

CHAPTER 16

BRAIN & CRANIAL NERVES

LECTURE - Learning Objectives

1. Identify the major regions of the brain and describe their function

-Cerebrum

Conscious thought processes, intellectual functions

Memory storage and processing

Conscious and subconscious regulation of skeletal muscle contractions

-Cerebellum

Coordinates complex somatic motor patterns

Adjusts output of other somatic motor centers in brain and spinal cord

-Diencephalon

Thalamus: Relay and processing centers for sensory information

Hypothalamus: Centers controlling emotions, autonomic functions, and hormone production

-Mesencephalon

Processing of visual and auditory data

Generation of reflexive somatic motor responses

Maintenance of consciousness

-Pons

Relays sensory information to cerebellum and thalamus

Subconscious somatic and visceral motor centers

-Medulla Oblongata

Relays sensory information to thalamus and to other portions of the brain stem

Autonomic centers for regulation of visceral function (cardiovascular, respiratory, and digestive)

MIDBRAIN (mesencephalon)

Cerebral Peduncles

Connect primary motor cortex with motor neurons in brain & spinal cord
Pathway for ascending information to thalamus

Corpora Quadrigemina

Sensory nuclei (two pairs)

- Superior colliculi
- Inferior colliculi

HINDBRAIN

Pons

Location:

Function:

Medulla Oblongata

Location:

Function:

Cerebellum

Location:

Function:

RETICULAR ACTIVATING SYSTEM

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LIMBIC SYSTEM

Motor & Sensory Areas of the Cerebral Cortex

Identify shaded/colored regions on Figure 16.17b

Primary motor cortex

Primary sensory cortex

Visual cortex

Auditory cortex

Olfactory cortex

Gustatory cortex

Association Areas of the Cerebral Cortex

Somatic sensory association area

Somatic motor association area (premotor cortex)

Visual association area

Integrative Center(s) of the Cerebral Cortex

Prefrontal cortex

22. Gray matter in the nervous system is gray because
- It lacks myelin
 - Nissl bodies are present in the somas
 - Both a and b
 - None of the statements above are correct
23. Bundles of axons in the CNS are known as a
- Ganglia
 - Nuclei
 - Nerve
 - Tract
 - Blood-brain barrier
24. Extending from the conus medullaris of the spinal cord as a slender, fibrous strand that helps provide support for the spinal cord is the
- Anterior median fissure
 - Dorsal root ganglion
 - Filum terminale
 - Cauda equina
25. Motor neurons
- Are known as efferent neurons
 - Enter the spinal cord via the dorsal root
 - Carry information to the central nervous system
 - All of the above are true
 - Only b and c
26. The cerebral hemispheres are separated by the
- Transverse fissure
 - Central sulcus
 - Parieto-occipital sulcus
 - Longitudinal fissure
 - Lateral sulcus
27. The cell bodies of most of the somatic sensory neurons are located in the
- Ventral columns of white matter
 - Dorsal root ganglia
 - Ventral horns of gray matter
 - Dorsal columns of white matter
28. The central nervous system includes which of the following?
- All of the neural tissue in the body
 - The neural tissue in the brain and spinal cord
 - All of the neural tissue outside the brain and spinal cord
 - Only the neural tissue in the brain
29. Functions of the peripheral nervous system include:
- Providing sensory information to the CNS
 - Making higher order decisions to interpret sensory inputs
 - Carrying motor commands from the spinal cord to the peripheral tissues and systems
 - Carrying information up and down the spinal cord
 - Both a and c are correct