Study Sheet for Laboratory Practical # 2

Exercise 13.1
Be able to differentiate between smooth, skeletal, and cardiac muscle under the microscope. You should also be able to identify the characteristic features of each tissue type listed under procedure “A.”

Be able to identify the structures on the models listed under procedure “B.”

Exercise 13.2
What does “EMG” stand for? What is it a record of?

Be able to look at an EMG trace and make conclusions about motor unit recruitment.

What is asynchronous recruitment? In what kind of contraction could asynchronous recruitment occur? What is the purpose of asynchronous recruitment?

How would electrical activity generated by antagonistic muscle groups differ with different exercises? (i.e. flexion vs. extension – biceps vs. triceps)

Be able to answer the questions at the end of the exercise.

Exercise 14
Be able to identify the structures listed in the heart anatomy lab on dissected hearts and models.

How can you tell the left from the right side of the heart?

Exercise 15
What does “ECG” stand for? What is it a record of?

How does an ECG work? What is Einthoven’s triangle?

Be able to identify the waveforms present in an ECG. What does each waveform represent?

Know how to measure the PQ interval, QRS interval, QT interval, ST interval, and TQ interval. What events in the cardiac cycle correspond to the above intervals? How would you calculate heart rate?

What is the diving reflex? Why is it useful? What stimuli are important for initiating this reflex? Propose two hypotheses to explain your observations of the change in the rate rate during “diving.” How would you test these hypotheses?

How does exercise change the ECG reading?
Be able to answer the questions on pages 145 and 147.

Exercise 16.1

What events in the cardiac cycle do the two heart sounds correspond to?

What is auscultation?

What is a heart murmur? What could be a cause of a heart murmur?

What is a stenotic valve? An insufficient valve?

When might you hear a systolic murmur (relative to the two heart sounds)? A diastolic murmur?

Be prepared to identify the cause of a heart murmur based on (1) the sound made (whooshing, whistling, etc.), (2) timing (systolic vs. diastolic) and (3) where the murmur is best heard.

Be able to answer the questions on page 147.

Exercise 16.2

What are Korotkoff sounds?

Mean arterial pressure is dependent on what factors? Hint: Start with the formula in the manual.

Be able to calculate both mean arterial pressure and pulse pressure.

What pieces of equipment are necessary to measure blood pressure? Spelling counts!

What is systolic pressure? Diastolic pressure? Be able to measure systolic and diastolic blood pressure of a subject.

Why would changes in posture affect blood pressure?

What is hypertension? Orthostatic hypotension?

Be able to answer the questions on page 159.

Exercise 17

What is spirometry? What piece of equipment is used for measuring ventilation volumes?

Be able to define the lung volumes and capacities (and volume and capacity abbreviations) listed in the laboratory handout. What does each lung volume and capacity represent?

Be able to calculate pulmonary (minute) ventilation. No formula will be given on the exam. Is this a good estimate of the actual volume of air available for gas exchange? Why or why not?

Be able to calculate vital capacity VC, TLC, IC, EC, FRC.

*** You will not be given the formulas on the exam ***

Be able to calculate FEV₁ given patient data.
Compare and contrast obstructive vs. restrictive disorders. How might lung volume measurements and FEV₁ change with these types of disorders?

Be able to answer the questions on pages 167 and 169.

**Exercise 18**

Be able to diagnose simple acid-base disorders based on arterial pH, PCO₂ and HCO₃⁻. How do you know if compensation is occurring?

**Exercise 19**

Identify the list of kidney structures on various models.

Identify the structures and tissues listed on page 182 on microscope slides of the kidney.

**Exercise 20**

What is specific gravity? What piece of equipment is used to measure specific gravity? How does this piece of equipment work?

What is the normal range for specific gravity? Why might a urine sample fall outside of the normal range?

Be able to measure the specific gravity of a urine sample.

Be able to explain why blood, glucose, protein, leukocytes, nitrites, ketones, bilirubin or hemoglobin might be present in the urine.

Be able to answer the questions at the end of the exercise (pages 187 and 189).

Be able to perform the calculations on page 191.

**Exercise 21**

Be able to identify the GI structures (and functions) listed on page 193 on various models.