The following is an approximate breakdown of the number of questions pertaining to each topic:

Blood vessels and fetal circulation....12
Immunity....10
Respiratory System....15
Urinary System....14
Fluid and Electrolytes....11
Digestive system....18
Metabolism....6
Reproductive....14

The following is a list of some of the areas that you should be sure to study and questions that you should try and answer as you prepare for the final. Remember that this list is not all inclusive.

**Blood Vessels and Fetal Circulation**
1. The umbilical cord is composed of what blood vessels?
2. Know what each of the following blood vessels supplies: pulmonary, coronary, renal, iliac and hepatic.
3. In fetal circulation, what blood vessels have the highest level of oxygen?
4. In circulating through the shortest path from the capillaries of the left arm, through the liver, and to the left toe how many times would a drop of blood pass through the right ventricle?
5. Know the various circuits of the circulatory system.
6. Know which arteries branch directly from the aortic arch.
7. What is atherosclerosis?
8. Be able to explain the causes of hypovolemic shock.

**Immunity**
9. Be able to compare the innate immune response and the adaptive immune response.
10. What does it mean to be “immune to a disease”? 
11. Know the function of memory cells and when they are produced.
12. What is anaphylactic shock?
13. Know where B-lymphocytes are made and what they do.
14. Understand what an autoimmune disease is.
15. Be able to explain what an antibody is and how it is different from an antigen.
16. Know the differences between viruses and bacteria.
17. What is the difference between active and passive immunity, be able to identify examples.

**Respiratory System**
18. Define apnea and dyspnea.
19. Know how most of the carbon dioxide and oxygen is carried in the plasma.
20. Know about the concerns for patient with chronic CO₂ retention, what might cause this?
21. Know factors that affect the diffusion of gases.
22. Know the effect that low arterial pCO₂ has on the respiratory rate.
23. Know some possible causes of elevated pCO₂.
24. Study the respiratory terms on Laboratory Handouts page 15 of your study guide.
25. Be able to explain the differences between internal and external respiration.
26. Be able to describe the membrane that covers the lungs and thoracic cavity. What are its functions?
27. Where might an inhaled object most likely lodge in the bronchi?

**Urinary System**
28. Be able to explain the roles of ADH and aldosterone.
29. Be able to explain the job of the proximal convoluted tubule.
30. Be able to explain how tubular maximum works.
31. Review the general effects of diuretics.
32. Be able to explain what the Loop of Henle is responsible for.
33. Be able to explain how the JGA regulates blood pressure.
34. Be able to explain what substances may be secreted by the kidneys.
35. Be able to explain how albuminuria could occur and know where albumin is produced.
36. Be able to explain each of the following: nephritis, cystitis, cystic fibrosis and glomerulonephritis.
37. Know all the functions of the urinary system.
38. Be able to explain factors that could increase or decrease urine output.

**Fluid and Electrolytes**
39. Know causes, signs, and symptoms of hypernatremia and hyponatremia.
40. Know causes, signs, and symptoms of respiratory acidosis.
41. Why can burns result in edema?
42. In acidosis how do the cells try to help and what is the end result?
43. Know how the kidneys compensate when pCO₂ goes up.
44. Know the function of albumin.
45. In general know how buffer systems work.
46. Be able to evaluate someone’s blood gas values for the type of disturbance and the level of compensation.
47. Be able to explain the various causes of edema.
48. Know about fluid shifts and what might cause them.

**Digestive**
49. Know the general functions of the liver.
50. What purpose does bile serve?
51. Know the functions of the pancreas and the secretions it produces.
52. Know the regions and functions of the large intestine.
53. Where does the chemical break down of carbohydrates, lipids, and proteins occur?
54. What are the primary predisposing factors for the development of colon cancer?
55. Know the layers of the gastrointestinal tract.
56. What might cause the formation of a gastric (peptic) ulcer?
57. In what part of the GI tract does most of the absorption occur?
58. Know the function and location of the gastroesophageal (cardiac) sphincter.
59. Know the general anatomy of the GI tract.
60. Know the functions of the liver.
61. Know the function of parietal cells.
62. Know how hepatitis A, B and C are spread (lab).
63. Know the function(s) of gastrin.
64. Know the function(s) of CCK
65. Know the enzymes produced by the various organs and their functions.
66. What are the greater and lesser omentia and where are they found?
67. Know the function of the pancreas.
68. What is the appendix attached to?
69. Know about diverticulitis (lab).

**Metabolism**
70. Refer to the chart detailing glucose metabolism (done in Lab 9, key on Instructor Website).

**Reproduction**
71. Know what the interstitial cells of the testes do.
72. Know the differences between oogenesis and spermatogenesis.
73. Know what triggers menstruation, know the phases of the uterine (menstrual) cycle.
74. Know where eggs are normally fertilized in humans.
75. Know the layers of the uterus and their function.
76. Know the number of chromosomes in a human cell.
77. Know why the testes are contained in the scrotum.
78. Know which chromosome Down’s syndrome involves.
79. Know when HCG (human chorionic gonadotropin) is produced.
80. Know what triggers ovulation and which hormones are involved.
81. Review Klinefelter’s and Turner’s syndrome.