

Advanced Addiction Science Mastery

Addiction Science · Practice Test · 18 Questions

1. Which specific subunit configuration of the nicotinic acetylcholine receptor is primarily responsible for the reinforcing effects of nicotine in the ventral tegmental area?

- A) alpha-7
- B) alpha-4-beta-2
- C) alpha-3-beta-4
- D) alpha-5-beta-3

2. In the context of opioid dependence, which medication acts as a partial agonist at the mu-opioid receptor and has a high affinity but low intrinsic activity?

- A) Methadone
- B) Naltrexone
- C) Buprenorphine
- D) Lofexidine

3. What is the primary mechanism of action of Disulfiram, used in the treatment of alcohol use disorder?

- A) Inhibition of aldehyde dehydrogenase
- B) Agonism of GABA-A receptors
- C) Antagonism of NMDA receptors
- D) Inhibition of dopamine beta-hydroxylase

4. Chronic cocaine exposure is primarily associated with the downregulation of which specific dopamine receptor subtype in the striatum?

- A) D1
- B) D2
- C) D3
- D) D4

5. Which brain structure is considered the primary site for the initiation of the 'incentive salience' process in drug addiction?

- A) Nucleus accumbens shell
- B) Prefrontal cortex
- C) Hippocampus
- D) Thalamus

6. What is the metabolic byproduct of ethanol that leads to the acute toxic effects associated with Disulfiram therapy?

- A) Acetic acid
- B) Acetaldehyde
- C) Methanol
- D) Acetone

7. Which neurotransmitter system is primarily implicated in the 'anti-reward' system and the negative emotional state associated with protracted drug withdrawal?

- A) Serotonergic
- B) Dopaminergic
- C) Dynorphin/Kappa-opioid
- D) Cholinergic

8. What is the primary pharmacological action of Varenicline, a smoking cessation aid?

- A) Full agonist of alpha-4-beta-2 receptors
- B) Partial agonist of alpha-4-beta-2 receptors
- C) Antagonist of alpha-7 receptors
- D) Reuptake inhibitor of serotonin

9. The 'opponent-process theory' of addiction, as proposed by Solomon and Corbit, suggests that addiction is maintained by:

- A) Positive reinforcement only
- B) A shift from homeostatic set-points to allostatic states
- C) Purely social conditioning
- D) The absence of neuroplasticity

10. Which drug is classified as a non-competitive NMDA receptor antagonist and is often studied for its dissociative and addictive properties?

- A) Ketamine
- B) Diazepam
- C) Baclofen
- D) Buspirone

11. What specific type of neuroplasticity in the nucleus accumbens is a hallmark of long-term exposure to psychostimulants?

- A) Increased spine density on medium spiny neurons
- B) Decreased spine density
- C) Axonal pruning
- D) Glial cell death

12. Naltrexone, an opioid antagonist used for alcohol dependence, primarily exerts its effect by blocking which system?

- A) Endogenous opioid system
- B) GABAergic system
- C) Serotonergic system
- D) Glutamatergic system

13. Which metabolic enzyme is responsible for the conversion of heroin into 6-monoacetylmorphine (6-MAM) in the body?

- A) Cytochrome P450 2D6
- B) Plasma esterases
- C) Alcohol dehydrogenase
- D) Monoamine oxidase

14. The 'incentive sensitization theory' of addiction, developed by Robinson and Berridge, distinguishes between which two psychological processes?

- A) Liking and wanting
- B) Tolerance and withdrawal
- C) Reward and punishment
- D) Cognition and emotion

15. Which region of the prefrontal cortex is most consistently linked to the 'go/no-go' deficit observed in addicted individuals?

- A) Ventromedial prefrontal cortex
- B) Anterior cingulate cortex
- C) Dorsolateral prefrontal cortex
- D) Orbitofrontal cortex

16. What is the primary effect of chronic alcohol consumption on the NMDA receptor system?

- A) Downregulation
- B) Upregulation
- C) No effect
- D) Competitive antagonism

17. Which drug is a partial agonist at the glycine site of the NMDA receptor and has been investigated as a treatment for cognitive deficits in addiction?

- A) D-cycloserine
- B) Memantine
- C) Acamprosate
- D) Naloxone

18. In the context of cannabis pharmacology, the 'entourage effect' refers to the interaction between cannabinoids and which other class of compounds?

- A) Terpenes
- B) Flavonoids
- C) Alkaloids
- D) Phenols