

Addiction Science Foundations

Science · Answer Key · 8 Questions

1. Which neurotransmitter is primarily responsible for the reinforcement of reward-seeking behaviors in the brain's limbic system?

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

2. What is the term for the brain's physiological adaptation to a substance, where higher doses are required to achieve the same effect?

- A) Withdrawal
- B) Tolerance**
- C) Sensitization
- D) Homeostasis

3. Which brain region, often called the 'executive control center', is significantly impaired by long-term substance use, affecting impulse control and decision-making?

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

4. What occurs at the cellular level when a person experiences physical dependence and suddenly stops using a substance?

- A) Increased neurotransmitter synthesis
- B) Synaptic pruning
- C) Withdrawal syndrome**
- D) Hyper-myelination

5. Which part of the neuron is most directly involved in the synaptic transmission of chemical signals between cells?

- A) Axon terminal**
- B) Nucleus
- C) Mitochondria
- D) Cell body

6. How do addictive substances typically disrupt the process of 'reuptake' in the synaptic cleft?

- A) By destroying the vesicles
- B) By blocking the transporter proteins**
- C) By increasing the rate of enzymatic degradation
- D) By shrinking the postsynaptic membrane

7. What is the physiological role of the 'reward circuit' (mesolimbic pathway) under normal, healthy conditions?

- A) Regulating body temperature
- B) Processing visual memory
- C) Reinforcing survival-essential behaviors**
- D) Controlling fine motor skills

8. Which condition describes the state where an individual's brain chemistry has shifted so that the presence of a drug is required for normal physiological functioning?

- A) Psychological craving
- B) Dependence**
- C) Placebo effect
- D) Tolerance