

Quiz 1 - Study Guidelines

Quiz 1 will typically be given during the 4th week of classes.
Please consult your syllabus for the date specific to your lecture section.

Study Outline

This Study Outline should be used as a means for organizing your class notes. Important concepts discussed in class are listed below.

➤ Introduction to Planet "Earth"

Know the four basic sub-fields of Oceanography

Understand the basic steps involved in using the Scientific Method and the key differences between a "hypothesis" and a "theory"

Know the features that make the Earth unique within our solar system and be able to describe the "Goldilocks Condition"

Be able to give a brief description of the "Nebular Hypothesis" and be able to state 5 key lines of evidence in support of the Nebular Hypothesis

Be able to give a brief description of the Earth's "Environmental Spheres"

Understand the importance of density differentiation in the history of the early Earth (Hint: This process led to the formation of a layered Earth.)

Know the possible sources of liquids and gases for the early Earth (forming the hydrosphere and primitive atmosphere)

Understand the role of liquid water in the early biosphere

Understand the role of the biosphere in modifying the Earth's early atmosphere

➤ Intro. to Plate Tectonics & Plate Dynamics

Be able to list the evidence for plate tectonics including the early evidence related to continental drift, paleomagnetism, and sea floor mapping.

Know the concept of sea floor spreading and its relationship to Plate Tectonic Theory

Be able to describe the basic principles of Plate Tectonics

Know the difference between a view of the Earth's structure based on chemical composition versus one based on physical properties and the importance of this view relative to plate dynamics

Be able to describe the basic plate tectonic boundaries and the forces at work there including the presence of earthquake and volcanic activity

Understand the basic driving force or mechanism for Plate Tectonics

Know the importance of the Wilson Cycle as it relates to the evolution of ocean basins through time

Understand the importance of hot spots as they relate to the Plate Tectonic Theory

Understand the difference of hot spot volcanism relative to other volcanic activity such as sea floor spreading or subduction

Review Questions

The following questions are designed to help you review the concepts presented in class. You should refer to both your class notes and the textbook when answering the questions. Note: These questions cover the same material listed on the Study Outline!

➤ Introduction to Planet "Earth"

1. Oceanography 100 is a broad-based survey course. What are the four sub-fields of Oceanography that we will study this semester?
2. Describe the process of the Scientific Method. What are the key differences between a "hypothesis" and a "theory"?
3. What are some of the features of the Earth that make it unique in our solar system?
4. When scientists use the phrase "Goldilocks Condition", what aspect of the Earth are they referring to?
5. Briefly summarize the process by which our solar system is believed to have formed.
6. List five simple observations of our modern solar system which satisfy basic predictions from the Nebular Hypothesis.
7. What are the basic components of the Earth system (the environmental spheres)?

8. What are the three principal compositional zones of the solid earth? By what process did these layers form?
9. What process do scientists believe is most likely responsible for forming the Earth's early atmosphere and oceans?
10. What role or roles may water have played in the development of the early biosphere?
11. What role did the biosphere play in the modification of the Earth's early atmosphere?

➤ Intro. to Plate Tectonics & Plate Dynamics

1. What kinds of evidence did Alfred Wegener use in support of the idea of "continental drift"?
2. The ages of sea floor rocks show a regular pattern around an oceanic ridge. Describe this pattern
3. The magnetic properties of sea floor rocks also show an interesting pattern. How does this pattern compare to the age pattern and how is the pattern useful in understanding plate tectonic motion?
4. Explain the concept of sea floor spreading as proposed by Harry Hess.
5. Describe the basic principles of the Plate Tectonic Theory.
6. What is the distinction between "lithosphere" and "asthenosphere"? How are these terms different from the terms "crust" and "mantle" which are also used to describe the Earth?
7. Name the three basic types of plate tectonic boundaries. Include a description of basic plate motion as well as the type of force producing the interaction along the plate boundary.
8. What tectonic process produces oceanic ridges and rises?
9. Convergent boundaries are the most complex of the plate tectonic boundaries. Describe the three different kinds of convergent boundaries.
10. What is believed to be the basic mechanism driving plate tectonic motion?
11. What is the Wilson Cycle?
12. Ocean basins tend to be dominated by either trenches or ridges/rises. What is the importance of these features as they relate to the Wilson Cycle?
13. How is hot spot volcanism different from volcanism associated with sea floor spreading or subduction?
14. What kinds of information have hot spots provided in the understanding of plate tectonic motion?