

Foundations of Addiction Science

Addiction Science · Answer Key · 20 Questions

1. Which neurotransmitter is primarily associated with the brain's reward system and the reinforcement of addictive behaviors?

- A) Serotonin
- B) Dopamine**
- C) Acetylcholine
- D) GABA

2. What is the term for the process where a person needs more of a substance to achieve the same effect previously produced by a smaller amount?

- A) Withdrawal
- B) Tolerance**
- C) Craving
- D) Relapse

3. Which brain region is heavily involved in decision-making and impulse control, and is often impacted by long-term substance use?

- A) Prefrontal cortex**
- B) Cerebellum
- C) Brain stem
- D) Occipital lobe

4. What does the term 'dependence' refer to in the context of addiction science?

- A) Only the presence of physical symptoms
- B) The inability to stop using a substance
- C) A state where the body has adapted to a substance's presence**
- D) The social desire to use a drug

5. Which of the following is considered a primary 'reward' pathway in the brain?

- A) Mesolimbic pathway**
- B) Visual cortex pathway
- C) Spinal cord pathway
- D) Auditory pathway

6. What happens during the 'withdrawal' phase of addiction?

- A) The brain increases dopamine production
- B) Physical and mental symptoms occur upon cessation of use**
- C) The person feels no desire for the substance
- D) Tolerance levels reach their peak

7. Which organ is the primary site for the metabolism of most consumed substances?

- A) Heart
- B) Lungs
- C) Liver**
- D) Kidneys

8. Chronic exposure to addictive substances can lead to changes in the strength of connections between neurons. What is this process called?

- A) Neuroplasticity**
- B) Cellular atrophy
- C) Myelination
- D) Synaptic pruning

9. What is the primary function of the 'ventral tegmental area' (VTA) in the brain?

- A) Regulating body temperature
- B) Processing memories
- C) Producing dopamine for the reward system**
- D) Controlling motor coordination

10. In addiction science, what does 'craving' refer to?

- A) The physical pain of withdrawal
- B) An intense, urgent desire for the substance**
- C) The act of consuming a substance
- D) A lack of knowledge about drug effects

11. Which neurotransmitter system is typically inhibited by alcohol consumption?

- A) Glutamate**
- B) Dopamine
- C) Serotonin
- D) Norepinephrine

12. What does the 'incentive salience' theory suggest about addiction?

- A) Drugs become less rewarding over time
- B) Addiction is purely a social choice
- C) Cues associated with a drug trigger intense motivation to use**
- D) Addiction is unrelated to the brain's reward system

13. What is the main role of the 'nucleus accumbens' in addiction?

- A) It acts as a pleasure and reinforcement center**
- B) It controls muscle movement
- C) It stores long-term memories
- D) It regulates breathing

14. Why is the 'amygdala' involved in addiction?

A) It processes emotions and stress responses

- B) It controls heartbeat
- C) It is responsible for color vision
- D) It manages body fat

15. What is a 'cue' in the context of addiction?

A) A medication used to stop use

B) A stimulus that triggers a memory or desire for the substance

- C) A physical symptom of withdrawal
- D) The social stigma surrounding addiction

16. Which of the following describes the 'allostatic' state in addiction?

A) Achieving a new, stable baseline due to chronic substance use

- B) Returning to perfect health immediately
- C) A short-term change that does not affect biology
- D) The elimination of all drug memories

17. What is 'homeostasis' in biological terms as it relates to addiction?

A) The brain's effort to maintain internal balance

- B) The process of increasing drug dosage
- C) The genetic predisposition to addiction
- D) The chemical composition of a drug

18. How do addictive substances typically affect synaptic transmission?

A) By blocking the brain from receiving oxygen

B) By altering the release or reuptake of neurotransmitters

- C) By physically destroying neurons
- D) By preventing blood from reaching the brain

19. What characterizes 'compulsive' drug seeking in addiction?

A) Intentional, infrequent use

B) Use despite negative consequences

- C) A logical choice to use a drug
- D) Use only in social settings

20. Which term describes the genetic influence on an individual's susceptibility to addiction?

A) Heritability

- B) Environmental acquisition
- C) Random chance
- D) Learned behavior