Study Sheet for Sensory Receptors and Sensory, Motor and Integrative Systems

1. The 3 layers of the eye are the \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_.

The cornea belongs to which layer?

What is the function of the lens?

What is the function of the iris and pupil?

2. Name the 2 photoreceptors found in the eye - \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_. Which is

more numerous? \_\_\_\_\_\_\_\_ Which is more sensitive? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Which type is

concentrated in the fovea? \_\_\_\_\_\_.

Describe how light causes a nerve impulse –

3. Tell what is found in the middle ear – list them in the proper sequence.

What makes up the boundary between the external and middle ear? \_\_\_\_\_\_\_\_\_\_\_\_\_

What marks the boundary between the middle and inner ear? \_\_\_\_\_\_\_\_\_\_\_\_

4. Describe how sound waves causes a nerve impulse (explain the transduction!! – what does

Transduction mean?

5. Tell where the 2 general kinds of chemoreceptors are located.\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_

Describe how they convert information into nerve impulses.

6. Are Mechanoreceptors encapsulated or free nerve endings? \_\_\_\_\_\_\_\_\_\_\_\_\_ Structurally

Mechanoreceptors are made up of these parts of neurons. \_\_\_\_\_\_\_\_\_. In which layer of the skin

do we typically find mechanoreceptors?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Are mechanoreceptors considered

“special” or “somatic sensory receptors? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. To which lobe of the brain do they

send their nerve impulses?

7. To what kind of stimuli do thermoreceptors respond? \_\_\_\_\_\_\_\_\_ Are thermoreceptors free or

encapsulated receptors?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ In what layer of the skin are they found?\_\_\_\_\_\_\_\_\_\_

What do we mean by a “first order sensory neuron”?

Are the Special Sensory Receptors or Somatic Receptors usually first order sensory neurons?

To what kind of stimuli do nociceptors respond?

To what kinds of stimuli do proprioceptros respond?

To what kind of stimuli do osmoreceptors respond?

Are osmoreceptors exteroreceptors or interoreceptors?

8. What is the function of the Ciliary muscle in the eye?

Name the muscle that dilates the pupil\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Is that muscle part of the

Sympathetic or Parasympathetic nervous system? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Identify the following components of the eye–

a. anterior chamber of the anterior cavity –

what does this chamber contain?

b. the optic disc- is a part of the \_\_\_\_\_\_\_\_\_ layer of the eye that –

c. the central fovea is a part of the \_\_\_\_\_\_\_\_\_\_\_ that –

d. rods contain the photopigment \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which is concentrated in layers

in this part of the rod (neuron) \_\_\_\_\_\_\_\_\_\_.

10. In the eye of someone with Myopia, the eye is too \_\_\_\_\_\_\_ (or the lens is too \_\_\_\_\_\_\_\_) so

that light rays focus \_\_\_\_\_\_\_\_\_\_ the retina, leading to a blurred image. Such a condition can

be corrected by using a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ shaped lens.

11. Static equilibrium is controlled by a structure in the \_\_\_\_\_\_\_\_ ear known as the \_\_\_\_\_\_\_\_\_.

Structurally the actual receptor is a \_\_\_\_\_\_\_\_ cell that is activated when –

12. Vibrations of the \_\_\_\_\_\_\_\_\_\_\_\_\_ cause a vibration of the malleus. Similarly vibration of

the stapes produce a vibration of the \_\_\_\_\_\_\_\_\_\_\_\_. This produces waves of fluid in the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the inner ear and these waves bend hair cells producing a \_\_\_\_\_\_\_\_\_

13. Which of the following taste buds is the largest and houses the most taste buds?

a. Filiform papillae c. Fungiform papillae

b. Foliate papillae d. Vallate papillae

14. The Pacinian Corpuscle would be an example of which of the following:

a. a first-order sensory neuron with encapsulated nerve endings

b. a first-order sensory neuron with free nerve endings

c. a second-order neuron that synapses with a first-order sensory neuron

d. a sensory receptor that synapses with a first-order sensory neuron

15. Third order sensory neurons run from the:

a. cerebral cortex to the thalamus c. midbrain to thalamus

b. medulla to midbrain d. thalamus to cerebral cortex

16. The kind of brain wave seen when a person is asleep is the \_\_\_\_\_\_\_\_\_\_ wave.

a. alpha c. delta

b. beta d. theta

17. Sensations about where our limbs and head are moving without looking at them arise

from this type of sensory receptor.

a. Meissner’s Corpuscles c. nociceptors

b. Merkel’s Discs d. proprioceptors

18. All of the following characteristics describes the Pacinian Corpuscle except for:

a. exteroreceptor c. free nerve ending

b. first order sensory neuron d. mechanoreceptor

19. The brain waves characterized by slow but “tall” waves are \_\_\_\_\_\_\_\_\_\_ waves.

20. Lower motor neurons originate in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and run to \_\_\_\_\_\_\_\_\_\_\_\_

muscles.

21. The function of the Olfactory Glands is to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. The Basal Nuclei are composed of (**Choose –**White **Or** Gray) \_\_\_\_\_\_\_\_\_

matter and are located (**Choose -**Near the Surface **OR** Deep Within) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

the cerebral cortex.They are composed of these parts of neurons \_\_\_\_\_\_\_\_\_\_\_. Damage

to the Basal Nuclei results in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-

23. (4 pts.) For olfactory receptor cells -

a. describe how the cell (neuron) is modified to function as a receptor –

b. describe how the cell functions (what causes it to “fire”)?

c. in the process of transduction \_\_\_\_\_\_\_\_\_\_ energy is converted into\_\_\_\_\_\_\_\_\_\_\_ energy.

d. as the result of this transduction, does a generator or a receptor potential result?

24. What do we mean by “referred pain” and why does it occur?

25. Tell the difference between a direct and an Indirect motor Pathway.

26. Tell the difference between a First-Order, a Second- Order and a Third-order Sensory Neuron.

27. Explain how various parts of the body are represented by the somatic sensory and somatic motor maps

of the cerebral cortex.

28. Know the stages of Non-REM sleep and what happens during REM sleep.

29. Upper motor neurons run from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ down through this spinal tract – the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ down the spinal cord. It synapses with a \_\_\_\_\_\_\_\_\_\_\_ motor neuron that

carries the nerve impulse to this kind of effector \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.