

Study Guide: Anatomy & Physiology

Midterm Fall 2019

Homeostasis

1. What is homeostasis?
2. Why is homeostasis important?
3. Be able to give an explanation of how homeostasis works, and an example, using the terms *receptor*, *set point*, and *effector*.
4. Understand the difference between negative and positive feedback mechanisms.

Planes of Reference

5. Be able to give the proper relative positions of body parts on a diagram.
6. What are the three directions in which you could dissect a body?

Levels of Organization

7. What are the levels of organization in living things, from simplest to most complex?
8. Be able to define each level of organization.

Cell Transport

9. What is the general structure of a cell membrane?
10. What are the main functions of cell membranes?
11. What is the difference between diffusion, osmosis, and filtration?
12. Given a diagram of a cell in a solution, be able to explain what types of materials will move across the membrane and how.

Tissues

13. What are the four major types of body tissues? What are their main functions?
14. How can you distinguish between smooth, skeletal, and cardiac muscle?
15. What is tissue engineering?
16. What are stem cells?

Integumentary System

17. What are the main functions of the skin?
18. In what ways does the skin help your body to maintain homeostasis?
19. What are the functions of the epidermis, dermis, hair follicles, nails, sebaceous glands, and sweat glands?
20. Be able to correctly identify structures of the skin.
21. What parts of your body are most sensitive to touch, pain, and temperature? Why do you think this is?
22. What is the function of melanin?
23. How do UV rays and vitamin D play into the role of melanin?

Skeletal System

24. Be able to identify the major bones of the human body.
25. For each of the skull bones we studied, where are they located, and what are their functions?
26. Describe the general structure of a long bone.
27. Describe the microscopic structure of bone.
28. What is resorption and deposition, and what role do they play in homeostasis?
29. What is the difference between a tendon and a ligament?
30. Describe the three different types of joints.
31. What are the differences between an x-ray, an MRI and a CT scan?
32. Be able to answer questions pertaining to the case study we reviewed in class (the skiing accident).

Muscular System

33. Describe in detail the structure of a muscle fiber.
34. Explain in detail the sliding filament theory of muscle contraction.
35. Describe the locations and explain the functions of the major muscles we studied in class.

General Nervous System

36. Draw a diagram showing the general organization of the nervous system.
37. What are the functions of the various divisions of the nervous system?
38. Describe the general pathway of signals through the nervous system.

Neurons

39. Describe the structure of a neuron.
40. What is the importance of the myelin sheath? Why does it have gaps (Nodes of Ranvier)?
41. Describe the differences between sensory neurons, motor neurons, and interneurons.
42. Explain in detail how nerve impulses are generated and conducted.
43. What are depolarization and repolarization?
44. What is the mV potential of a neuron at rest?
45. Explain the “all or none” response of neurons.
46. How are signals transmitted from one neuron to another?

The Brain & Spinal Cord

47. What are the functions of the major brain structures mentioned in class?
48. What are the four main lobes of the brain, and where are they found?
49. Explain white matter and grey matter.
50. What are the functions of the meninges and the cerebrospinal fluid

Making Connections

51. Be able to explain the physiological connection between any two of the systems covered in class thus far (integumentary, skeletal, muscular, and nervous)

In addition to these questions, you are responsible for knowing anything we covered in class, results from lab experiments, and homework assignments.

Key Vocabulary Terms

Homeostasis	External acoustic meatus	Neuron
Receptors	Mandible	Cell body
Set Point	Maxilla	Dendrites
Effectors	Foramen magnum	Axon
Negative Feedback	Sutures	Myelin sheath
Positive Feedback	Osteon	Sensory neurons
Axial	Resorption	Interneurons
Appendicular	Deposition	Motor neurons
Superior	Ligament	Resting potential
Inferior	Tendon	Action potential
Anterior	Joints	Depolarization
Posterior	Muscle Fiber	Repolarization
Medial	Filament	Synapse
Lateral	Sarcomere	Synaptic Cleft
Cross section	Myosin	Neurotransmitter
Oblique	Actin	Reflex Arc
Longitudinal	Masseter	Meninges
Frontal	Pectoralis Major	White Matter
Diffusion	Rectus Abdominis	Grey Matter
Osmosis	Triceps Brachii	Frontal lobe
Facilitated Diffusion	Biceps Brachii	Temporal lobe
Concentration Gradient	Achilles Tendon	Occipital lobe
Filtration	Gluteus Maximus	Parietal lobe
Integumentary	Central Nervous Sys.	Gyri
Epidermis	Peripheral Nervous Sys.	Cerebrum
Dermis	Somatic Nervous Sys.	Cerebellum
Glands	Autonomic Nervous Sys.	Corpus callosum
Melanin	Neurons	Spinal cord
Melanocyte	Afferent	Cerebrospinal Fluid
Mastoid process	Efferent	