

Neuroscience II System

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1. All of the following are true of "peripheral nerve cell tumors" EXCEPT
 - A. Mostly show Schwann cell differentiation
 - B. May arise within the dura
 - C. May be associated with "neurofibromatosis syndromes"
 - D. Schwannomas arise directly from nerves
 - E. In the hereditary form Schwannomas arise as a component of "neurofibromatosis type 1"

2. Loss of function of "merlin" protein is frequently encountered in the formation of
 - A. Diffuse neurofibroma
 - B. Superficial cutaneous neurofibroma
 - C. Plexiform neurofibroma
 - D. Schwannoma
 - E. Malignant peripheral nerve sheath tumor

3. Pathologic examination of a mass attached to radial nerve revealed alternating hyper and hypocellular regions, parallel arrangement of the spindle cells nuclei with nuclear "buckling", and positive staining with S100 protein. This neoplasm is expected to show
 - A. continuous active RAS
 - B. increased GTPase activity of RAS
 - C. decreased GTPase activity of RAS
 - D. loss of GAP
 - E. loss of function of "NF2" gene

4. Which of the following cells of neurofibroma secrete factors stimulate the growth of Schwann cells as a response to KIT ligand produced by Schwann cells?

- A. Mast cells**
- B. Fibroblasts**
- C. Perineurial like cells**
- D. CD34+ spindle cells**
- E. T lymphocytes**

5. A 30 years old man has a diagnosis of "plexiform neurofibroma". He is expected to show

- A. 8th nerve schwannoma**
- B. Multiple meningiomas**
- C. Pigmented nodules of the iris**
- D. Spinal cord ependymoma**
- E. Schwannoma**

6. Which of the followings is TRUE of multiple sclerosis?

- A. It's a pure hereditary disorder**
- B. Its more frequent in regions far away from the equator**
- C. Characterized by destruction of both myelin and axons**
- D. Shows well demarcated plaques mainly seen in the grey matter**
- E. Staining of the plaques with "luxol" will reveal abundant blue color.**

7. Which of the following statements is TRUE?

- A. Platinum compounds cause demyelinating neuropathy**
- B. The anatomic pattern of peripheral neuropathy in vasculitis is mononeuropathy**

- C. "Radiculoneuropathy" is the anatomic pattern seen in "Guillain-Barre Syndrome"
- D. Most of the cases of Guillain-Barre Syndrome are preceded by influenza like illness associated with peripheral nerve direct infection by C. jejuni
- E. The inflammatory process in Guillain-Barre Syndrome is more prominent in the distal part of the nerves

8. A 25 years old female presented with the complaint of painless muscle weakness, physical examination revealed no additional findings, by CT scan a 15 cm regular mass was detected in the anterior mediastinum. The expected diagnosis is characterized by

- A. Demyelinating plaques in the cerebral white matter
- B. Dense inflammation of the posterior nerve roots
- C. Destruction of the spinal motor neurons associated with axon degeneration
- D. Autoantibodies against neuromuscular junction elements
- E. Hereditary loss of "neurofibromin"

9. Which type of metabolic disease caused due to Hexosaminidase A enzyme deficiency:

- A. Fabry's disease
- B. Niemann-Pick disease
- C. Gaucher's disease
- D. Tay-Sachs disease

10. Glutamate ionotropic NMDA receptor blocked and inhibit over depolarization by:

- A. Na⁺
- B. K⁺
- C. Mg⁺⁺
- D. Ca⁺⁺

11. The critical enzyme catalysis the conversion of glutamate to GABA

- A. Glutamic acid decarboxylase**
- B. Glutaminase**
- C. Glutamine synthetase**
- D. Adenyl cyclase**

12. GABA receptor activated through increase the action of:

- A. Na⁺**
- B. K⁺**
- C. Mg⁺⁺**
- D. Cl⁻**

13. Neurotransmitters in Parkinson's disease patients would be as:

- A. Increased GABA and decreased glutamate**
- B. Decrease GABA and increase glutamate**
- C. Decrease GABA and glutamate**
- D. Increase GABA and glutamate**

14. Dopamine receptor D2 family inhibit adenyl cyclase enzyme in order to stimulate:

- A. Depolarization**
- B. Hyperpolarization**
- C. K⁺ current**
- D. All of them**

15. Dopaminergic pathway responsible of motor function:

- A. Mesolimbic pathway**

- B. Mesocortical pathway**
- C. Nigrostriatal pathway**
- D. Tuberoinfundibular pathway**

16. Sphingomyelins abundant in brain tissue, composed of:

- A. Glycerol, fatty acids, phosphoric acid, and choline**
- B. Glycerol, sphingosine, choline and fatty acids**
- C. Sphingosine, phosphoric acid, Glycerol and inositol**
- D. Sphingosine, 1 fatty acids, phosphoric acid and 2 choline**

17. One of the following receptors is telereceptor:

- A. Taste receptors.**
- B. Photoreceptors.**
- C. Pain receptors.**
- D. Touch receptors.**
- E. Muscle stretch.**

18. Which statement about peripheral nerve characteristics is correct?

- A. The peripheral nerves are bundles of axons or nerve fibers surrounded by four layers of connective tissue.**
- B. Their outermost covering the nerve fascicles is called epineurium.**
- C. All peripheral nerves are myelinated.**
- D. Conduction velocity of a peripheral nerve is determined only by its diameter.**
- E. Autonomic nerve fibers are 1 myelinated.**

19. The functional modality of the auditory sensation is:

- A. Special somatic afferent.
- B. General visceral afferent.
- C. Special visceral afferent fibers.
- D. General somatic afferent.
- E. General visceral efferent.

20. An elderly patient with Alzheimer disease is diagnosed with degenerative changes to the amygdala on both sides. Which one of the following statements about the amygdala is true?

- A. The central part of amygdala regulates the emotional affective response to smell and food.
- B. It contains tuberculum part.
- C. In emotional learning, outputs from the amygdala go via the posterior nucleus of the thalamus.
- D. The basolateral amygdala plays a role in the regulation of visceral responses to stimuli.
- E. Lesions can lead to lack of emotional responses & docility.

21. Which of the following cutaneous receptors is unencapsulated and fast adapting?

- A. Meissner's corpuscles.
- B. Pacinian corpuscles.
- C. Ruffini's end organs.
- D. Merkel's complex.
- E. Hair follicle endings

22. One of the following structures is part of the subcortical limbic system:

- A. Uncus.
- B. Subcallosal area.
- C. Cingulate gyrus.

D. Amygdala.

E. Parahippocampal gyrus.

23. Damage of what of the following structures results in the inability to form long-term memories?

A. Hippocampus.

B. Amygdala.

C. Cingulate gyrus.

D. Hypothalamus.

E. Central tegmental area.

24. All of the following are parts of Papez Circuit, Except:

A. Hypothalamus.

B. Mammillary bodies.

C. Anterior nuclei of thalamus.

D. Cingulate gyrus.

E. Hippocampus.

25. Which of the following structures is related to subcortical structures of limbic system and basal nuclei?

A. Cingulate gyrus.

B. Fornix.

C. Hippocampus.

D. Septal nuclei.

E. Amygdala.

26. A 37-year-old man complained of recurring episodes of loss of awareness lasting two to three minutes. During these he would stop speaking, stare and smack his lips. He would be unable to finish a sentence. He might drop any object he was holding. Between episodes he was normal. The most probable cause for his symptoms would be:

- A. Tonic seizures "Grand mal epilepsy".**
- B. Absence seizures.**
- C. Simple partial seizures.**
- D. Temporal lobe epilepsy.**
- E. Myoclonic seizures.**

27. What is the characteristic EEG sign of absence epilepsy??

- A. Slow waves activity without spikes.**
- B. Focal 3 Hz spike-and-waves activity**
- C. Generalized 3 Hz spike-and-slow waves activity**
- D. Focal spikes.**
- E. Generalized spikes.**

28. The frontal eye conjugate center is located in the:

- A. Area 4.**
- B. Area 6.**
- C. Area 45.**
- D. Area 8.**
- E. Area 11.**

29. Which of the following structures is responsible for generating a plan for movement?

- A. Supplementary motor area.**
- B. Primary motor cortex.**

- C. Angular gyrus.
- D. Postcentral gyrus.
- E. All of the above.

30. Which immune cell type is primarily responsible for surveying the central nervous system and participating in immune responses within the CNS?

- A. Neutrophils.
- B. Microglia.
- C. Mast cells.
- D. T cells.

31. A 28-year-old woman, presents with a history of recurrent episodes of visual disturbances, numbness, and weakness in her limbs. Her symptoms tend to improve over time but leave her with residual disability. A detailed medical history reveals that 5 years ago she was previously diagnosed with Hashimoto's thyroiditis. Neurological examination shows signs of motor dysfunction and an MRI reveals lesions consistent with demyelination in her brain and spinal cord. Based on her symptoms, examination findings, and MRI results, which class of immune cells is thought to play a central role in the inflammation and demyelination seen in her condition?

- A. Helper T cells (Th cells).
- B. Cytotoxic T cells.
- C. Regulatory T cells (Tregs).
- D. Natural killer (NK) cells.

59. A wide variety of neurotransmitters have been identified in the cell bodies and efferent synaptic terminals in the basal ganglia. A deficiency of which of the following transmitters is typically associated with Parkinson disease?

- A. Norepinephrine
- B. Dopamine

C. Serotonin

D. GABA

E. Substance P¹

60. Hemiballismus, the sudden flailing movements of an entire limb, results when damage occurs to which area of the brain?

A. The subthalamic nucleus²

B. The ventral basal complex of the thalamus

C. The globus pallidus

D. The red nucleus

E. The lateral hypothalamus³

61. Bilateral lesions involving the ventromedial hypothalamus will lead to which of the following deficits?

A. Decreased eating and drinking

B. Loss of sexual drive

C. Excessive eating, rage and aggression, hyperactivity

D. Uterine contractility, mammary gland enlargement

E. Obsessive-compulsive disorder⁴

62. An 83-year-old man is brought to the emergency department by his daughter, who explains that her father started having "fits." The examination reveals⁵ an alert, otherwise healthy, man who frequently has uncontrollable flailing movements of his left arm. Which of the following structures is most likely involved in this lesion?⁶

A. Cerebellar cortex plus nuclei

B. Reticular nucleus

C. Subthalamic nucleus

- D. Ventral lateral nucleus
- E. Ventral posterolateral nucleus

63. Which of the following thalamic nuclei has a motor function?

- A. Lateral dorsal nucleus
- B. Mediodorsal nucleus
- C. Ventral lateral nucleus⁷
- D. Lateral posterior nucleus
- E. Lateral posterior nucleus

64. Spinothalamic fibers project to which one of the following thalamic nuclei

- A. Ventral posteromedial (VPM) nucleus
- B. Pulvinar
- C. Ventral anterior nucleus
- D. Ventral posterolateral (VPL) nucleus
- E. Anterior nucleus⁸

65. Cerebellar fibers project to which one of the following nuclei

- A. Ventral posteromedial (VPM) nucleus
- B. Lateral dorsal nucleus
- C. Lateral posterior nucleus
- D. Ventral lateral nucleus
- E. Anterior nucleus

66. Thalamus receives precortical sensory input from all of the following except:

- A. general somatic sense

B. gustation

C. vision

D. audition

E. olfaction

67. Which of the following is NOT a component of the basal ganglia?

A. Substantia nigra

B. Hippocampus

C. Putamen

D. Globus pallidus

68. The indirect pathway of the basal ganglia:

A. Facilitates movement

B. Inhibits movement

C. Regulates hormone production

D. Controls blood pressure

69. Which structure in the diencephalon serves as a major relay station for sensory information to the cerebral cortex?

A. Thalamus

B. Hypothalamus

C. Pineal gland

D. Pituitary gland

70. The diencephalon is connected to the pituitary gland through the:

A. Corpus callosum

B. Medulla oblongata

C. Optic chiasm

D. Infundibulum

71. Regarding basal ganglia, Striatum consists of:

A. Putamen + Caudate nucleus

B. Putamen + Globus pallidus

C. Subthalamic nucleus + substantia nigra

D. Caudate nucleus + Globus pallidus

72. Simultaneous attention is:

A. type of attention, elicited by attending to multiple events at the same time.

B. characterized by alternating attention and focus between multiple activities.

C. characterized by halting one activity before switching to the next activity.

D. involves interrupted attention to several activities occurring at the same time.

73. In divided attention, all of the following is true EXCEPT:

A. individuals attend or give attention to multiple sources of information

B. driving performance is better while engaged in multiple tasks

C. research shows that when multitasking, people make more mistakes

D. Research shows that when multitasking, people perform their tasks more slowly.

74. All of the following statements regarding attention are true EXCEPT:

A. Exogenous orienting is frequently described as being under control of a stimulus.

B. Orienting is considered to be reflexive and automatic and is caused by a sudden event.

C. Endogenous orienting is the intentional allocation of attention resources to a predetermined goal.

D. Exogenous orienting attention occurs when attention is oriented according to one's goals.

75. If you want to know the shortest way to get to the new coffee shop in town, what type of problem-solving skills would be the most efficient among the following:

A. Working Backward

B. Heuristic, or "rule of thumb"

C. Algorithms

D. Trial and Error

76. Which part of the brain is thought to be mediating executive functions?

A. Limbic system

B. Thalamus

C. Prefrontal cortex

D. Cerebellum

77. Which of the following is considered to be a function of sleep?

A. Restorative/homeostatic

B. Thermoregulation/energy conservation

C. Consolidation of learning and memory

D. Programming of species-specific behaviors

E. All of the answers

78. All of the following are part of sleep hygiene except one:

A. Education about sleep habits and behaviors

B. Eat a heavier diet

C. Limit use of alcohol and tobacco

D. Vigorous exercise just before bed time

E. Set regular sleep and wake times

79. All of the following physiological changes occurs during REM sleep except one:

A. Autonomic slowing

B. Skeletal muscles paralysis

C. Full penile erection

D. Altered thermoregulation

E. Significant vaginal lubrication

80. Perception of an emotion-arousing stimulus leads to the concurrent experience of emotion and physiological response. Thalamus controls processing of sensory¹ information. This theory of emotional perception is

A. CANNON-BARD THEORY

B. Osgood shlater theory

C. JAMES-LANGE THEORY

D. John Bowlby theory

E. Adolph Meyer theory

81. The period of pairing required between an unconditioned stimulus and a conditioned stimulus in Pavlovian experiment for the association to be learned and the conditioned response to occur is called the

A. Extinction

B. acquisition stage

C. delay conditioning

D. classical conditioning

E. Typical response

82. Which of the following divisions of sensory memory is true

- A. echoic is verbal memory**
- B. iconic is gustatory memory**
- C. haptic is visual memory**
- D. echoic is auditory memory**
- E. iconic is touch memory**

83. Which of the following subtype of memory had the ability to store more information (unlimited) for long periods of time

- A. sensory memory**
- B. short term memory**
- C. verbal memory**
- D. visual memory**
- E. long term memory**

84. New learning disrupts the recall of a previously learned item this theory of forgetting is called

- A. decay theory**
- B. interference theory**
- C. proactive forgetting theory**
- D. repression theory**
- E. displacement theory**

85. Which of the following subtypes of memory is the least affected by dementia

- A. semantic memory**
- B. declarative memory**
- C. procedural memory**
- D. episodic memory**
- E. sensory memory**

86. All of the followings about Wernicke area is true except one

- A. Concerned with comprehension of auditory and visual information.**
- B. provides the neural circuitry for word formation**
- C. Located at the posterior end of the superior temporal gyres**
- D. Formation of thought in response to sensory experience**
- E. Interpretations of sensory experience**

87. Which of the followings can be as a result of Broca area damage

- A. Word blindness**
- B. unable to interpret the thought**
- C. fluent aphasia**
- D. Understanding normal but Voice production defective**
- E. conduction aphasia**

88. Disorder in articulation. It happens in some individuals who has no abnormality in the speech center or in its pathways

- A. Dysarthria**
- B. Dysphasia**
- C. Stuttering**
- D. Dysphonia**
- E. Aphasia**

89. According to Maslow hierarchy of human needs, Each individual has needs, or feelings of deficiency that drive their behavior, Once a need is satisfied, then it is no longer motivating. Needs are in a hierarchy that an individual moves up as they satisfy levels of needs. Which of the following needs are listed on the top of this hierarchy

- A. Need for food and water**
- B. Need for safety**
- C. Need to mean less pain and illness**
- D. Need for achievement and self-respect**
- E. Need for love and marriage**

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