Study questions - final exam

Circulatory systems - ch. 42

gas exchange -

1) what are some of the basic characteristics associated with transport epithelia used for gas exchange?
2) various systems for exchanging gases -- from very simple (basically diffusion) to gills, lungs, skin, tracheal systems...
3) basic design of respiratory system of
    1) mammals -- lungs, capillaries, blood cells, etc...
    2) birds -- continuous breathing...
4) effects related to physics... Dalton's law, Fick's law
5) osmosis, diffusion, partial pressures of gasses, laws of continuity, etc.
6) how do gills work?
7) how do tracheal systems work?
8) how do lungs work?
9) why do lungs work better than gills for breathing air?
10) know and be able to label the basic structures of the human lungs
11) what is meant by partial pressure?
12) how are breathing rates controlled by the brain?
13) how does oxygen get delivered to the tissues from the lungs?

circulation-

14) various types of circulatory systems, and the types of organisms that they are found in...
15) what are the differences between open and closed circulatory systems?
16) know how blood flows through a spider.
17) tetrapods -- differences in circulatory systems...
18) what is shunting? how does it work?
19) what happens when blood passes from arteries into a capillary network (in terms of blood pressure?)
20) what is the law of continuity?
21) what is double circulation?
    - what problem does this solve?
    - how is this related to number of heart chambers?
    - mixing of deoxy with oxy blood...
    - know basic path of blood through a 4-chambered heart and the major vessels associated with the heart
22) arteries and veins and lymph vessels -- definitions/differences...
23) why do veins have valves?
24) what controls the rhythm of the heart?
25) know the parts of the cardiac cycle
26) what is a heart murmur?
27) know how blood pressure gets measured
28) what affects blood pressure?
29) know the different elements of blood and what they do.
30) how are erythrocyte levels maintained?
31) what is an ischemic stroke?
32) what is a hemorrhagic stroke?
33) what causes a heart attack?

Reproduction Ch 47

asexual

34)what are some advantages of asexual reproduction?
35)what are the main types of asexual reproduction?
36)know examples of each type of asexual reproduction.
37)know the different types of sex determination we talked about.
38)what is parthenogenesis?
39)what is myxis? how does it work?

sexual

40)what is the relative reproductive investment for males and females in terms of gametes?
41)what are the advantages of sexual and asexual reproduction?
42)know the terms: monoecious, dioecious, hermaphroditism, gonochorism, sexual dimorphism. (precisely)
43)how does sexual dimorphism relate to the idea that "sperm are cheap"?
44)what are some of the problems with sexual reproduction?

45)what is sequential hermaphroditism? examples?
46) what are some of the differences in internal and external fertilization?
47)know a little bit about spider sex.
48)what are spermatheca?
49)what is an intromittent organ?
50)know the arrangement for openings for digestive, urinary, and reproductive systems in mammals.
51)what are the modes of reproduction in vertebrates?

humans

52)know the anatomy of the human male reproductive system.
53)know the anatomy of the human female reproductive system.
54)know the male primary and secondary sex characteristics.
55)know the female primary and secondary sex characteristics.
56)describe the cyclic changes in hormone levels and how they affect the menstrual and ovarian cycles.
57)what is menopause?
58)How to prevent the spread of STIs?

Immune systems Ch 48

comparative

59) what are the two main types of immunity? how are they different?
60) go over examples of immune systems in invertebrates.

non-specific

61)what is the first line of defense for humans? most animals?
62)in what ways does the skin act as a barrier?
63)what are neutrophils? how do they work?
64)what are basophils?
65)what are eosinophils?
66)what are monocytes?
67)what are macrophages? how do they work?
68)what are NK cells? how do they work?
69)discuss how an inflammatory response happens.
70)how does an inflammatory response help fight an infection?
71)what is a systemic inflammatory response?
72)what are interferons?

specific responses

73)how do B and T cells develop?
74)what is an antigen?
75)how are B and T cells different?
76)what are MHC molecules? what are the classes of MHC molecules?
77)what are antibodies? how do they work?
78)what is humoral immunity?
79)what is cell-mediated immunity?
80)how are T-cells involved in humoral immunity?
81)why is the secondary immune response quicker and longer lasting?
82)what is clonal selection?
83)what is the difference in active and passive immunity? give an example of each.
84)how do ABO blood groups get inherited?
85)how does ABO blood group affect tissue transplantation?
86)know something about the organ transplant issues we discussed.
87)how are allergies related to the immune system?
88)what is anaphylaxis?

~~Ecology/Population ecology Ch 49/51~~

89) ~~what is ecology? understand the different levels at which ecology can be studied.~~
90) ~~how are terrestrial biomes usually defined?~~
91) ~~what are some examples of terrestrial biomes?~~
92) ~~how are aquatic biomes usually defined?~~
93) ~~what are some examples of aquatic biomes?~~
94) ~~know the basic ocean and lake zones.~~
95) ~~what is a population? metapopulation?~~

96) ~~know the different dispersion patterns we discussed.~~
97) ~~What is the difference in dispersion and dispersal?~~
98) ~~Why is dispersal a good thing?~~
99) ~~know the different types of survivorship curves and how they reflect the life history of an organism.~~
100) ~~know the different models of population growth, and why populations grow as they do.~~
101) ~~Review the reproductive strategies we discussed with respect to reproductive investment.~~

Comprehensive

102) make sure you know the major taxonomic groups of animals and plants.
103) make sure you know the major branches / clades in the animal tree.
104) make sure you can still interpret a tree.
105) make sure you are still familiar with the basic terminology of cladistics and systematics.
106) review the organ systems we discussed.
107) make sure you still know the major concepts associated with each organ system we discussed.
108) know the anatomy associated with the organ systems we discussed.
109) make sure you are still familiar with the basics of plant structure and function that we discussed.