Marine Science Semester Exam Study Guide

**Test 1 – The Nature of Science**

1. What is science?
2. What is the difference between objectivity and subjectivity?
3. What is peer review?
4. What is a hypothesis?
5. What is an experiment?
6. What is a control?
7. What is a variable?
8. How many variables can be tested in an experiment? Why?
9. What are the 2 types of variables?
10. What is a theory? Why are theories so important in science?
11. What is a law? Why are laws less useful than theories?

**Test 2 - Ecology**

1. What is ecology?
2. Know the levels of organization of ecology (population, community, etc.)
3. Know the following trophic levels: producers, consumers, decomposers, detritivores and decomposers.
4. Know the following alternate terms: autotroph, heterotroph, herbivore, carnivore, omnivore.
5. What are abiotic and biotic factors?
6. Know the difference between a food chain and a food web.
7. Be able to construct and know how to read a food web.
8. What is the ecological pyramid? Know how it applies to food webs.
9. What is carrying capacity?
10. What are limiting factors?

**Test 3 – Biogeochemical Cycles**

1. What are biogeochemical cycles?
2. Why do chemicals have to be recycled?
3. What is the greenhouse effect? Why is the greenhouse effect a good thing?
4. Understand how CO2 and the greenhouse effect causes global warming.
5. Understand the Nitrogen Cycle as a whole.
6. How much of the atmosphere is nitrogen?
7. What is nitrogen used for in living organisms?
8. What is nitrogen fixation? What organisms carry out nitrogen fixation and where do they live?
9. What is denitrification?
10. What process can carry excess nitrogen into nearby lakes, rivers, and estuaries?

**Test 4 – Evolution**

1. Who developed the theory of evolution through natural selection?
2. What was the name of the book he published and when did he publish it?
3. What is natural selection?
4. What is the inheritance of acquired traits and who developed the idea?
5. **What are Darwin’s 4 major points**?
6. What is genetic drift?
7. What is genetic equilibrium?
8. What is the Hardy-Weinberg principle?
9. What are the 5 conditions required for maintaining genetic equilibrium?

**Test 5 - Classification**

1. What is binomial nomenclature?
2. Who invented binomial nomenclature?
3. What are the two parts of a scientific name?
4. **Know the taxonomic hierarchy in order**.
5. Know the rules for writing scientific names.
6. What properties are used to place organisms in the proper taxonomic categories?
7. What characteristic is used to classify an animal in Domain Eukarya?
8. What types of organisms are found in Kingdom Protista?
9. What types of organisms are found in Kingdom Fungi?
10. Know what types of organisms are found in each of the kingdoms.
11. What are the differences between prokaryotic and eukaryotic organisms?
12. Know the difference between autotrophs and heterotrophs.

**Test 6 – Primary Producers**

1. What is a diatom shell called?
2. How small does a diatom get before it reproduces sexually?
3. What is an auxospore?
4. What is a harmful algal bloom and what organism causes them?
5. Know the 3 divisions of algae.
6. Know the structures of a typical algae and what their functions are.
7. Know the life cycle of green algae, including the life stages and whether each stage is haploid or diploid.
8. What is alternation of generations?
9. Where does most photosynthesis take place in flowering plants?