

In General

The exam will consist of 50 multiple choice questions with 4 alternatives each. To successfully answer the questions you may be required to incorporate information from more than 1 slide or even 1 lecture. This means that you should not try and memorize the information, rather understand it. Physiology cannot be memorized (as with Anatomy). The exam shall consist of the following lectures:

- Cardiovascular II, III, Lymphatics, Immunology I, II.

Bring your student ID, a good eraser and at least 1 pre-sharpened dark pencil to the exam.

Disclaimer: This study guide is NOT meant to be a comprehensive list of everything you need to know but it gives you a very good start.

The Specifics

Cardiovascular II

1. Know the pulmonary and systemic circuit and the names of the blood vessels that bring oxygenated and deoxygenated blood to and from each circuit.
2. Understand the architecture of heart, the names of the chambers, which chambers carry oxygenated and deoxygenated blood, and the names of the valves separating the chambers.
3. Know the layers of the heart wall.
4. Understand what is meant by the coronary circuit and the types of coronary disease.
5. Know the conductive pathway of the heart and the order in which action potentials move along the pathway and which chambers of the heart beat when.
6. Understand the physiological mechanisms of how heart rate changes with respect to norepinephrine and acetylcholine.
7. Understand what pacemaker potentials are, and the ion movements that cause them.
8. Explain why action potentials in the ventricles look different than those of the atria and the physiological events that cause them.
9. Explain what ions cause the refractory period in the heart and the importance of a long refractory period in cardiac muscle.
10. Be able to explain the sequence of events in a regular ECG.
11. Know what irregular ECG look like and what causes the events in each of them.
12. Explain the physiology that lead to different types of ectopic heartbeats.
13. Know all of the events in the cardiac cycle. This means knowing each of the graphs shown in the lecture and just as importantly the timing of the events with respect to one another.
14. Understand what causes heart sounds and when the sounds occur with respect to different phases of the cardiac cycle.
15. Know what heart murmurs are and what causes them.

Cardiovascular III

1. Know the correct sequence of blood vessels coming out of and go towards the heart.
2. Know which blood vessels have high and which have low pressure. Also, know what is meant by systolic, diastolic pressure and be able to calculate pulse pressure.
3. Understand what is meant by cardiac output (C.O.) and what factors affect it. Be able to calculate C.O.
4. Know Starling's Law of the heart.
5. Understand what factors affect blood pressure and the physiological mechanisms the body uses to regulate it.

Lymphatic system

1. Know what hydrostatic and osmotic pressures are and what direction fluid moves if these pressures change with respect to one another.
2. Know the anatomical components of the lymphatic system and how substances enter into lymphatic vessels.
3. Know which organs in the body make up the lymphatic system and their function.

Immunology I

1. Understand the difference between innate and adaptive immunity.
2. Understand how the skin and epithelial membranes operate to retard the entry of bacteria into the body.
3. Know the steps involved in phagocytosis.
4. Understand how natural killer cells work.
5. Understand the steps involved in inflammation and the benefits of inflammation to healing.
6. Know how viruses work and how interferons work to interfere with viral replication.
7. Understand the steps involved in fever.

Immunology II

1. Understand the difference between humoral and cellular immunity and what cells are responsible for each type.
2. Know what antigens are, why they are important and how the body recognizes what cells are parts of the human body.
3. Understand the steps involved in humoral immunity and B-Cell cloning.
4. Know the anatomy of an immunoglobulin (Igs), the different classes of Igs and why they differ.
5. Understand how antibodies work and once they bind to antigens be able to describe each of the strategies used to destroy antigens.
6. Know the different types of humoral immunity (active vs. passive and natural vs. artificially acquired).
7. Know the steps of the immunocompetent cycle.
8. Understand the mechanisms of how antigen-presenting cells (APCs) operate.
9. Understand the mechanisms of how cytotoxic and helper T cells operate.