

GLY 150 Exam #1 STUDY GUIDE

This guide contains in an outline/question format the important points that have been covered in the course so far. You will be expected to have an understanding of this material for the exam, **Thursday, Sept. 17, 2009**. The exam will cover Chapters 1, 2, 3 and 4. Bring a Scantron sheet for the exam.

In addition to this study guide, I suggest you take the online quizzes and look at the GLY150 Lecture Outlines and related links given at the end of each outline, PowerPoint slides for lectures and the webpage associated with the book.

In the scientific method, what is the difference between hypothesis and theory?

Be able to discuss the origin of the oceans. What is outgassing? What role did comets play? How old is the Earth? When did the oceans form?

How did the first atmosphere compare to the Earth's atmosphere today?

What characteristics make Earth an unique planet within the solar system?

Compare and contrast terrestrial and jovian planets.

Know that the Earth is a differentiated planet, with its materials segregated and concentrated into layers according to density.

What are the internal layers of the Earth based on chemical composition? Be able to give a general description of each layer.

Study and be able to reproduce the cross-section of Earth fig 1.14 and 1.15

What are the differences between lithosphere, asthenosphere, crust and mantle? How were these physical layers determined? What is the composition of the layers?

What are the four largest oceans on the Earth's surface? What are distinguishing characteristics of each?

What is the average depth of the oceans? What is the deepest depth? Where is it located? What percentage of the earth's surface is covered by oceans?

What are lines of equal latitude? Lines of equal longitude? What is the prime meridian? Through what geographical location does it pass?

How did sailors in ancient times navigate on the oceans? What is a chronometer? Why is it important for navigation?

Study figure 3.6 and 3.7 Be able to correctly label the continental shelf, shelf break, continental slope, continental rise, abyssal plain, abyssal hills, oceanic ridge, trench and volcanic arc on a diagram of the marine physiographic provinces.

What is the difference between an active and passive continental margin? Know examples of each type.

How do submarine canyons form? Where do you find deep sea fans?

How does oceanic crust differ from continental crust?

Be able to describe the morphological characteristics of fast and slow

spreading ridges.

Be able to describe various techniques used for determining bathymetry, texture and structure of the ocean floor. What do satellite altimeters measure?

Explain the Theory of Continental Drift. Who proposed this theory? What is Pangaea? Gondwanaland? Laurasia? Panthalassa?

Explain the geologic, paleontologic, and paleoclimatic evidence that supports the Theory of Continental Drift.

In 1962 Harry Hess proposed the hypothesis of sea-floor spreading. What new data did he take into account to derive this hypothesis? Briefly describe the hypothesis of sea floor spreading.

What is paleomagnetism? Explain how basaltic rocks become magnetized by the Earth's magnetic field. Where is the source of the Earth's magnetic field believed to be located?

What is normal polarity? What is reversed polarity?

How do patterns of magnetic reversals on the seafloor support the theory of plate tectonics? How do you calculate spreading rates?

How does sediment on the ocean floor support the theory of plate tectonics?

How old is the oldest oceanic crust? Where is it located?

How is the distribution of earthquakes related to plate boundaries?

What are the characteristic magnitude and depth of earthquakes at different plate boundaries?

What is the theory of plate tectonics? Explain the evidence that supports the theory of plate tectonics.

What are the three types of plate boundaries? What are the major geologic processes and features that occur at the three types of plate boundaries?

What is the range of relative velocities of plate motion. How is the velocity of movement of one plate relative to another measured? How fast is London, England moving away from New York City, NY?

What geologic features indicate the direction of plate motion?

What is mantle convection? What are hotspots? How are these related to mantle plumes?

Explain the origin of the following features in the context of plate tectonics: Red Sea, Himalayas, Cascade Mountains, Iceland, Hawaii, San Andreas Fault, Andes Mountains.

What is the Wilson Cycle? Know examples of ocean basins in different stages of this cycle. How long is this cycle predicted to last?

Why is studying marine sediments important?

Study Table 4.2, Know the general classification of lithogenous sediments based on grain size and energy conditions. What is a poorly sorted sediment? What is a well-sorted sediment?

Study Table 4.1, Know the general classification of sediments by source particles and examples of each type (i.e. lithogenous, biogenous, hydrogenous and cosmogenous).

What is the difference between neritic and pelagic sediments? Be able to give examples of each.

What is a diatom? Radiolarian? Foraminifers? Coccolithophores? What type of sediment are these associated with? Know the differences between siliceous and calcareous oozes

Compare and contrast the types, distribution and sedimentation rates (Table 4.4) of sediments found on continental margins and in the deep ocean basins.

What is the calcium carbonate compensation depth? How does this control the deposition of carbonate oozes? What conditions are necessary for deposition of siliceous oozes?

Know examples of hydrogenous sediments. Know examples of cosmogenous sediments.

Study figure 4.18 and 4.19 . Know the various sediment types and their distribution in the world's oceans.

Know examples of resources that ocean sediments provide.