Human Anatomy
1st Semester Exam 2011-2012
Study Guide

An Overview of Anatomy and Physiology

- Define *anatomy* and *physiology*.
- Explain how anatomy and physiology are related.

Levels of Structural Organization

- Name the levels of structural organization that make up the human body and explain how they are related.
- Name the organ systems of the body and briefly state the major functions of each system.
- Classify by organ system all organs discussed.
- Identify the organs shown on a diagram or a dissectible torso.

Maintaining Life

- List functions that humans must perform to maintain life.
- List the survival needs of the human body.

Homeostasis

- Define *homeostasis* and explain its importance.
- Define *negative feedback* and describe its role in maintaining homeostasis and normal body function.

The Language of Anatomy

- Verbally describe or demonstrate the anatomical position.
- Use proper anatomical terminology to describe body directions, surfaces, and body planes.
- Locate the major body cavities and list the chief organs in each cavity.

Cells

- List the structures of the nucleus and explain the function of chromatin and nucleoli.
- Identify the organelles on a cell model or describe them, and discuss the major function of each.
- Describe briefly the process of DNA replication and of mitosis. Explain the importance of mitotic cell division.

Body Tissues

- Name the four major tissue types and their chief subcategories. Explain how the four major tissue types differ structurally and functionally.
- Give the chief locations of the various tissue types in the body.
- Describe the process of tissue repair (wound healing).

Classification of Body Membranes

- List the general functions of each membrane type-cutaneous, mucous, serous, and synovial-and give its location in the body.
- Compare the structure (tissue makeup) of the major membrane types.

The Integumentary System (Skin)

- List several important functions of the integumentary system and explain how these functions are accomplished.
- When provided with a model or diagram of the skin, recognize and name the following skin structures: epidermis, dermis (papillary and reticular layers), hair and hair follicle, sebaceous gland, and sweat gland.
- Name the layers of the epidermis and describe the characteristics of each.

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- Describe the distribution and function of the epidermal derivatives-sebaceous glands, sweat glands, and hair.
- Name the factors that determine skin color and describe the function of melanin.
- Differentiate between first-, second-, and third-degree burns.
- Explain the importance of the "rule of nines."
- Summarize the characteristics of basal cell carcinoma, squamous cell carcinoma, and malignant melanoma.

Bones: An Overview

- Identify the subdivisions of the skeleton as axial or appendicular.
- List at least three functions of the skeletal system.
- Name the four main kinds of bones.
- Identify the major anatomical areas of a long bone.
- Explain the role of bone salts and the organic matrix in making bone both hard and flexible.
- Describe briefly the process of bone formation in the fetus and summarize the events of bone remodeling throughout life.
- Name and describe the various types of fractures.

Axial Skeleton

- On a skull or diagram, identify and name the bones of the skull.
- Describe how the skull of a newborn infant (or fetus) differs from that of an adult, and explain the function of fontanels.
- Name the parts of a typical vertebra and explain in general how the cervical, thoracic, and lumbar vertebrae differ from one another.
- Discuss the importance of the intervertebral discs and spinal curvatures.
- Explain how the abnormal spinal curvatures (scoliosis, lordosis, and kyphosis) differ from one another.

Appendicular Skeleton

- Identify on a skeleton or diagram the bones of the shoulder and pelvic girdles and their attached limbs.
- Describe important differences between a male and female pelvis.

Joints

- Name the three major categories of joints and compare the amount of movement allowed by each.

Overview of Muscle Tissues

- Describe similarities and differences in the structure and function of the three types of muscle tissue and indicate where they are found in the body.
- Define *muscular system*.
- Define and explain the role of the following: *endomysium*, *perimysium*, *epimysium*, *tendon*, and *aponeurosis*.

Microscopic Anatomy of Skeletal Muscle

- Describe the microscopic structure of skeletal muscle and explain the role of actin- and myosin-containing myofilaments.

Skeletal Muscle Activity

- Describe how an action potential is initiated in a muscle cell.

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- Describe the events of muscle cell contraction.
- Define *graded response, tetanus, isotonic* and *isometric contractions,* and *muscle tone* as these terms apply to a skeletal muscle.
- Describe three ways in which ATP is regenerated during muscle activity.
- Define *oxygen deficit* and *muscle fatigue* and list possible causes of muscle fatigue.
- Describe the effects of aerobic and resistance exercise on skeletal muscles and other body organs.

Muscle Movements, Types, and Names

- Define *origin, insertion, prime mover, antagonist, synergist,* and *fixator* as they relate to muscles.
- Demonstrate or identify the different types of body movements.
- List some criteria used in naming muscles.

Organization of the Nervous System

- List the general functions of the nervous system.
- Explain the structural and functional classifications of the nervous system.
- Define *central nervous system* and *peripheral nervous system* and list the major parts of each.

Nervous Tissue: Structure and Function

- State the function of neurons and neuroglia.
- Describe the general structure of a neuron, and name its important anatomical regions.
- Describe the composition of gray matter and white matter.
- List the two major functional properties of neurons.
- Classify neurons according to structure and function.
- List the types of general sensory receptors and describe their functions.
- Describe the events that lead to the generation of a nerve impulse and its conduction from one neuron to another.
- Define *reflex arc* and list its elements.

Central Nervous System

- Identify and indicate the functions of the major regions of the cerebral hemispheres, diencephalon, brain stem, and cerebellum on a human brain model or diagram.
- Name the three meningeal layers and state their functions.
- Discuss the formation and function of cerebrospinal fluid and the blood-brain barrier.
- Compare the signs of a CVA with those of Alzheimer's disease; of a contusion with those of a concussion.
- Define *EEG* and explain how it evaluates neural functioning.
- List two important functions of the spinal cord.
- Describe spinal cord structure.

Peripheral Nervous System

- Describe the general structure of a nerve.
- Identify the cranial nerves by number and by name, and list the major functions of each.
- Describe the origin and fiber composition of (a) ventral and dorsal roots, (b) the spinal nerve proper, and (c) ventral and dorsal rami.
- Discuss the distribution of the dorsal and ventral rami of spinal nerves.

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- Name the four major nerve plexuses, give the major nerves of each, and describe their distribution.
- Identify the site of origin and explain the function of the sympathetic and parasympathetic divisions of the autonomic nervous system.
- Contrast the effect of the parasympathetic and sympathetic divisions on the following organs: heart, lungs, digestive system, blood vessels.