

# Quiz 2 - Study Guidelines

Quiz 2 is typically given during the 6th week of classes.  
Specific dates are announced in each section.

## Study Outline

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

### Marine Provinces

Know what is meant by first order physiographic features and understand the distribution of these features over the Earth's surface.

Know the importance of the hypsographic curve, including details related to land elevation and ocean depth.

Know the second order features of the marine environment.

Understand the difference between Active and Passive Continental Margins in terms of tectonic activity

Know the characteristic features of a Passive Margin

Know the characteristic features of an Active Margin including the differences between margins produced by Ocean-Ocean convergence and those produced by Ocean-Continent convergence.

Be able to describe the origin of submarine canyons and the processes at work in submarine canyons.

Understand the significance of graded bedding.

Review the tectonic process responsible for forming oceanic ridges and rises and understand the differences between ridges and rises.

Understand the difference between transform faults and fracture zones.

Know the features of the ocean basin floor; be able to describe the process by which tablemounts or guyots are produced.

Describe the changes that occur to form coral fringing reefs, barrier reefs, and atolls.

Understand the difference scientific methods for collecting data about the seafloor, including methods related to the hand-line, sonar, and radar.

## **Marine Sediments**

Understand the general techniques for the recovery of sediments from the sea floor

Understand how sediments can be used as historical records (oceanographic history)

Be able to relate the age of the sediments of the sea floor to the process of sea floor spreading

Know the relationship of plate tectonics to sediment deposition (especially sediment thickness)

Understand the classification of sediments by source or origin including the meaning of the following terms: Biogenic, Lithogenic, Hydrogenic, and Cosmogenic

Be able to give examples of the basic sediment types (Biogenic, Lithogenic, Hydrogenic, and Cosmogenic)

Be able to describe the importance of marine sediments in terms of the information they contain

Understand the basic controls on the deposition of marine sediment including how sediments are deposited and the rates of deposition

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## **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. Remember to review the material from any worksheets as well as assignments!

### **Marine Provinces**

1. Describe the distribution of first order physiographic features on the Earth's surface.
2. What basic information is illustrated on a hypsographic curve?
3. At what range of elevation is most of the land located?
4. Is all of the continental crustal material currently found above sea level? How can you explain your answer?
5. What is the average depth of the ocean basin? What marine province would this be?
6. What makes an Active Margin different from a Passive Margin?

7. What basic physical features exist along a Passive Margin?
8. Describe the features of a convergent active margin?
9. What is the relationship between submarine canyons and turbidity currents?
10. If you found graded bedding on the sea floor, what information does that tell you?
11. What tectonic process is responsible for producing oceanic ridges and rises? List 2 physical differences that exist between ridge and rise features and explain how the tectonic process accounts for these physical differences.
12. What is the role of transform faults in the global oceanic ridge/rise system?
13. How are transform faults different from fracture zones?
14. How are abyssal plains different from other regions of the deep-ocean basin?
15. What happens to volcanic features as they spread away from the ridge? How does this relate to the formation of tablemounts or guyots?
16. How do coral fringing reefs differ from coral atolls? What process explains this difference?
17. How is sonar used to determine ocean bathymetry?
18. How is radar used to determine ocean bathymetry? Is there any advantage to using sonar or radar technology?

### Marine Sediments

1. Sediment coring is the typical means used to directly study sediment type and age. How are the cores handled and stored and why is this done this way?
2. How can a sediment core be used to study oceanographic history?
3. What is the pattern of sediment age in the ocean basins?
4. Describe how the plate tectonic setting of the Pacific Ocean leads to a thinner sediment covering of its ocean floor than expected (by age alone).
5. What are the sources of lithogenic sediments?

6. What is a significant difference between sediment transport via rivers versus sediment transport via the winds? Does this play a role in any of the oceans today? Explain.
7. What are the two important chemical forms of biogenic sediment and how are they produced?
8. Can biogenic sediments be used to describe past environmental conditions? Explain your answer.
9. What factors influence the preservation of calcium carbonate sediments on the sea floor?
10. Does the Atlantic or Pacific Ocean have a greater amount of calcium carbonate sediments? What factors apparently control this distribution?
11. Under what conditions can hydrogenic sediments form? Give two examples of hydrogenic sediments.
12. What are cosmogenic sediments?
13. What are the expected rates of deposition for Neritic and Pelagic sediments?
14. Why are biogenic sediments deposited faster than abyssal clays even though they are about the same size?