Skeletal

1. What are the four components of the skeletal system, and their functions
2. What are the functions of bone
3. What are the two layers of bone
4. What is the periosteum and what is its function
5. What is the structure of the osteon, what are the features found in the osteon
6. What are the three types of bone cells and their functions
7. What are the functions of cartilage, tendons, and ligaments
8. What are the parts of the synovial joints and their functions
9. What are the hormones involved in bone growth and homeostasis
10. What glands produce calcitonin and parathyroid hormones
11. What are the disorders of the skeletal system
12. How do bones heal
13. What is osteoporosis, what are the risk factors, what can you do to prevent it

Definitions: Compact bone, osteon, central canal (haversian canal), spongy bone, epiphysis, diaphysis, periosteum, lacunae, callus, fibroblasts, osteoblasts, osteocytes, osteoclasts, chondrocytes, growth hormone, parathyroid hormone, calcitonin, vitamin D, epiphyseal plate, growth plate

Nervous System Part I

1. What are the functions of the nervous system
2. Know the two types of cells in nervous tissue (neuroglial cells and neurons)
3. What are the three types of neuroglial cells and their functions
4. What are the two main divisions of the nervous system (CNS, PNS) and where each is found
5. What are the parts and functions of a neuron
6. What are the three types of neurons (sensory, interneurons, and motor neurons) and their functions, and where are they located
7. Where are the cell bodies located for motor and sensory nerve cells
8. What are schwann cells and oligodendrocytes and what are their functions
9. Where are schwann cells and oligodendrocytes found
10. What is the cause and effects of multiple sclerosis
11. What are the parts of a nerve
12. How do ions pass through membranes
13. What is the function of the sodium potassium pump. How many ions are pumped
14. What are the steps of messages being conducted through a neuron, starting with the resting stage and ending with the next neuron or muscle being stimulated
15. What ions enter and leave the neuron during the depolarization and repolarization steps of action potential, what is the relative charge of the inside vs the outside of the neuron during these events, what is the order of events.
16. Components of the synapse
17. Function of neurotransmitters, how do they work, where do they work, know the ions involved and their functions
18. What is acetylcholine, where is it found, what effect does it have, how is acetylcholine removed from the synaptic cleft
19. What is the cause and effect of myasthenia gravis

**Nervous System II**

1. What are the somatic nervous system and autonomic nervous system, what do they control
2. What are reflex actions
3. What are the parasympathetic and sympathetic divisions, what specifically do they control (think: rest and digest vs fight or flight)
4. What protects the CNS
5. What are the three layers of the meninges, be able to describe them and their location (which is the inner, middle, or outer layer)
6. What is meningitis, what is the cause, what is encephalitis
7. What are the functions of cerebrospinal fluid
8. What is the function of the blood-brain barriers, what does it allow to pass
9. Major regions of the brain and their functions: cerebrum (including the cerebral cortex, hippocampus, and amygdala), hypothalamus, thalamus, cerebellum, brain stem (midbrain, pons, and medulla oblongata)
10. What parts of the brain are in the cerebrum and in the brain stem
11. What is the corpus callosum and what is its function
12. What are split brains and how does it affect a person
13. What are the primary motor and somatosensory areas of the cortex
14. How are body parts represented on the cortex

Definitions: Long term memory, somatic nervous system, autonomic nervous system, voluntary, involuntary, reflex arc, constrict, dilate, inhibits, accelerates, facilitates, stimulates, relaxes, white matter, grey matter, prefrontal region

**Muscle**

1. What are the three types of muscles, where are they found, are they under voluntary or involuntary control
2. What are the functions of skeletal, cardiac, and smooth muscles
3. How do skeletal muscles work in pairs
4. What is the structure and the components of a muscle, and of a muscle cell (muscle fiber) and the functions of the muscle cell components
5. What is the function of tendons
6. What stimulates a muscle to contract
7. Be able to describe the steps of how the message is transmitted from the neuron to the myofilaments
8. What is the role of calcium
9. What happens when the message is received by the myofilaments
10. What are the components of the muscle fibers, their functions, be able to identify them in an illustration, including: myofibrils, sarcomeres, Z lines, the myofilaments - actin and myosin filaments, cross-bridges, sarcolemma, sarcoplasm, sarcoplasmic reticulum, T-tubules
11. What are the components and the function of the tropomyosin-troponin complex
12. What are the three energy sources for muscle contraction, which require oxygen, which produce carbon dioxide, how many ATP are produced, how long can it provide energy

Definitions: muscle fibers, myoglobin, fascia, fascicles, myofibrils, sarcomere, involuntary, voluntary, origin, insertion

Endocrine

1. What is the function of the endocrine system
2. What are the similarities and differences between neurotransmitters and hormones
3. What are the two types of hormones? How do the two types of hormones work, how do they affect the target cells, know the differences between the two types of hormones, and examples of each type of hormone
4. Where are all the hormones in this lecture produced and released from, and what are the functions of the hormones, and what is the target of the hormones.
5. Know all the disorders discussed in the lecture, what are the causes, effects of the disorder and what are the treatments of the disorders.
6. Know the location and names of the endocrine glands, be able to label a drawing with the glands
7. How does the hypothalamus control the pituitary gland.
8. What is the function of the hypothalamus
9. How are the adrenal glands controlled.
10. What are the two parts of the adrenal glands, and how is each part controlled, and which hormones are released from which part.
11. What are the side effects of cortisol.
12. How are calcium levels in the blood regulated, what hormones and glands regulate it.
13. How are blood glucose levels regulated, what hormones and glands regulate it, know the causes of the two types of diabetes

Definitions: Endocrine glands, Hormones, receptor, target cells, non-target cells, exophthalmos, pancreatic islets, negative feedback, water soluble, hydrophilic, lipid soluble, hydrophobic, secondary messenger, transcription, translation, produce, release, dilute, concentrated,
extremities, deficient, sufficient, synthesis, reabsorption, inhibit, stimulate, extremities, prostaglandins, pancreatic islets, Islets of Langerhans