Review Suggestions: Semester 2

A & P Honors

Name:_____

Unit 6: Muscle

- Categorize the three main types of muscle and compare/contrast properties - **Special emphasis on skeletal muscle**.
    - Skeletal/cardiac/smooth
- Muscle gross anatomy
    - Major layers (connective tissue sheaths of skeletal muscles and each subsequent structure involved)
    - Review the 5 golden rules of muscle movements
- Review major muscles and location (remember, there is a practice PowerPoint in 6.3).
    - Review major muscle groups and their movements
- Microscopic muscle anatomy
    - Basic anatomy of a muscle fiber
    - Basic anatomy of a sarcomere (thick vs. this filament)
    - Sliding filament model (thick/thin filaments interaction, cross bridge formation, etc)
    - Events at neuromuscular junction (excitation, release of neurotransmitters, all or nothing, Ca and other ions involved)

Sample Questions:

6.1: List three properties of each skeletal, cardiac, and smooth muscle.
What are the 5 golden rules for muscle movement?

6.2: Create a list that shows the events that take place of skeletal muscle contraction (start at the events that would occur at the neuromuscular junction, continue to cross bridge formation and deformation, end with the beginning of another cross bridge cycle).

6.3: Name all the major muscles that were covered in class (see muscle diagram). Practice identifying specific muscles from a gross muscle diagram.

6.4: Identify the places in the body where smooth muscle can be found and relate their function to the ANS.

6.5: What are all the different categories of techniques used to name muscles? Provide examples for each.

Unit 7: Nervous System and vision (the eye)

- Fundamentals of the nervous system
    - Sensory input, integration, motor output
    - Branches of the nervous system (CNS and Peripheral Nervous System)
    - Compare the autonomic and somatic nervous system
    - Branches of the autonomic nervous system (Sympathetic nervous system vs. parasympathetic)
    - Glial Cells of the nervous system
    - Action potentials within the nervous system (step by step)
    - Basic structure of a neuron and a synapse
- The central nervous system
    - The major parts of the CNS
    - Structures of the brain (general main structures of the brain)
    - Physiology of the structures of the brain
    - Hemispheres of the cerebral cortex and their role in cognition
    - Folding of the brain (names of depressions/projections)
    - Ventricles of the brain and cells found here
    - Meninges (order of layers and function of the layers)

- Brain stem structures and roles in autonomic regulation
- Spinal cord (gray matter vs. white matter)

- The peripheral nervous system
  - Classification of sensory inputs (by location and stimulus types)
  - Sensory integration
  - Reflex arcs (components of and physiology)

- Autonomic Nervous System
  - Properties of neurons that specific to the autonomic and peripheral branches
  - Response to stimulus in PNS and SNS

- The special Senses

  1) **The eye**: structures of the eye, layers of the eye (vascular layer, sensory layer, etc), cell types within the eye (photoreceptors), internal layers and fluids, role of each structure

Sample Questions:

7.1: Create a step by step list of the events that take place in order for an action potential to be generated (begin with a stimulus and end at the repolarization of the neuron)

- Draw a chart to show the branches of the nervous system (try this without looking at notes)

7.2: List all the structures of the brain and record functions. Create a second list that only shows the hemispheres of the cerebrum and describe the role of each.

7.3: What the receptors that would respond to the following stimuli: 1) Pressure or vibration 2) Pain (extreme pressure, heat, etc) 3) Light 4) Taste 5) Slight changes in temperature

7.4: Create a chart that compares and contrasts the sympathetic nervous system and the parasympathetic nervous system (show the differences in response, ganglia, etc.)

7.5: Draw a basic diagram that shows both a cross section of the eye. Label all the necessary parts and describe their physiology.

Unit 8: Endocrine System

- The function and location of the glands presented in class.

Sample Questions:

8.1: Draw a sketch of the human body with the location of all of the glands that were included on worksheet, on the side, record the major function of each gland along with associated hormones.

8.2: For each endocrine gland make a connection to a class topic FROM EACH UNIT (body system) that relates to the gland.

Unit 9: Cardiovascular/Blood

- Fundamentals of blood
  - Composition of blood by percentage
  - Composition of plasma
  - Types of cells found in blood
  - Major three functions of blood
  - Major blood types and properties of each (Antigens present, antibodies, which blood types can be donated to which and which can received from which)
  - Properties of blood cells

- The heart (anatomy and physiology)
    - The path of blood through the heart (arteries vs. veins, pulmonary vs. systemic circulation, valve classification (AV valves vs. semilunar valves)
    - Layers of the heart tissue
    - Cardiac muscle tissue (compare properties to skeletal muscle)
    - Electrical conduction in the heart (order of events for contraction, neurons and nodes involved, reading an ECG)
    - Cardiovascular measurements (pulse, heart rate, blood pressure)
    - Systolic vs. diastolic pressures
- The blood vessels
    - Differences between arteries and veins (structure, physiology, etc)
    - Capillary bed and interaction with additional organs
    - Factors aiding venous return
    - Identifying major blood vessels in the body (veins and arteries)

Sample Questions:

9.1: If a person has type A blood who can they donate to and who can they receive from? What about a person with type O blood?

- Make pie chart (doesn't have to be precise) that shows the percentages of different materials in blood (be sure to include the content of blood plasma)

- Describe three important unique factors that make erythrocytes so efficient at oxygen transport

- Describe the major A & P of leukocytes covered.

9.2: Create a rough sketch of the heart showing all the chambers, valves, arteries, veins, and arrows that show direction of flow through the heart.

- Make a step by step list of the events that take place in order to propagate an electric impulse through the heart for cardiac muscle contraction.

- Describe the events in the cardiac cycle using an ECG, heart sounds (valves open/closed) , blood pressure landmarks, etc.

9.3: Compare arteries and veins. Describe in terms of appearance, special adaptations, pressures, volume of blood, etc.

Unit 10: Respiratory

- Basic Respiratory Anatomy
    - Respiratory pathway (structures that air travels through, types of cells, respiratory zone vs. conducting zone)
    - Structures of the respiration that aid in breathing (nose, diaphragm, etc)
    - Basic anatomy of the lungs
    - Voice production and structures of the larynx
- Respiratory physiology
    - Physics behind inspiration and exhalation (pressure and volume relationship and influence of diaphragm)
    - Reading and deciphering a Spirograph
    - Gas exchange processes (ventilation/perfusion)

- Respiratory homeostatic imbalances
    - Identifying the symptoms and causes of the major respiratory disorders (see sample question below for the five major respiratory ailments that will be represented on the final

Sample Questions:

10.1: What is the path of air as it moves through the respiratory system? (Be sure to include both the conducting and respiratory zones). Create a list that shows the characteristics of each structure.

10.2: Describe the physiological events that take place in inspiration and exhalation (the physics behind these events). Sketch a normal Spirograph for a male and show label the different sections

10.3: Respiratory Homeostatic Imbalances: The following 5 disorders are the required 5 that you will see represented on the exam : 1) Tuberculosis 2) Asthma 3) Cystic Fibrosis 4) Emphysema 5) Pneumonia 6) Pulmonary Fibrosis 7) Chronic Bronchitis