Biology 1120

PRACTICE REVIEW OF THE NERVOUS SYSTEM

OUTLINE

The following is a collection of questions and exercised to help you review the nervous system chapters, and in particular to discover which subjects will require additional studying.

- Nervous tissue
- Spinal cord
- Brain
- ANS

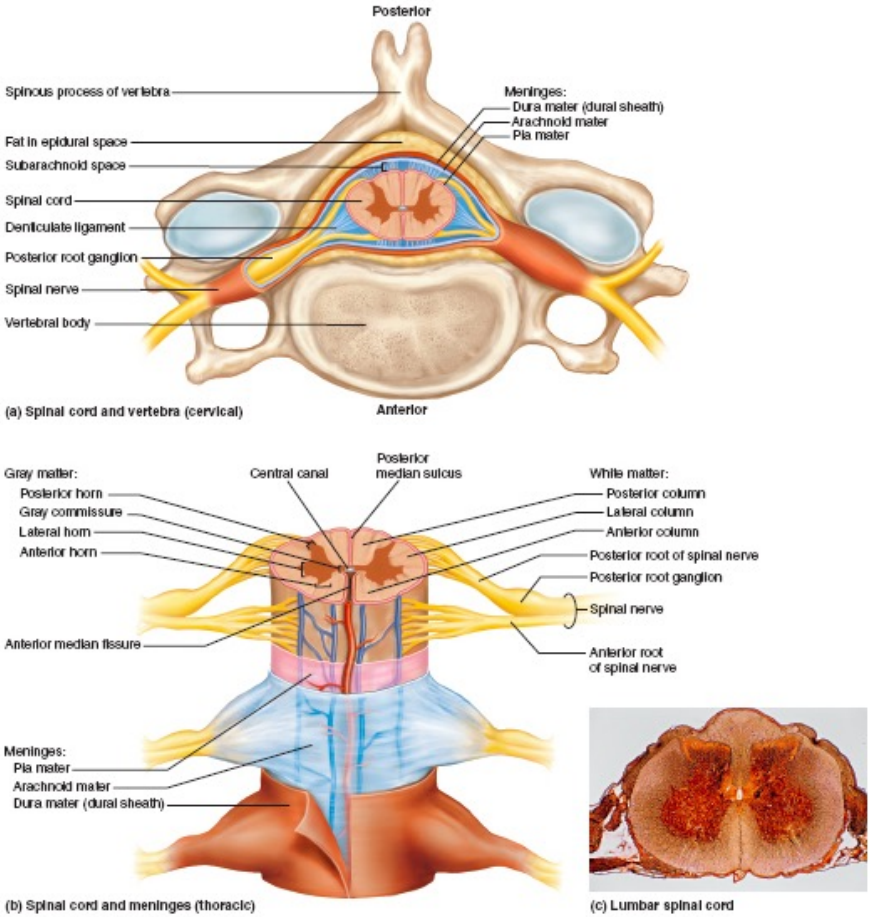
1. Draw a graph of an action potential and include:

- Y axis
- X axis
- Membrane potential (mV)
- Units of X and Y
- The graph line showing:
  - Resting potential, threshold, depolarization, peak, repolarization, hyperpolarization

2. Draw a cholinergic synapse and label:

- Pre-synaptic neuron
- Post-synaptic neuron
- Ca++
- Ca++ channels
- Vesicles containing neurotransmitters
- Synaptic cleft
- Na+
- Receptors
- Acetylcholine

Study this diagram for a moment:



3. Do the following two online game labelling exercises

- You will need to register (it is free) to Purpose games:
  - Spinal cord game: https://www.purposegames.com/game/gross-anatomy-of-the-spinal-cord-quiz
  - Spinal cord and meninges game: https://www.purposegames.com/game/h22bFl0hOEN

4. Spinal cord tracts

The following questions are multiple choice. If we are doing these questions online, please DO NOT annotate. Simply write your choice on a piece of paper.

1. Ascending tracts are:
   a) Sensory
   b) Motor
   c) Both

2. If the origin and destination of the tract is on opposite sides it is:

a) contralateral

b) ipsilateral

c) lateral lateral

3. In ascending tracts there are _____ neurons.

a) 9

b) 6

c) 3

4. In descending tracts there are _____ neurons>

a) 2

b) 4

c) 6

5. The spinothalmic tract is:

a) ascending

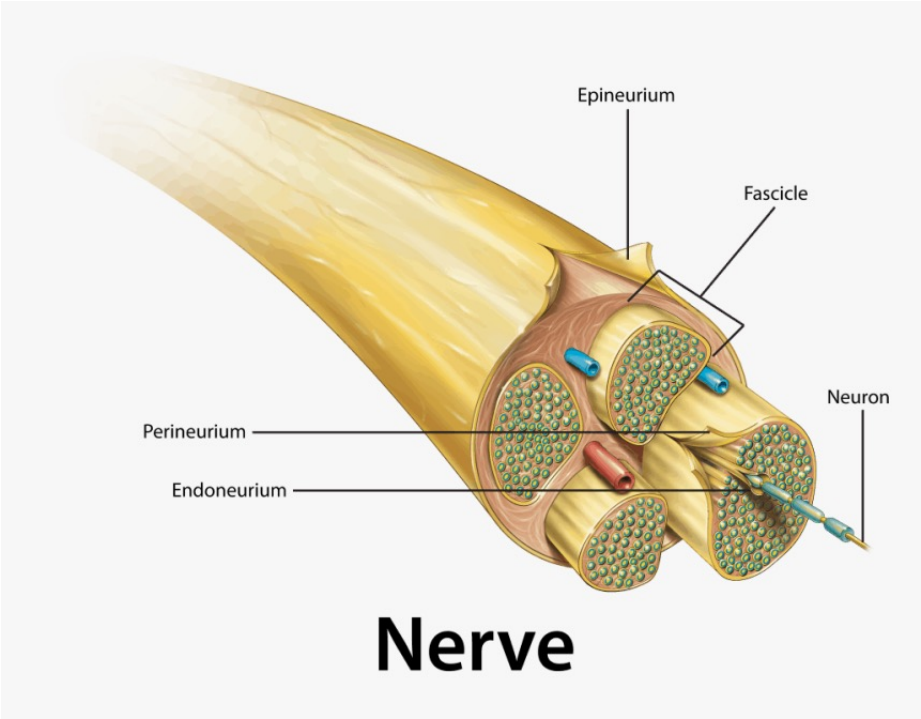
b) descending

6. The vestibulospinal tract is:

a) ascending

b) descending

5. Nerve cross-section labelling. Study this diagram for a moment.

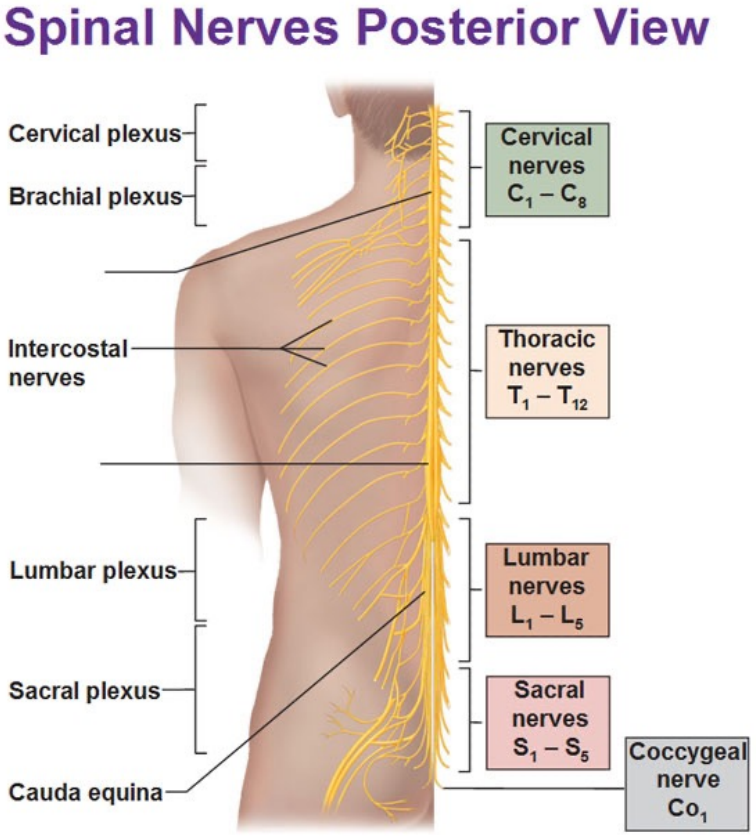


Now go to this site and play the nerve labelling game:

- https://www.purposegames.com/game/spinal-nerve-cross-section-quiz

- If you don't get 100%, play the game again.

6. Plexus labelling. Study this diagram for a moment.



- Now go to this site and play the plexus labelling game:
  - https://www.purposegames.com/game/spinal-plexuses-game

7. The brain - meninges

1. The order of meninges from superficial to deep is:
    a) Arachnoid, pia, dura
    b) pia, dura, arachnoid
    c) Dura, arachnoid, pia

2. The ventricular system of the brain is continuous.
    a) true
    b) false

8. The brain - brainstem

Watch this video:

https://www.youtube.com/watch?v=yQetOVB_VZo

1. Brainstem sections are:
   a) Frontal, parietal, mid-saggital
   b) Medulla, pons, midbrain

2. The _____ is responsible for vision, hearing, eye movement and body movement
   a) Midbrain
   b) Medulla
   c) Pons

3. The _____ is responsible for maintaining breath and heartrate and other autonomic processes.

a) midbrain

b) medulla

c) pons

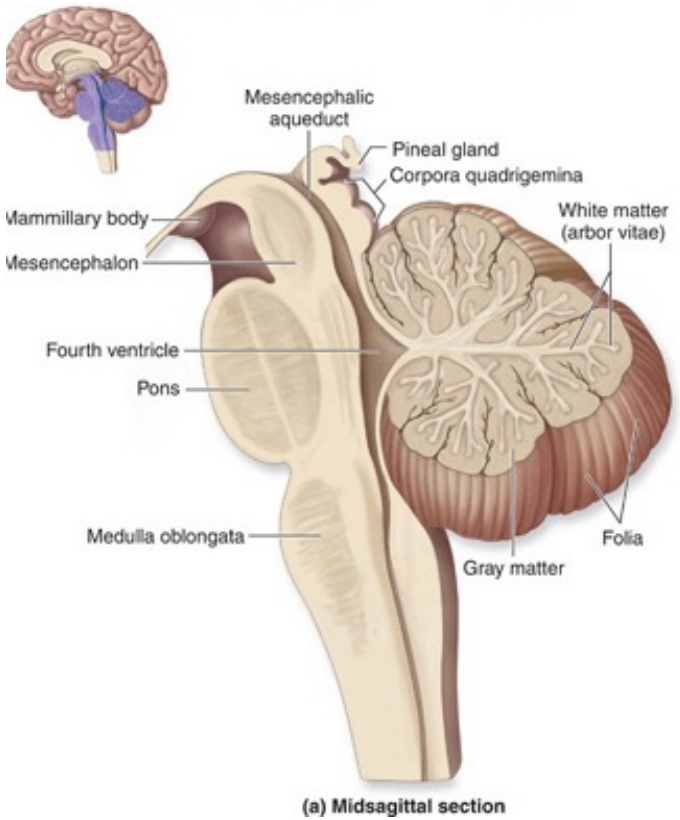
4. The _____ is responsible for motor control and sensory analysis.

a) midbrain

b) medulla

c) pons

9. The brain – cerebellum



(a) Midsagittal section

Now go to this site a play the cerebellum labelling game:

https://www.purposegames.com/game/sectional-view-of-the-cerebellum-game

10. The brain - questions

1. The diencephalon consists of the:
   a) Thalamus
   b) Hypothalamus
   c) Epithalamus
   d) All of the above

2. The _____ lobe is responsible for voluntary motor functions, planning, mood, social judgement.
   a) Frontal
   b) Parietal
   c) Temporal
   d) Occipital
   e) Insula

3. The ____ lobe is responsible for receiving and integrating sensory information.

a) Frontal
b) Parietal
c) Temporal
d) Occipital
e) Insula

4. The ____ lobe is the visual centre of the brain

a) Frontal
b) Parietal
c) Temporal
d) Occipital
e) Insula

5. The _____ lobe has areas for hearing, smell, learning, memory and emotional behaviour.

a) Frontal
b) Parietal
c) Temporal
d) Occipital
e) Insula

6. The _____ lobe has a variety of functions.

a) Frontal
b) Parietal
c) Temporal
d) Occipital
e) Insula

7. Deep masses of gray matter in the brain are called (page 7).
    a) basal nuclei
    b) basal vinegar
    c) superior nuclei
8. The loop of cortical structures including the amygdala is:
    a) parietal system
    b) emotional system
    c) limbic system
9. An electroencephalogram detects:
    a) voltage changes
    b) brain waves
    c) mental activity
    d) all of the above

10. Sensory association areas interpret sensory information (pg 10):

a) true

b) false

11. Learned motor skills, muscle tone, posture and smooth muscle contractions are formed in the:

a) pons

b) medulla

c) cerebellum

12. A language deficit is know as:

a) lesion

b) lateralization

c) aphasia

13. Cerebral hemispheres have different functions.

a) true

b) false

Now go and play this brain and spinal cord labelling game:

https://www.purposegames.com/game/label-the-brain-and-spinal-cord-game

11. The autonomic nervous system review:

Watch this neurology video by Armando Hasudungan, and answer the following questions.

https://www.youtube.com/watch?v=3a_aLsFvNWs

1. Another name for the sympathetic nervous system is:
   a) Rest and digest
   b) Fight or flight

2. The parasympathetic nervous system arises from:
   a) The thoracic and lumbar vertebrae
   b) The brainstem and sacral areas

3. What happens in a ganglion?
   a) Organ stimulation
   b) Synapses

4. In the sympathetic system, the post-ganglionic neuron extends from the _____ to the _____.
   a) Sympathetic ganglion chain to the target organ
   b) Brainstem to sympathetic ganglion chain

5. The sympathetic system prepares an individual for:

a) having dinner

b) exercising

6. Cranial nerve three causes the pupil to constrict:

a) true

b) false

7. The vagus nerve (cranial nerve X), is part of the

a) sympathetic system

b) parasympathetic system

8. Nerves from the sacral segment:

a) relaxes the eyes

b) relaxes the rectum

9. In the parasympathetic system, the pre-ganglionic neuron is longer.

a) true

b) false

10. Acetylcholine is part of both the sympathetic and parasympathetic system.

a) true

b) false