

Biological Foundations of Mental Health

Mental Health · Practice Test · 20 Questions

1. Which neurotransmitter is primarily associated with the regulation of mood, sleep, and appetite?

- A) Acetylcholine
- B) Serotonin
- C) Epinephrine
- D) Glutamate

2. The HPA axis, a complex set of direct influences and feedback interactions among three endocrine glands, stands for which of the following?

- A) Hypothalamus-Pituitary-Adrenal
- B) Hippocampus-Pineal-Aorta
- C) Hypothalamus-Pineal-Amygdala
- D) Heart-Pancreas-Adrenal

3. Which brain structure is primarily responsible for the processing of fear and emotional responses?

- A) Cerebellum
- B) Amygdala
- C) Thalamus
- D) Occipital lobe

4. What is the primary role of cortisol in the human body regarding stress?

- A) To promote serotonin production
- B) To increase blood glucose levels for energy
- C) To inhibit insulin release in all cases
- D) To lower heart rate during exercise

5. Neuroplasticity, a key concept in mental health, refers to what?

- A) The hardening of brain tissue with age
- B) The ability of the brain to form new neural connections
- C) The speed at which electrical signals travel
- D) The process of neurotransmitter reuptake

6. Chronic stress is known to cause a decrease in the volume of which brain area involved in memory and learning?

- A) Hippocampus
- B) Brain stem
- C) Corpus callosum
- D) Pons

7. Which hormone is commonly referred to as the 'bonding hormone' and is involved in social recognition and trust?

- A) Thyroxine
- B) Oxytocin
- C) Melatonin
- D) Adrenaline

8. The prefrontal cortex is most associated with which of the following functions?

- A) Basic motor skills
- B) Executive function and decision-making
- C) Visual perception
- D) Regulation of body temperature

9. Deficiency in which vitamin is frequently linked to depressive symptoms and cognitive decline?

- A) Vitamin C
- B) Vitamin D
- C) Vitamin K
- D) Vitamin A

10. What does the term 'neurogenesis' refer to in the context of the adult human brain?

- A) The death of neurons
- B) The growth and development of new neurons
- C) The repair of damaged myelin sheaths
- D) The chemical transmission between synapses

11. Which part of the autonomic nervous system is responsible for the 'rest and digest' response?

- A) Sympathetic nervous system
- B) Parasympathetic nervous system
- C) Enteric nervous system
- D) Central nervous system

12. The 'gut-brain axis' refers to the two-way communication between the central nervous system and which organ system?

- A) Enteric nervous system
- B) Respiratory system
- C) Endocrine system
- D) Lymphatic system

13. Dopamine is a neurotransmitter primarily involved in which brain pathway?

- A) The pain reflex pathway
- B) The reward and motivation system
- C) The visual processing system
- D) The tactile sensory system

14. Which sleep stage is most critical for emotional regulation and memory consolidation?

- A) Stage 1 (NREM)
- B) Stage 2 (NREM)
- C) Deep Sleep (Slow-wave sleep)
- D) REM Sleep

15. What is the function of the blood-brain barrier?

- A) To transport oxygen to the brain
- B) To protect the brain from pathogens and toxins
- C) To regulate neurotransmitter production
- D) To filter waste from spinal fluid

16. Which condition is characterized by an overactive sympathetic nervous system response to perceived threats?

- A) Anxiety disorders
- B) Narcolepsy
- C) Aphasia
- D) Ataxia

17. The term 'myelination' in brain health refers to:

- A) The formation of fatty sheaths around axons to speed up electrical impulses
- B) The destruction of synapses
- C) The production of new glial cells
- D) The movement of ions across the membrane

18. Chronic inflammation in the body has been scientifically linked to the increased risk of:

- A) Hyperthyroidism
- B) Clinical depression
- C) Myopia
- D) Scoliosis

19. What is the primary role of GABA in the central nervous system?

- A) To act as the main excitatory neurotransmitter
- B) To act as the main inhibitory neurotransmitter
- C) To increase heart rate
- D) To initiate muscle contraction

20. The thalamus functions primarily as:

- A) The brain's relay station for sensory information
- B) The control center for hormonal balance
- C) The area responsible for long-term memory storage
- D) The center for balance and coordination