Review Suggestions: Semester 1

CP A & P

Name:_____

Unit 1: The Human Body – An Orientation

- Biological Levels of organization (with a focus on an individual organism and smaller)
- Body planes
    - Description of each
    - Picture identification of each (module guide with diagram)
- Anatomy vs. Physiology
    - Revisit module 1.1 warm-up
- Medical terms
- Overview of body systems
    - 11 total – review the major homeostatic function of each
- Homeostasis
    - Positive vs. Negative feedback
    - Examples within major body systems
    - Examples of imbalances and how the body would respond (TBL quiz 1.5)
- *Maintaining Life*: The eight major necessary life functions
    - Examples of each
    - Primary body system(s) involved in carrying out
- *Maintaining Life*: The five main survival needs of the body

Sample Questions:

1.1: A doctor listens in to a patient's heart beat using a stethoscope – which necessary practice for studying anatomy would the doctor be using? (be specific)

1.2: Name the anatomical structural levels of organization that come before and after the tissue level:

1.3: Withdrawal reflex would be an example of which of the 8 necessary life functions?

1.4: The phalanges are _____ to the humerus and _____ to the skin of the hand (always assume anatomical position)

1.5: Provide a specific example (using body systems) of homeostatic feedback (include terms receptor, control center, and effector)

Unit 2: Living Chemistry/Digestive System

- Basic Atomic Chemistry
    - Subatomic particles (protons, neutrons, electrons)
    - Identifying atomic properties (mass, atomic #)
    - Isotopes
    - Ions
- Energy
    - Forms of energy found in or used by living organisms
    - Conversions of matter to energy by organisms
- Composition of Matter
    - Mixture types
    - Solute/Solvent/Solution
- Chemical Bonds/Combining Matter
    - Covalent/Ionic/Polar Covalent/Hydrogen

- Molecules vs. compounds
- Hydrolysis vs. dehydration
- Synthesis vs. decomposition
- Anabolic vs. catabolic

- Biochemistry
  - Acids/Bases
    - H^+ vs. OH^-
    - Examples of common acids and bases
    - pH scale (measurement, increments, pH lab)
  - Biomolecules – components (monomers, polymers, functions, examples)
    - Carbohydrates
    - Lipids
    - Proteins (enzymes)
    - Nucleic Acids
  - ATP (structure, function, etc)
- Digestion
  - Organs of the digestive tract
  - Chemical vs. Mechanical digestion (location and enzymes/biomolecules involved)
  - Receptors found in digestive system
  - The major processes that take place during digestion (propulsion, peristalsis, etc.)
  - Major Accessory glands (we are they located, what is their role, chemical secretions, etc)
  - Hormonal control of digestion (see mod.guide warm-up)

Sample Questions:

2.1: What type of energy is contained within the food we eat? What type(s) of energy just it get transformed into?

2.2: What are the four major elements that comprise the human body? What's the difference between a mixture, a colloid, and a suspension? Give an example of each:

2.3: List each major step of digestion and describe the organs/structures involved.

2.4: List the structures of the digestive tract in order and 1) decide if there is chemical, mechanical, or both 2) Secretions that take place there 3) general properties of said structure.

2.5: List the major accessory organs and explain their role in digestion.

Unit 3: Cells /Tissues / Excretory (Urinary Focus)

- Basic Cell anatomy (organelles and structures)
  - Nucleus (chromatin vs. chromosomes, nucleolus)
  - Cytoplasm (Ribosomes, ER – rough and smooth, Golgi, Lysosomes, Mitochondria, Cytoskeleton, Ribosomes, Vacuole, chloroplast)
  - Cell membrane (Phospholipids, Proteins, junctions, carbohydrate chains)
- Cell Membrane Physiology
  - Passive transport (diffusion, facilitated diffusion, osmosis)
  - Active transport (solute pumping, bulk transport (endocytosis, exocytosis, phagocytosis)
- Cell Physiology DNA and Protein
  - Transcription (DNA, mRNA, codons, etc)
  - Translation (mRNA, tRNA, ribosomal RNA, etc)
- Tissue (What are the four main types? – We have only looked at epithelial and connective in detail (specifically skeletal for connective)
- Epithelial Tissue (diagrams, functions, locations, etc) (see also unit 4)

    - Simple squamous, Simple cuboidal, Simple columnar, pseudostratified, stratified squamous, stratified columnar, transitional, glandular
- Connective Tissue
    - Bone, hyaline cartilage, elastic cartilage, fibrocartilage, adipose tissue
- Urinary System
    - Name the gross anatomy as well as the microscopic anatomy of a nephron.
    - Describe the basic physiology of the excretory system
    - Describe the process of blood filtration, reabsorption, secretion, and excretion

Sample Questions:

3.1: Draw an animal cell with all necessary organelles – include organelle functions

3.2: Draw a cross section of a plasma membrane: include diagrams that show all of the processes of how materials move across (draw solutes, concentrations, any necessary proteins if applicable, and an arrow to show direction of movement) *can be separate pictures for each

3.3: Provide a specific example of how the physiology of a cell will dictate that cell's anatomy or vice versa (think about cell type project – building cells with play-doh)

3.4: Draw the gross anatomy of the urinary system. Label and define function (add a frontal cut cross section of the kidey)

3.5: Diagram a nephron and describe what is happening in each section (F, S, R). What are the materials that form filtrate? What are the materials that form urine? What are the materials that need to be present in healthy blood composition?

Unit 4: Integumentary

- Skin basics
    - Main layers of the skin (main layers of the epidermis and dermis)
    - Hypodermis
    - Pigments
- Skin physiology (6 main functions and their homeostatic importance)
- Appendages of the skin
    - Glands (sebaceous, sweat glands (eccrine, apocrine)
    - Hair and hair follicle composition
- Homeostatic imbalances
    - Burns (1^{st}, 2^{nd}, and 3^{rd} degree (partial thickness, full thickness)
    - Skin cancer (benign vs. malignant, basal cell carcinoma, squamous cell carcinoma, malignant melanoma)
- Developmental aspects
    - Timeline of changes to skin while aging

Sample Questions:

4.1: Draw an example of different epithelial cells – next to the cell, include a location and property of that cell

4.2: Draw a diagram of the five (include Lucidum) – include a brief description of the job/role of that layer, and the relative thickness of each layer)

4.3: List the six main functions of the skin. Include a brief description and describe the main body system(s) that would work closely in that function

4.4: Describe the differences between the different glands. Also draw a basic diagram of a hair follicle and label the most necessary components.

4.5: What are the distinguishing factors between each of the three burn types.

4.6: Define all key vocab from 4.2/4/3 notes

Unit 5: Skeletal

- Bone basics
    - Parts of the skeleton (axial vs. appendicular)
    - Types of bones (long, short, flat irregular)
    - Type of bone (spongy, compact)
    - Anatomy/structure of a long bone (diaphysis, epiphysis, periosteum, Sharpey's fibers, arteries, articular cartilage, medullary cavity)
- Microscopic Anatomy of a bone
    - Cell types (osteoblast, osteoclast, osteocyte)
    - Structures (Osteon anatomy, lacunae, lamellae, canaliculi, etc)
- Physiology of the skeleton
    - Review the 6 main functions of the skeletal system
- Bone development and formation
    - Endochondral vs. intramembranous (location, cell types, steps in the process)
    - Bone growth in length (interstitial) vs. growth in width (appositional)
    - Remodeling (action of bone cells)
- Joints
    - 2 classifications (3 functional classifications vs. 3 structural classifications) – properties of each and an example of a location on the body
- Bone Fractures
    - Descriptions and locations (closed vs. open)
    - Comminuted, compression, spiral, epiphyseal, depression, greenstick
    - Bone repair and healing (4 main stages)

Sample Questions:

5.1: Provide an example of 3 bones found on the axial skeleton and 3 bones found on the appendicular skeleton. Also, provide an example for each of the four bone shapes.

5.2: Describe the action of the three main bones cells:

5.3: List the 6 main functions of the skeletal system. What are some other major organ systems that work closely with the skeletal system?

5.4: Describe the steps in both endochondral and intramembranous bone formation:

5.5: What are the properties of each of the joint types? (discuss both structural and functional classifications)

5.6: What are the main steps in bone repair?