



Jerusalem Science Contest 5784

Neuroscience

Test 2

Form – A

Answer Key

- 1) Regarding the number of neurons and glial cells in the human brain, which is most accurate?
 - a) There are 10 times as many glial cells as neurons.
 - b) There are 10 times as many neurons as glial cells.
 - c) There are about 2-3 glial cells for each neuron.
 - d) *The number of neurons is similar to the number of glial cells.***

- 2) Which statement regarding gray and white matter is most accurate?
 - a) Synapses occur only in the gray matter.
 - b) *White matter accounts for the largest portion of brain volume.***
 - c) Gray matter is found only in the cerebral cortex.
 - d) White matter axons make connections only within one cerebral hemisphere.

- 3) Which of the following is a part of the brainstem?
 - a) Temporal lobe
 - b) Optic nerve
 - c) *Midbrain***
 - d) Diencephalon

- 4) Which lobe of the cerebrum is central to vision?
 - a) Frontal lobe
 - b) Parietal lobe
 - c) Temporal lobe
 - d) *Occipital lobe***

- 5) How many lobes of the cerebrum are necessary for speech to function normally?
 - a) None, speech is not a cerebral function
 - b) One
 - c) *Two***
 - d) Three

6) The brain is surrounded by a protective layer of _____.

- a) Glial cells
- b) Fat
- c) Cerebrospinal fluid**
- d) Blood

7) The diencephalon is located between:

- a) Cerebellum and pons
- b) Midbrain and cerebrum**
- c) Temporal and parietal lobes
- d) Pons and midbrain

8) Which function arises in the pons?

- a) Alertness**
- b) Eye movement
- c) Taste
- d) Coordination

9) Which function is controlled by the frontal lobe?

- a) Vision
- b) Tactile sensation
- c) Cold/heat discrimination
- d) Finger movement**

10) How does stroke cause loss of function?

- a) A shock to the central nervous system slows down brain networks
- b) Death of neurons subserving a specific function**
- c) Loss of white matter connections
- d) Temperature dysregulation

11) Which of the following would be an unexpected symptom of stroke?

- a) Facial droop
- b) Arm weakness
- c) Trouble communicating
- d) Uncontrolled salivation**

12) Which lobe contains parts of the limbic system?

- a) Frontal lobe
- b) Temporal lobe
- c) Parietal lobe
- d) Occipital lobe**

13) What best categorizes the thalamus?

- a) **Forebrain**
- b) Midbrain
- c) Hindbrain
- d) Uberbrain

14) Which of the following best pertains to a neural network?

- a) Multiple neuron connections within a single cerebral lobe
- b) Restricted to either left or right cerebral hemisphere
- c) Most essential for controlling simple functions like reflexes
- d) **Processing signals through the brain in a linear route**

15) Which of the following is not a feature of neural circuits within the cerebral cortex?

- a) Multiple cellular layers
- b) Organized into columns
- c) **Sulci and gyri**
- d) Change signals that can be sent to other parts of the brain

16) Does neuroscience support what the Jewish sources say about how much sleep we should get?

- a) Neuroscience contradicts what the Jewish sources say about how much we should sleep.
- b) **Neuroscience supports what the classical Jewish sources say about how much sleep we should get.**
- c) No mention is made in the Jewish sources about how much we should sleep.
- d) Neuroscience says nothing about how much sleep we should get.

17) There is no such thing as “too much” sleep. Rather, the more you sleep, the better it is for your physical, emotional, and mental health.

- a) True.
- b) **False.**
- c) It depends on the person’s age and overall health.
- d) Neuroscience says that the more you sleep, the healthier you will be. The Jewish sources say that oversleeping is not healthy.

18) According to what the Talmud says about dreams, when a normal teenager today has a dream, that dream is most likely:

- a) **A reflection of the experiences, thoughts, and emotions s/he had when s/he was awake.**
- b) A prophecy from God about what will happen in the future.
- c) A Divine revelation, sharing with him or her some hidden truth about the world.
- d) Random residual electric charges of neurons in the brain.

- 19) When a verse or a Midrash utilizes sleep as an allegory or metaphor, it usually carries what type of connotation?
- a) Sometimes it is positive, sometimes it is negative.
 - b) Sleep is sleep; it is never used as a metaphor for anything.
 - c) Sleep always has a positive connotation (it is a metaphor for rejuvenation and reinvigoration).
 - d) Sleep always has a negative connotation (it is a metaphor for weakness, laziness, lack of thought).**
- 20) According to the Gemara and commentaries, to be a dream-interpreter,
- a) You must study dream-interpretation from a reliable practitioner.
 - b) There is no need to study; you can use your own intuition about that a dream means.
 - c) You must be born with the ability.**
 - d) You must get adequate sleep yourself, and you must be able to remember your own dreams.