Unit 12:

Cerebellum, diencephalon and central pathways in the CNS

GENERAL OBJECTIVES:

- Understand the organization of the cerebellum and diencephalon.
- Understand how the anatomical features of cerebellum (cortex, nuclei, white mater) and diencephalon (division into anatomical and functional levels) affect the surface and cross-sectional appearance of these parts of CNS.
- Distinguish between ascending and descending pathways in the CNS
- Understand the principle of the organization of corticospinal/corticonuclear **descending pathway** and **ascending pathways** for pain & temperature, touch & pressure, conscious proprioception & fine touch

SPECIFIC OBJECTIVES:

Cerebellum ('little brain')
-Describe the location, parts and principle external features of the cerebellum
-Describe how is cerebellum connected to different parts of the brainstem
-Describe the 'body' of cerebellum and specifics of flocculonodular lobe
-Describe specifics of the organization of cerebellar cortex (into distinct morphological and functional layers)
-Describe the organization of principle afferent and efferent cerebellar projections

Diencephalon
-Describe the location, parts and principle 'external' features of the diencephalon
-Describe the shape, position, walls, openings and communications of the third ventricle
-Describe the thalamic surfaces, the way thalamus is divided, emotional, motor and sensory thalamic nuclei
-Describe features and functional anatomy of hypothalamus, subthalamus, epithalamus
-Describe the organization of principle afferent and efferent diencephalic projections

Projection pathways
-Describe principle similarities and differences between 'pyramidal' and 'extrapyramidal' motor pathways in the CNS
-Describe the way upper motor neurons project to neurons within motor cranial nerve nuclei, differences between lateral and ventral corticospinal pathways and the way of upper motor neurons projecting to spinal lower motor neurons
-For every of 3 principle ascending pathways describe the receptor-cortex connection, another word the location of all neurons in the chain, the way their axons project within the CNS and how are they interconnected