**BSC 2085L**

**“Need to Know” Sheet**

**Unit 4**

***MEMORIZE*** the following topics below. Word banks will not be provided.

**QUIZ 4 MATERIAL – Functions of Major Brain Parts and Subparts**

**Brain:**

Section 13.2 (p. 557-566)

* Functions of the brain parts and subparts in the table below:

|  |  |  |
| --- | --- | --- |
| **Major Part** | **Subpart(s)** | **Major Function(s)** |
| Medulla oblongata |  | Reflexive, involuntary control of heart, breathing & blood vessels |
| Pons |  | Timing of subconscious breathing |
| Cerebellum | arbor vitae  L/R cerebellar hemispheres | Subconscious control & coordination of voluntary muscle |
| Midbrain | corpora quadrigemina  superior colliculi  inferior colliculi | Filter and relay visual (superior colliculi) & auditory (inferior colliculi) stimuli; reflexive control of eye movement, focusing lens and pupil diameter |
| Hypothalamus | mammillary bodies | Control of autonomic nervous system (ANS) & pituitary gland; regulates involuntary body functions, homeostasis |
| Thalamus | interthalamic adhesion = intermediate mass | Crude (raw) perception of sensation & emotions; relay afferent/efferent impulses to/from the cerebrum |
| Pineal gland |  | Endocrine gland – secretes one hormone (melatonin); covered in BSC2086 |
| Pituitary gland | infundibulum | Endocrine gland – secretes many hormones; covered in BSC2086 |
| Cerebrum | cerebral cortex  cerebral tracts  white matter vs. grey matter  fornix | Will (choice), intelligence, memory, awareness, personality |
| longitudinal fissure | Divides cerebrum into cerebral hemispheres |
| left cerebral hemisphere | Dominates speech sounds and in understanding sequential, rational & analytical concepts |
| right cerebral hemisphere | Dominates in non-speech sounds (melodies, laughing, etc.), in spatial perception & in holistic, artistic & emotional concepts |
| frontal lobe | Voluntary control over muscles, learning, planning, higher psychological functions |
| parietal lobe | Perception of sensations of touch, temperature, taste & and body position |
| temporal lobe | Perception of auditory sensations & related speech center |
| occipital lobe | Perception of visual sensations |
| corpus callosum  anterior commissure | Communication between the two cerebral hemispheres |
| gyri & sulci | Increase surface area of cerebrum for exchange of nutrients/wastes to/from blood vessels in the pia mater |

**QUIZ 4 MATERIAL (continued) – Functions of Cranial Nerves**

**Cranial Nerves:**

Section 13.4 (p. 581-584)

* Cranial nerve functions
* Identify which ones are sensory only (**S**), motor only (**M**), or both sensory and motor (**B**)

|  |  |
| --- | --- |
| **Number & Name** | **Body Functions Controlled** |
| I – Olfactory | **S**ensory – carries impulses associated with smell |
| II – Optic | **S**ensory – carries impulses associated with vision |
| III – Oculomotor | **M**otor – inferior oblique, superior/inferior and medial rectus muscles of eye, moves eye in eye socket, movement of eyelid, shape of lens |
| IV – Trochlear | **M**otor – superior oblique eye muscle moving eye in eye socket |
| V – Trigeminal | **B**oth – *Sensory*: nerves of face, *Motor*: muscles of mastication |
| VI – Abducens | **M**otor – lateral rectus eye muscle moving eye in eye socket |
| VII – Facial | **B**oth – *Sensory*: taste at anterior portion of tongue, *Motor*: facial expression muscles, tear glands, salivary glands |
| VIII – Vestibulocochlear | **S**ensory – balance/equilibrium & motion in the vestibule and semicircular canals, hearing in the cochlea |
| IX – Glossopharyngeal | **B**oth – *Sensory*: general throat sensations, taste at posterior portion of tongue, pressure receptors in carotid artery, *Motor*: muscles of larynx, pharynx, control of blood pressure |
| X – Vagus | **B**oth – *Sensory*: pharynx, larynx, impulses from many viscera (internal organs), *Motor*: pharynx, larynx, heart rate many visceral organs |
| XI – Spinal Accessory | **M**otor – voice production, neck movement, motor control of many thoracic and abdominopelvic viscera |
| XII – Hypoglossal | **M**otor – movement of tongue |

MAKE SURE TO DO THE **PRACTICE QUIZZES!** EXACT WORDING ON QUIZ MAY DIFFER SLIGHTLY FROM WHAT YOU SEE IN THESE FIGURES. **PRACTICE QUIZZES ARE A BETTER REPRESENTATION OF THAT EXACT WORDING.**

**PRACTICAL 4 MATERIAL (the remainder of this document)**

**Practical 4** covers everything that is not covered on the Quiz – including the Figures from the textbook for which there are no models. **Don’t forget to study the Figures!**

**Nervous Tissue:**

Section 12.2 (p. 512-520)

* Identify the following specialized parts and organelles of neurons from a picture, model, diagram or figure:
  + Figure 12.8
    - cell body (soma)
    - dendrites
    - axon
    - axon hillock
    - initial segment of axon
    - myelin sheath
      * Schwann cell (peripheral nervous system – PNS)
      * Oligodendrocyte (central nervous system – CNS)
    - node of Ranvier
    - endoneurium
    - synapse
    - Schwann cell
    - axon terminal
    - Nissl bodies
* Identify the different types of neurons in the figures below from a picture, model, diagram or figure:
  + Figure 12.9 (unipolar, bipolar, multipolar)
  + Figure 12.14 (sensory = afferent, motor = efferent, and interneuron)

Section 12.5 (p. 531-539)

* Identify the following specialized parts and organelles of neurons from a picture, model, diagram or figure:
  + Figure 12.27
    - axon terminal
    - synaptic cleft
    - synaptic vesicles containing neurotransmitter
    - presynaptic neuron cell membrane
    - postsynaptic neuron cell membrane

**Brain & Nerves:**

Section 13.2 (p. 557-566)

* Locate ALL of the brain parts and subparts in the table above (page 1 of this NTKS) from a picture, model, diagram or figure.
* Identify the ALL of the structures in Figures 13.6, 13.7, 13.11, 13.12, 13.13 from a picture, model, diagram or figure

Section 13.3 (p. 569-576)

* Identify the following structures as presented in Figures 13.16 & 13.17 from a picture, model, diagram or figure:
  + dura mater
  + arachnoid mater
  + pia mater
  + arachnoid granulation villus
  + subarachnoid space
  + subdural space
  + superior sagittal sinus
* Know and understand the production and circulation of cerebrospinal fluid (CSF) from its production in the choroid plexus, its path through the ventricular system, central canal and subarachnoid space, and its reabsorption back into the blood at the arachnoid granulation villi
  + Figure 13.18
  + Table 13.2

Section 13.4 (p. 576-586)

* Be able to recognize the following parts of a nerve as illustrated in Figure 13.21 from a picture, model, diagram or figure:
  + epineurium
  + perineurium
  + endoneurium
  + fascicle
* Identify the cranial nerves (name AND number in Roman numerals) from a picture, model, diagram or figure:
  + Figure 13.23
  + Table 13.3
* Identify the following structures of the gross anatomy of the spinal cord from a picture, model, diagram or figure:
  + conus medullaris
  + cauda equina
  + posterior median sulcus
  + dura mater
  + pia mater
  + dorsal root ganglia
  + sympathetic chain ganglia
* Identify ALL the structures shown on Figure 13.14 & Figure 15.3 (right column only) and the following structures below from a picture, model, diagram or figure:
  + dorsal ramus
  + ventral ramus
  + Rami communicantes
* Locate all 4 of the spinal nerve plexuses labeled in Figure 13.24 from a picture, model, diagram or figure.
* Identify the following structures from a picture, model, diagram or figure.
  + spinal cord
  + brachial plexus
  + cauda equina
  + cervical plexus
  + conus medullaris
  + dorsal roots
  + dorsal root ganglia
  + femoral nerve
  + genitofemoral nerve
  + ilioinguinal nerve
  + intercostal nerves
  + lumbar enlargement
  + lumbar plexus
  + phrenic nerve
  + anterior median fissure
  + sacral plexus
  + sciatic nerve
  + spinal nerve
  + sympathetic chain ganglia
  + ventral root
  + white rami communicantes