EMC 451
Study Guide for Exam 5

The final exam is cumulative. There will be a mixture of multiple choice questions and EKGs, similar to all previous exams. All questions from previous exams are fair game. If you missed an exam, refer to the study guide for that particular exam. The exam will be roughly 50% from the last 4 lectures (electrophysiology, miscellaneous patterns I, miscellaneous patterns II, and pacemakers), and 50% from all previous exams. The study guide for the material covered in the last 4 lectures is below.

Describe the normal action potential, including the slow and fast channels.
What is the normal resting membrane potential of myocardial cells? Pacemaker cells?
How does resting membrane potential affect heart rate?
What is threshold potential?
How does threshold potential affect heart rate?
Describe the slope of diastolic depolarization?
How does the slope of diastolic depolarization affect heart rate?
How does enhanced automaticity cause arrhythmias?
Describe the re-entry mechanism of arrhythmias.
How does lidocaine treat arrhythmias?
What are the electrophysiological effects of digitalis?
What are the signs and symptoms of digitalis toxicity?
How are digitalis effects identified on the EKG?
What is the treatment of digitalis toxicity?
How are quinidine effects identified on the EKG?
What is the leathal arrhythmia that may be caused by qunidine?
Name some of the EKG effects of TCA.
What is the treatment of TCA overdose?
Where may internal pacemaker electrodes be placed?
Describe the pacing concept of sensing.
Describe the pacing concept of stimulation.
Compare and contrast fixed and demand pacing.
Describe how the pacemaker uses intercycle timing to maintain an appropriate heart rate.
Describe how an AV sequential pacemaker works and how it appears on the EKG.
Describe how a ventricular demand pacemaker works and how it appears on the EKG.
Describe how a universal pacemaker works and how it appears on the EKG.
Describe the concept of rate responsive pacing.
What physiologic monitors may be used to adjust the heart rate in a rate responsive pacemaker.
Describe the concepts of failure to sense and failure to pace.
What is normal serum potassium level?
What are the EKG effects of hyperkalemia and hypokalemia?
What is the treatment of hyperkalemia?
What is the treatment of hypokalemia?
What are the EKG effects of hypercalcemia and hypocalcemia?

What is the leathal rhythm associated with hypocalcemia?
What are the signs and symptoms of hypocalcemia?
What are the signs and symptoms of hypercalcemia?
How is Torsades de Pointes (TdP) recognized ont he EKG?
What are the warning signs of impending TdP?
What is the treatment for TdP?
What are the EKG criteria of pericarditis?
What are the signs and symptoms of pericarditis?
What are the EKG signs of pericardial effusion and pericardial tamponade?
What are the EKG changes associated with COPD?
What are the EKG changes associated with hypothermia?
How does the EKG change following cardiac transplantation?
What are the EKG changes associated with pulmonary embolus?
What are the EKG changes of early repolarization syndrome?
How can you distinguish between early repolarization syndrome and pericarditis?