaptic terminal
C) Opening of ligand-gated ion calcium channels
D) Influx of calcium into the presynaptic terminal

13- Which substance enhances the sensitivity of pain receptors but does not directly excite them?

A) Bradykinin
B) Serotonin
C) Potassium ions
D) Prostaglandins

14- Which structure carries axons from neurons in the ventral posterolateral nucleus of the thalamus to the primary somatosensory cortex?

A) Medial lemniscus
B) External capsule
C) Internal capsule
D) Extreme capsule

15- Which statement concerning synaptic transmission is correct?

A) When a specific population of synaptic terminals is spread over the considerable surface of a neuron, their collective effects cannot spatially summate and lead to initiation of an action potential

B) Even if the successive discharges of an excitatory synapse occur sufficiently close in time, they cannot temporally summate and initiate an action potential

C) A neuron is “facilitated” when its membrane potential is moved in the less negative or depolarizing direction

D) Even when rapidly stimulated by excitatory synaptic input for a prolonged period, neurons typically do not exhibit synaptic fatigue

16- Light entering the eye passes through which retinal layer first?

A) Inner nuclear layer
B) Outer nuclear layer
C) Outer plexiform layer
D) Photoreceptor layer
E) Retinal ganglion layer

17- All of the following may cause amensia except:

A) Ecephalitis
B) Stroke
C) Tumor
D) Pain

18- The precentral gyrus and corticospinal tract are essential for which of the following?

A) Vision
B) Olfaction
C) Auditory identification
D) Kinesthesia
E) Voluntary movement

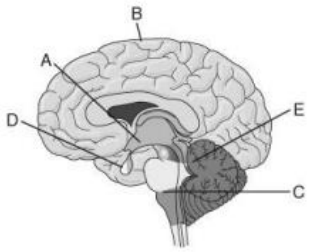
19- The following steps refer to various stages in transmission at a chemical synapse.

1. Neurotransmitter binds with receptors associated with the postsynaptic membrane.
2. Calcium ions rush into neuron's cytoplasm.
3. An action potential depolarizes the membrane of the presynaptic axon terminal.
4. The ligand-gated ion channels open.
5. The synaptic vesicles release neurotransmitter into the synaptic cleft.

Which sequence of events is correct?

A) 1 → 2 → 3 → 4 → 5
B) 2 → 3 → 5 → 4 → 1
C) 3 → 2 → 5 → 1 → 4
D) 4 → 3 → 1 → 2 → 5

20- Use the figure to answer the following question.



Which of the following region(s) arose developmentally from the hindbrain?

A) only A
B) both A and D
C) only C
D) both C and E

21- Wakefulness is regulated by the reticular formation, which is present in the _____.
A) basal nuclei
B) cerebral cortex
C) brainstem
D) limbic system

22- After suffering a stroke, a patient can see objects anywhere in front of him, but pays attention only to objects in his right field of vision. When asked to describe these objects, he has difficulty judging their size and distance. What part of the brain was likely damaged by the stroke?

A) the left frontal lobe
B) the right frontal lobe
C) the left parietal lobe
D) the right parietal lobe

23- One of the fundamental processes by which memories are stored and learning takes place _____.

A) is related to changes in the degree of myelination of axons
B) results in an increase in the diameter of axons
C) results in a shift from aerobic to anaerobic respiration in neurons
D) involves changing the responsiveness of postsynaptic neurons to neurotransmitter

24- Sensory transduction of light in the vertebrate retina is accomplished by _____.
A) ganglion cells
B) amacrine cells
C) bipolar cells
D) rods and cones

25- Two students studying physiology taste a known "bitter" substance, and both reports sensing bitterness. They then sample another substance. Student A reports sensing both a bitter taste and a salty taste, but student B reports only a salty taste. What is the most logical explanation?

A) Student A had an allergic reaction to the food, causing him to perceive the food as being bitter.
B) Student A has normal "bitter" taste buds; student B has defective "bitter" taste buds that result in lower sensitivity to bitterness.
C) Student A has a protein receptor capable of detecting a bitter molecule found in that substance, whereas student B lacks that particular protein receptor.
D) Student A has normal saliva, whereas student B's saliva is more alkaline than normal.

26- A 72-year-old man visits his physician because he finds it difficult to hold his hand steady when painting. Examination reveals a resting tremor and rigidity. The symptoms are relieved by a single dose of levodopa. This patient's neurological signs are most likely related to a lesion within which of the following?
A) Caudate nucleus and putamen
B) Cerebellum
C) Hippocampus
D) Premotor area
E) Substantia nigra

27- Which of the following characteristics of an axon is most dependent on its diameter?
A) The magnitude of its resting potential
B) The duration of its refractory period
C) The conduction velocity of its action potential
D) The overshoot of its action potential

E) The activity of its sodium-potassium pump

28- A 22-year-old man sees his ophthalmologist because it is becoming increasingly difficult for him to read the newspaper. His vision problem most likely results from an inability to contract which of the following?

A) The iris

B) The ciliary body

C) The suspensory ligaments

D) The extraocular muscles

E) The pupil

29- he precentral gyrus and corticospinal tract are essential for which of the following?

A) Vision

B) Olfaction

C) Auditory identification

D) Kinesthesia

E) Voluntary movement

30- A 25-year-old student studies for a test in medical physiology. The visual contrast of the subject matter is enhanced due to lateral inhibition of the visual input by which cell type in the retina?

A) Amacrine cells

B) Bipolar cells

C) Ganglion cells

D) Horizontal cells