

Advanced Psychiatric Science Quiz

Psychiatry · Practice Test · 20 Questions

1. Which of the following is the primary mechanism of action for second-generation antipsychotics (SGAs) in treating positive symptoms of schizophrenia?

- A) Potent D2 antagonism
- B) Partial D2 agonism and 5-HT_{2A} antagonism
- C) Selective serotonin reuptake inhibition
- D) NMDA receptor potentiation

2. According to current neurobiological models, what structural brain abnormality is most consistently associated with the pathophysiology of schizophrenia?

- A) Increased hippocampal volume
- B) Reduced cortical thickness, particularly in prefrontal and temporal lobes
- C) Enlarged basal ganglia
- D) Hyperactive amygdala

3. Which neurotransmitter system is primarily implicated in the anxiolytic effects of benzodiazepines?

- A) Dopaminergic system
- B) Glutamatergic system
- C) GABAergic system
- D) Cholinergic system

4. The therapeutic effect of lithium in bipolar disorder is thought to involve inhibition of which intracellular signaling pathway?

- A) Adenylate cyclase pathway
- B) MAP kinase pathway
- C) Inositol monophosphatase (IMPase) pathway
- D) JAK-STAT pathway

5. Transcranial Magnetic Stimulation (TMS) for depression primarily targets which brain region?

- A) Right dorsolateral prefrontal cortex
- B) Left dorsolateral prefrontal cortex
- C) Medial prefrontal cortex
- D) Anterior cingulate cortex

6. What genetic polymorphism is most robustly linked to an increased risk of late-onset Alzheimer's disease?

- A) APOE ϵ 4 allele
- B) COMT Val158Met
- C) BDNF Met allele
- D) HTR2A T102C

7. Deep Brain Stimulation (DBS) is an FDA-approved treatment for severe, treatment-refractory obsessive-compulsive disorder (OCD) targeting which brain region?

- A) Subthalamic nucleus
- B) Ventromedial prefrontal cortex
- C) Anterior limb of the internal capsule (ALIC)
- D) Nucleus accumbens

8. What is the primary neurobiological basis for Wernicke-Korsakoff syndrome, often seen in chronic alcoholism?

- A) Dopamine receptor hypersensitivity
- B) Thiamine deficiency leading to neuronal damage
- C) Serotonin transporter dysfunction
- D) Glutamate excitotoxicity

9. Which of the following describes the mechanism of action of esketamine in treating treatment-resistant depression?

- A) Selective serotonin reuptake inhibition
- B) NMDA receptor antagonism
- C) Monoamine oxidase inhibition
- D) GABA-A receptor agonism

10. In DSM-5-TR criteria for Major Depressive Disorder, a key distinguishing feature from normal sadness is the presence of at least five symptoms for a minimum duration of:

- A) 1 week
- B) 2 weeks
- C) 1 month
- D) 6 months

11. Which neuroimaging technique is most effective for visualizing white matter integrity and connectivity in psychiatric research?

- A) Functional Magnetic Resonance Imaging (fMRI)
- B) Positron Emission Tomography (PET)
- C) Diffusion Tensor Imaging (DTI)
- D) Electroencephalography (EEG)

12. The 'dopamine hypothesis' of schizophrenia primarily posits an excess of dopamine activity in which brain pathway to explain positive symptoms?

- A) Mesocortical pathway
- B) Nigrostriatal pathway
- C) Tuberoinfundibular pathway
- D) Mesolimbic pathway

13. What is the primary mechanism by which carbamazepine exerts its mood-stabilizing effects in bipolar disorder?

- A) Potentiation of GABAergic neurotransmission
- B) Blockade of voltage-gated sodium channels
- C) Inhibition of monoamine oxidase
- D) Stimulation of serotonin release

14. Which of the following is a characteristic neuropathological finding in Huntington's disease, associated with its psychiatric symptoms?

- A) Amyloid plaques and neurofibrillary tangles
- B) Lewy bodies in the substantia nigra
- C) Loss of GABAergic medium spiny neurons in the striatum
- D) Vacuolation of neurons in the spongiform encephalopathy

15. The use of cholinesterase inhibitors (e.g., donepezil, rivastigmine) in Alzheimer's disease aims to primarily compensate for a deficiency in which neurotransmitter system?

- A) Dopaminergic
- B) Serotonergic
- C) Noradrenergic
- D) Acetylcholinergic

16. Which type of psychotherapy has the strongest empirical support for the treatment of Panic Disorder with Agoraphobia?

- A) Psychodynamic therapy
- B) Interpersonal therapy
- C) Cognitive Behavioral Therapy (CBT)
- D) Humanistic therapy

17. The neurodevelopmental hypothesis of schizophrenia suggests that initial brain insults occur during which period?

- A) Adolescence
- B) Early adulthood
- C) Prenatal or perinatal period
- D) Late childhood

18. What is the most common cause of intellectual disability with a known genetic basis?

- A) Fragile X syndrome
- B) Phenylketonuria (PKU)
- C) Down syndrome (Trisomy 21)
- D) Turner syndrome

19. Which of the following is a well-established side effect of long-term typical antipsychotic use, characterized by involuntary movements, particularly of the face and tongue?

- A) Akathisia
- B) Acute dystonia
- C) Neuroleptic malignant syndrome
- D) Tardive dyskinesia

20. The 'monoamine hypothesis' of depression primarily implicates a deficiency in which group of neurotransmitters?

- A) Acetylcholine, GABA, Glutamate
- B) Dopamine, Serotonin, Norepinephrine
- C) Histamine, Orexin, Substance P
- D) Endorphins, Anandamide, Adenosine