There are two versions of this exam. You have version A. Before starting the exam, mark A on question 60.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Good Luck!

1) Which of the following statements about the reward system in the brain is false?
   A) It is activated by functions important for survival.
   B) Dopaminergic transmission plays an important role in the circuit.
   C) It includes the nucleus accumbens, and the prefrontal cortex.
   D) It can be hijacked by drugs.
   E) None of the above

2) Long term potentiation (LTP)
   A) is a much studied model of the types of synaptic changes that might underlie memory.
   B) often depends on the activation of a particular subtype of glutamate receptor.
   C) represents an increase in synaptic efficiency, resulting from prior activity (stimulation) at the synapses.
   D) A and B
   E) All of the above

3) ACTH
   A) is secreted from the hypothalamus
   B) is secreted from the pituitary
   C) stimulates release of cortisol from the adrenal cortex
   D) A and C
   E) B and C
4) Individuals who experience drug withdrawal effects are, by definition,
   A) physically dependent.
   B) psychologically dependent.
   C) tolerant.
   D) addicted.
   E) metabolic.

5) An endogenous chemical that binds to THC receptors has been isolated and named
   A) hightime.
   B) endorphin.
   C) mellotamine.
   D) anandamide.
   E) bromandamine.

6) Hippocampal lesions in rats reliably disrupt the performance of tasks that involve memory for
   A) spatial location.
   B) objects.
   C) instrumental conditioning.
   D) time.
   E) Pavlovian conditioning.

7) Action potentials (APs) differ from EPSPs in that APs are
   A) postsynaptic responses.
   B) transmitted decrementally.
   C) depolarizations.
   D) graded responses.
   E) "all or none"  In other words, they fire or they don't.

8) Taking one drug can often produce tolerance to other drugs; such tolerance is called
9) The monoamine theory of depression is based on the fact that
A) depressed people have high levels of monoamines.
B) depressed people have low levels of monoamines.
C) most drugs effective in the treatment of depression are monoamine agonists.
D) most drugs effective in the treatment of depression are monoamine antagonists.
E) both A and D

10) Contusions
A) occur only when the brain is punctured by a sharp object.
B) involve hemorrhage and hematoma.
C) are often produced by the brain slamming against the inside of the skull.
D) none of the above
E) both B and C

11) Sensitization is the opposite of
A) conditioned withdrawal effects.
B) withdrawal.
C) physical dependence.
D) tolerance.
E) addiction.

12) With respect to the visual system, a high degree of convergence is to a low degree of neural convergence as
A) low acuity is to high acuity.
B) high sensitivity is to low sensitivity.
C) rods is to cones.
D) all of the above
E) both A and C

13) Tricyclic antidepressants
A) block the reuptake of serotonin and norepinephrine from synapses.
B) can produce significant side effects (e.g. drowsiness and heart irregularities).
C) are serotonin and norepinephrine antagonists.
D) are commonly used in the treatment of schizophrenia.
E) both A and B

14) Most of the rods are concentrated in the ____________, and most of the cones are located in the ____________.
A) foveas, periphery of the retina
B) retinal ganglion, optic disk
C) foveas, retinal ganglion
D) periphery of the retina, foveas.
E) optic disk, foveas

15) About what proportion of the adult population is clearly schizophrenic?
A) 0.01% B) 0.1% C) 1% D) 12% E) 17%

16) Withdrawal effects
A) are generally opposite to the initial effects of the drug that has been withdrawn.
B) arise from the physiological changes that compensate for a drug's effects on the nervous system.
C) can be a conditioned response to drug-predictive cues.
D) All of the above
E) A and B
17) In a nutshell, H.M.'s main problem seems to be that he
A) has a devastating retrograde amnesia for remote events.
B) can form no new implicit long-term memories.
C) has no long-term memories.
D) can form no new long-term memories.
E) can form no new explicit long-term memories.

18) Neurotransmitters can often act on more than one receptor subtype. Which of the following statements is false?
A) Binding of the same neurotransmitter to different receptor subtypes can produce different effects.
B) NMDA and AMPA receptors are subtypes of glutamate receptors.
C) Individual neurons can have more than one subtype of receptor for the same neurotransmitter.
D) Antipsychotic drugs are thought to work differentially on different dopamine receptor subtypes.
E) none of the above

19) Substance-induced psychosis
A) usually, but not always goes away when the individual stops taking the drug.
B) can be produced by drugs that inhibit glutamate (NMDA) receptors or increase activity at dopamine synapses.
C) has provided clues about alterations in neurotransmitter activity that may be associated with schizophrenia.
D) A and C
E) All of the above

20) ________ occurs when less drug gets to the target tissue; ________ occurs when the target cells becomes less sensitive to the drug after repeated exposures.
A) Behavioral tolerance; metabolic tolerance
B) Functional tolerance; metabolic tolerance
C) Behavioral tolerance; sensitization
D) Metabolic tolerance; functional tolerance

E) Metabolic tolerance, sensitization

21) Monoamine oxidase inhibitors are no longer commonly used in the treatment of depression because they

A) are ineffective against depression.

B) are effective only if they are taken with other drugs.

C) can produce dangerous increases in blood pressure if taken with foods containing tyramine.

D) produce dangerous decreases in blood pressure.

E) both A and B

22) Schizophrenia typically begins in

A) adolescence or early adulthood.

B) old age.

C) childhood.

D) infancy.

E) middle age.

23) According to Siegel, heroin users are more likely to die from an overdose when they

A) take heroin in an environment in which they have often taken other drugs before.

B) take heroin in an environment in which they have never taken it before.

C) take heroin orally.

D) take heroin in an environment in which they have frequently taken it before.

E) buy their heroin from a new source.

24) A neuron fires when

A) the summed EPSPs and IPSPs it receives produce sufficient depolarization in the axon hillock to reach the threshold of activation.

B) it is absolutely refractory

C) neurotransmitter binds to its receptors
D) its terminal buttons are stimulated
E) all of the above

25) At every level of the visual system, the receptive field of a neuron
A) is round.
B) is the area of the visual field where an appropriate stimulus can trigger firing.
C) changes shape.
D) responds to color.
E) None of the above.

26) Many chemicals are kept from passing from the circulatory system of the CNS into CNS tissue by
A) reflexology.
B) withdrawal.
C) the blood-brain barrier.
D) tolerance.
E) the cerebrospinal fluid.

27) Which of the following drugs is most likely to produce a syndrome of psychotic behavior that is similar to schizophrenia?
A) cocaine B) marijuana C) heroin D) tobacco E) alcohol

28) The somatic nervous system
A) plays a key role in running from sabertooth tigers and rabid pitbulls.
B) directly decreases heart rate.
C) generally acts to conserve the body's energy.
D) A and B
E) all of the above.

29) Which of the following is not true of Tourette's syndrome?
A) Tics are the primary symptom.
B) There is a genetic component.
C) It's often accompanied by epilepsy.
D) It's believed to arise from abnormalities in the neural circuits between the basal ganglia and the cortex.
E) It's more common in males than in females.

30) The defining feature of addiction is
A) the inability to stop using a drug despite efforts to do so.
B) sensitization.
C) tolerance.
D) physical dependence.
E) all of the above

31) A stroke in the temporal lobe might be expected to produce problems in
A) breathing
B) balance
C) language
D) A and C
E) All of the above

32) Studies of monozygotic and dizygotic twins suggest that schizophrenia
A) is a mental disorder.
B) is the result of bad parenting.
C) is probably caused by a single defective gene.
D) is not influenced by genetic factors.
E) is influenced by genetic factors.

33) The pituitary gland is situated just inferior to the
A) hippocampus.
B) cerebellum.
C) thalamus.
D) hypothalamus.
E) nose.

34) Lithium is most often used as a treatment for
A) schizophrenia.
B) bipolar affective disorder.
C) generalized anxiety.
D) cocaine psychosis.
E) unipolar affective disorder.

35) Possible consequences of chronic alcohol abuse include.
A) cirrhosis of the liver.
B) physical dependence severe enough to produce death during withdrawal.
C) Korsakoff's syndrome.
D) all of the above.
E) A and C

36) Acetylcholine
A) receptors are activated by nicotine
B) signaling may be compromised in Alzheimer's disease
C) is a monoamine.
D) both A and B
E) both B and C

37) Drug injection is common in medical practice because the effects of injected drugs are relatively
A) easily reversed if overdose occurs.
B) rapid.
C) predictable.
D) all of the above
E) both B and C

38) Severe ongoing neural degeneration is typically observed in the _________ of most schizophrenics.
A) frontal cortex
B) amygdalas
C) temporal cortex
D) all of the above
E) none of the above

39) When a neurotransmitter binds to a metabotropic receptor
A) always opens an ion channel.
B) always produces repolarization.
C) can activate second messengers like G-proteins.
D) A and B
E) all of the above

40) The amygdala appears to be involved in the _________ component of memory, whereas the cerebellum appears to be involved in the _________ component.
A) sensory; emotional
B) visual; temporal
C) procedural; implicit
D) emotional; sensorimotor
E) spatial; visual

41) Although _________ is classified as a depressant, it has stimulant effects at low doses.
A) tobacco
B) amphetamine
C) alcohol
D) morphine
E) cocaine

42) Primary somatomotor cortex
A) plays a role in voluntary movement.
B) contains a representation of the body surface.
C) is in the occipital lobe.
D) both A and B
E) both B and C

43) Antischizophrenic drugs are thought to be particularly effective against
A) positive symptoms.
B) depression.
C) unipolar schizophrenia.
D) nigrostriatal symptoms.
E) symptoms such as blunt affect, catatonia, and poverty of speech

44) Alcohol and Benzodiazepines
A) block serotonin reuptake.
B) are both anxiolytic.
C) exert some of their effects via their interactions with GABA receptors.
D) B and C
E) All of the above

45) Depressed patients who do not experience periods of mania are said to suffer from __________ depression.
A) reactive
B) unipolar
C) bipolar
D) acute
E) endogenous

46) Both selective serotonin-reuptake inhibitors and selective norepinephrine-reuptake inhibitors are effective in the treatment of some cases of
A) schizophrenia.
B) mania.
C) brain injury.
D) depression.
E) Tourette's Syndrome.

47) Tardive dyskinesia is caused by
A) lead poisoning.
B) toxic psychosis.
C) the chronic use of some kinds of antipsychotic drugs.
D) mercury poisoning.
E) viral infection.

48) The majority of people who try ______________ wind up addicted to it.
A) tobacco
B) alcohol
C) cocaine
D) All of the above
E) A and B

49) Cannabinoid receptors are found at high levels in
A) the basal ganglion and cerebellum
B) the brainstem
C) the hippocampus
D) A and C
E) All of the above

50) Stress can
A) increase the severity of many mental disorders
B) disrupt the performance of the immune system.
C) decrease neurogenesis
D) A and B
E) All of the above
MULTIPLE CHOICE.

Choose the one alternative that best completes the statement or answers the question.

1) E  
2) E  
3) C, E  
4) A  
5) D  
6) A  
7) E  
8) D  
9) C  
10) E  
11) D  
12) D  
13) E  
14) D  
15) C  
16) D  
17) E  
18) E  
19) E  
20) D  
21) C  
22) A  
23) B  
24) A  
25) B  
26) C
27) A  
28) A  
29) C  
30) A  
31) C  
32) E  
33) D  
34) B  
35) D  
36) D  
37) E  
38) E  
39) C  
40) D  
41) C  
42) D  
43) A  
44) D  
45) B  
46) D  
47) C  
48) A  
49) D  
50) E