

# Anatomy Semester 1 Exam Study Guide

## Chapter 1 - Orientation

### **Objective 1:** *Be able to define Anatomy and Physiology*

- > **Anatomy** is the study of the structure and shape of the body
- > **Physiology** is the study of how the body and its parts function.

### **Objective 2:** *Name the six levels of structural organization*

Simplest to the most complex are:

chemical -> cellular -> tissue ->organ ->organ system -> organism

### **Objective 3:** *Be able to match the organ systems with their functions:*

Cardiovascular – Delivers oxygen and nutrients to the body tissues.

Digestive – breaks food down into absorbable units that enter the blood for distribution to body cells.

Endocrine - Controls the body with chemicals called hormones

Integumentary - Protects deeper tissue from injury.

Lymphatic - Protects the body; destroys bacteria and tumor cells.

Muscular - Allows for locomotion and facial expressions.

Nervous - Responds to internal and external changes by activating appropriate muscles and glands

Reproductive - Production of offspring.

Respiratory - Keeps blood constantly supplied with oxygen and removes carbon dioxide.

Skeletal - . Protects and supports body organs.

Urinary - Eliminates nitrogenous wastes from the body.

### **Objective 4:** *Define homeostasis, and explain its importance*

>Homeostasis describes the body's ability to maintain relatively stable internal conditions even though the outside world is continuously changing.

### **Objective 5:** *Compare negative and positive feedback mechanisms*

> negative feedback - the net effect of the response to the stimulus is to shut off the original stimulus or reduce its intensity. Graph would fluctuate

>positive feedback - tends to increase the original stimulus and pushes the variable farther from its original value.

### **Objective 6:** *Be able to describe the anatomical position*

\*In *anatomical position* the body is erect with the feet parallel and the arms hanging at sides with the palms facing forward.

### **Objective 7:** *Use proper anatomical terminology to describe body directions*

Inferior – below

superior – above

posterior – behind

anterior – in front

lateral – toward the side

medial - at the midline of the body

proximal –closer to body origin

distal – farther from the origin of the body

deep – away from the body surface

superficial – toward the body surface

### **Objective 8:** *Be able to identify the three types of body sections*

>sagittal section - divides the body into right and left parts

> frontal section - divides the body into anterior and posterior parts

> transverse section - divides the body into superior and inferior parts

### **Chapter 3 - Body Tissues**

**Objective:** *Be able to name the four major Body Tissues and their characteristics*

*\*Epithelial (covering)*

\*cells are close together

\*avascular

\*cells regenerate easily

*Connective (support)*

\*most are well vascularized

\*Examples include blood, bone, ligaments, tendons, and cartilage

*Muscle (movement)*

\*Highly specialized to contract (shorten) to produce movement.

*Nervous (control)*

\*Found in the brain, spinal cord, and peripheral nerves.

\*Coordinate, regulate, and integrate body functions.

### **Chapter 4 - The Integumentary System**

**Objective 1:** *Be able to name the parts and functions of the Integumentary System*

\* The Integumentary System includes the skin, hair, nails, sweat glands, oil glands

\* The skin protects us from mechanical damage, chemical damage, bacterial damage, UV radiation, thermal damage, and drying out.

\* The skin aids in body heat loss, aids in heat retention, secretes uric acid, and synthesizes Vitamin D.

**Objective 2:** *Be able to define and locate keratin & melanin*

\***Keratin** – tough protein that makes skin, hair, and nails tough and hard. Made by keratinocytes; the primary cell found throughout the epidermis. Oldest cells are in the corneum layer.

\***Melanin** – pigment responsible for color, protects the skin from UV radiation, protects the folate in our blood vessels. Made by melanocytes which are found only in the basal layer of the epidermis.

→ UVB radiation from the sun allows our skin to form Vitamin D.

**Objective 3:** *Know the main layers of the skin & their characteristics*

*Epidermis* – mostly dead cells, melanin found here, contains keratin

*Dermis* – contains collagen, elastin, blood vessels, and hair follicles. Two regions

1) papillary layer - responsible for fingerprints

2) reticular layer - elastic fibers gives skin elasticity, collagen fibers gives skin strength

*Hypodermis* – subcutaneous layer, mostly fat (adipose) tissue

**Objective 4:** *Differentiate between a 1<sup>st</sup>-2<sup>nd</sup>- and 3<sup>rd</sup>- degree burn*

1<sup>st</sup>-degree □ only epidermis is damaged, skin will regenerate

2<sup>nd</sup>-degree □ epidermis and upper dermis damaged, blisters will form, skin will regenerate

3<sup>rd</sup> -degree □ all layers of the skin damaged, no pain due to nerves destroyed, skin will not regenerate

# Anatomy Semester 1 Exam Study Guide

## **Chapter 5 - The Skeletal System**

General Info:

\* The adult skeleton has 206 bones.

\* Parts of the skeletal system include: bones, joints, cartilages, ligaments.

**Objective 1:** *Be able to identify the subdivisions of the skeleton:*

- a. The axial skeleton contains: the skull, vertebral column, and bony thorax.
- b. The appendicular skeleton contains: pectoral girdle, pelvic girdle, limbs

**Objective 2:** *Be able to list the functions of the skeletal system:*

The functions of bone are: support the body, protection of soft organs, blood cell formation, storage of minerals and fats, movement due to skeletal muscles

**Objective 3:** *Describe the two basic types of bone tissue:*

- a. compact bone – dense & smooth, homogenous
- b. spongy bone – small needle-like pieces of bone, many open spaces

**Objective 4:** *Name the five main classifications of bone on the basis of shape.*

- a. long – shaft with two heads, mostly compact bone (bones of arms & legs)
- b. short – mostly spongy bone (bones of wrist and ankles)
- c. flat – thin layer of compact around a layer of spongy (skull, ribs, chest bone)
- d. irregular – does not fit in other categories (vertebrae)
- e. sesamoid - a bone embedded within a tendon or muscle (patella)

**Objective 5:** *Be able to identify significant features of a long bone and describe the functions of each.*

- a. epiphysis - ends of a long bone
- b. diaphysis - bone shaft
- c. spongy bone - porous bone filled with red marrow
- d. compact bone - dense bone, wall of diaphysis
- e. periosteum - membrane that covers the entire bone
- f. medullary cavity - hollow, filled with yellow marrow
- g. articular cartilage - found at the epiphyses and provides a smooth, slippery surface that decreases friction at joint surfaces.
- h. epiphyseal line - growth plate
- i. yellow marrow - fat storage

**Objective 6:** *Locate the sutures of the skull*

coronal suture - connects the parietal bones to the frontal bone  
sagittal suture - connects the two parietal bones  
lambdoid suture - connects the parietal bones to the occipital bone  
squamous suture - connects the parietal bones to temporal bone

**Objective 7:** *Be able to identify these bones and locate where they are on a model*

\*The hyoid bone is unique because it is the only bone that does not articulate with any other bone in the body.

\*The five regions of the vertebral column from superior to inferior are:

Cervical(7), thoracic (12), lumbar(5), sacrum, coccyx

\*The first 7 pair of ribs are True Ribs. The last 5 pairs are False Ribs. The last 2 pairs of false ribs are also called Floating Ribs.

\*The coxal bone consists of the ilium (largest), ischium (sit down bone), and pubis (most anterior)

\*Given a common name or description, be able to name the bone

Zygomatic – cheekbone	Mandible – jaw bone
Frontal Bone – forehead	Maxilla – upper jaw
Lacrimal – contains passage for tears	Palatine – posterior hard palate
Vomer – divides the nasal septum	Femur – thigh bone
Tibia – shin bone	Fibula – lateral leg bone
Carpals – wrist bones	Patella – knee cap
Humerus – upper arm bone	Sternum – breastbone
Clavicle – collar bone	Scapula – shoulder blade
Metacarpals – palms of your hand	Calcaneus – heel bone
Phalanges – fingers and toes	Tarsals – ankle bones
Occipital bone – most posterior cranial bone	Coccyx - tailbone
Radius – forearm bone(thumb side)	Ulna – forearm bone (pinky side)
Sphenoid – makes up the floor of the cranium, butterfly shaped bone	

**Objective 8:** *Identify the paranasal sinuses & their functions*

The four paranasal sinuses are: frontal, ethmoid, sphenoidal, maxillary

Functions:

- \*Lighten the skull
- \*Humidifying and heating inhaled air
- \*supporting immune defense of the nasal cavity
- \*give resonance and amplification to voice

**Objective 9:** *Describe the functions of fontanelles*

- \*Allow skull compression during birth
- \*Allow the brain to grow during later pregnancy and infancy

**Objective 10:** *Define the homeostatic imbalances of the skeletal system*

**Arthritis** - inflammation of the joints that includes symptoms of swelling, pain, stiffness and decreased range of motion.

**Osteoporosis** - a condition in which the bones become weak and brittle, typically as a result of hormonal changes, or deficiency of calcium or Vitamin D