

Marine Biology Study Guide: Test 2 – Chapters 8 and 9

Use your notes, homework, and textbook to completely answer all the questions in detail. Answer the questions on separate paper and staple to the back of this study guide. You will be allowed to use one 4X6 note card on the test – front and back, handwritten. Questions are in the general order they were covered in class and in the book

1. What is the Coriolis Effect and how does it affect objects in the Northern and Southern hemispheres?
2. What gasses make up the atmosphere and at what percentage?
3. What are the 4 main layers of the atmosphere?
4. Describe the general characteristics of each layer of the atmosphere.
5. Describe the 3 atmospheric circulation cells and the major wind belts associated with them.
6. How does water vapor affect the density of air?
7. How much of the sun's energy reaches the surface of the earth? How much is absorbed? How would Earth be affected if the balance was altered?
8. Why does the Earth experience uneven solar heating?
9. Why do the Earth's major deserts occur around 30 degrees latitude?
10. Explain the characteristics and formation of monsoons, extratropical cyclones, and tropical cyclones.
11. What is the difference between the ITCZ and the geographic equator?
12. Explain what a gyre is and what causes them?
13. How many gyres are there and where are they found?
14. Explain what causes currents to flow around the periphery of the ocean basins.
15. What is Ekman transport and how does it affect current direction?
16. Describe what a countercurrent is and what causes it.
17. Describe what an undercurrent is and what causes it.
18. How would the world climate be affected if there were no currents?
19. What happens during warm phase ENSO events?
20. Explain the process of thermohaline circulation.
21. What causes coastal upwelling and downwelling?
22. How are upwelling and downwelling important in coastal climate and ocean mixing?
23. What are the water mass classifications based on density stratification?
24. How does deep water form in the poles?
25. How does deep water form in the Mediterranean?
26. What is the ocean conveyor belt and why is it important?
27. Describe the characteristics of eastern and western boundary currents. What are the eastern and western boundary currents in each gyre?

The following topics will be included in a short answer/answer format:

28. Explain the factors that make the Earth heat unevenly and why they do so. Why is it summer in the Northern Hemisphere even though the Earth is farther from the sun than it is in the winter? What accounts for the difference in seasons?
29. Describe the process of convection and how it relates to airflow and ocean currents on Earth. How does the relationship between water vapor, air temperature, and density relate to convection?
30. Explain how the trade winds are related to the major ocean gyres and western intensification of currents. What patterns can be seen when comparing the wind belts to the ocean surface currents?
31. Explain the ENSO phenomenon. What causes it to occur and how does it affect the climate and weather of the adjacent continents and/or islands?