

Module Three Review Guide

Lesson 3.01

Succession

- Explain in your own words what primary succession is (See page 1 from lesson 03.01)
 - Where (under what conditions) would primary succession tend to occur? Be very specific
 - What would be evidence of primary succession? List all characteristics in detail
 - Define and give examples of a pioneer species - especially for a primary succession area
- Explain in your own words what secondary succession is (See page 1 from lesson 03.01)
- Would primary or secondary succession have higher biodiversity faster and why?
- Be able to interpret a migration map
- What are reasons for seasonal migrations?
 - How do seasonal changes affect ecosystems? (See page 2 from lesson 03.01)
 - How does location affect the productivity of an ecosystem? (See page 2 from lesson 03.01)
 - To what type of environment do gray whales migrate to? Why do they like to visit this place? (See page 3 from lesson 03.01)

Lesson 3.02

Energy/Ocean Systems

- What is a system? (See page 2 from lesson 03.02 and this [article](#))
- A physical system can best be characterized as a collection of _____ with distinct boundaries. (See page 2 from lesson 03.02 and this [article](#))
Watch this [video](#) to see examples of open, closed, and isolated systems.
 - Define and describe an open system and give examples
 - Define and describe a closed system and give examples
 - Define and describe an isolated system and give examples
- What does the law of conservation of energy state? (See page 1 from lesson 03.01 and this [article](#))
 - Identify examples in systems that would validate or invalidate this law
 - Analyze methods that would test this hypothesis
 - Recognize this in the transfer of energy from potential – kinetic, etc.

Lesson 3.03 and 3.04

Waves

- Understand the properties of light listed below - give specific details related to each from the lesson.
 - Absorption
 - Reflection
 - Refraction
 - Diffraction
- Understand properties of different types of waves - give specific details related to each from the lesson.
 - Electromagnetic
 - Sound
 - Heat

- Light

For the next 3 - please do an individual Google search, these are not directly found in the lesson
- Transverse
- Longitudinal
- Surface
- Understand definitions and be able to identify/locate parts of a wave - give specific details related to each from the lesson.
 - Crest
 - Trough
 - Wavelength
 - Wave height
 - Wave speed, frequency, amplitude (See page 2 from lesson 03.03)
 - What is the amplitude of a wave?
 - What are the different types of wave interference?
 - What type of wave interference would affect the amplitude of a wave?
 - What factors affect the speed of a wave?
 - What is the formula for the speed of a wave? (Be able to recognize effect of altering any part of equation)
 - Why does the speed of a sound wave increase in deep water?
 - How does time change with wave frequency? (See page 1 and 2 from lesson 03.03 - pay attention to the definition of frequency on page 1 and the example about the surfers to get the connection)

Lesson 3.05

Tides & Currents

- What is the main causation of tides on Earth?
 - What is a spring tide? What is the alignment and what happens during this?
 - What is a neap tide? What is the alignment and what happens during this?
 - What is a diurnal tide?
 - What is a semidiurnal tide?
 - Recognize tides from graphs/images (spring, neap, diurnal, semidiurnal)
- What is an abiotic factor?
 - Know examples for a marine ecosystem
- Understand how these various factors below affect the abundance of organisms for an area - give specific details related to each from the lesson.
 - Estuaries
 - Why do estuaries have high biodiversity when compared to other areas? (See this [article](#))
 - low tide
 - tsunami
 - ocean waves
 - thermohaline current
 - Define the term **thermohaline circulation** (See page 5 from lesson 03.05)
 - How do differences in density affect thermohaline circulation? (See page 5 from lesson 03.05)
 - Know the relationship between temperature and salinity changes and how they interact in thermohaline currents
 - Upwelling

- In the open ocean
- Near the shore
- tides (spring, neap, diurnal, semidiurnal)

Lesson 3.06

Coastal Dynamics

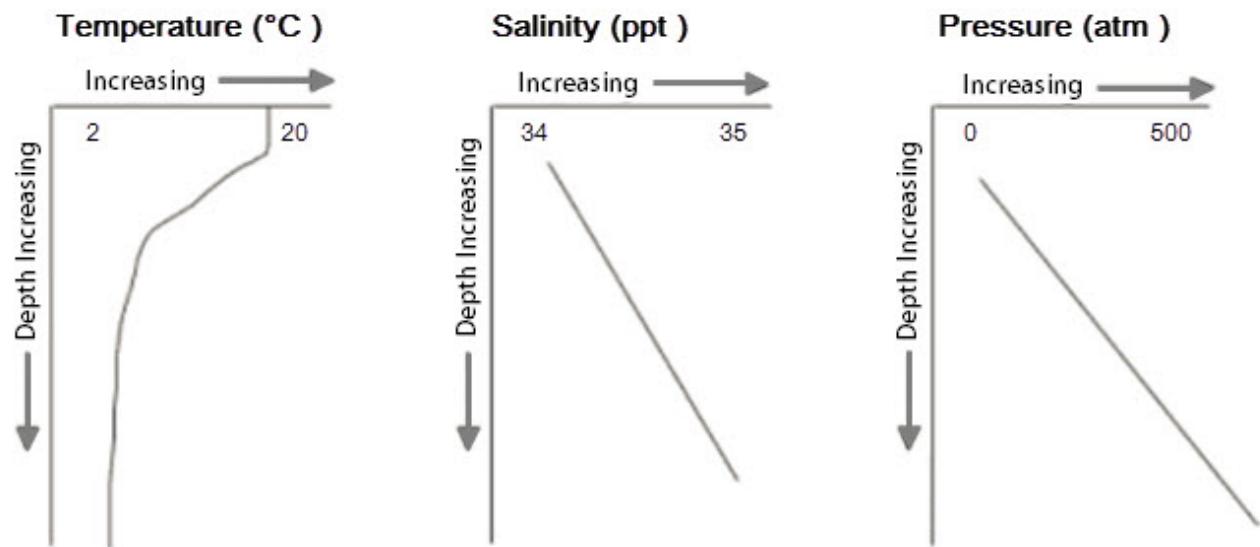
- Understand how the various coastal dynamics listed below (abiotic factors) affect the abundance of organisms - how they can increase or decrease the amounts concentrating on what changes they create in that habitat (for example: more oxygen, less water coverage, more/less air exposure, etc.) AND understand how these various coastal dynamics (abiotic factors) affect the types of adaptations those organisms have and how useful they are - give specific details related to each from the lesson.
 - Water depth
 - Water temperature
 - Tidal Action
 - Salinity
 - Wave Action
 - Which of the above factors has the greatest influence on the abundance of organisms along the coast?
 - How do currents, waves and tides influence the adaptations of intertidal zone organisms? (See page 4 from lesson 03.06)
- Know and describe the three zones of the rocky shore. (See page 3 from lesson 03.06 and this [article](#))
 - The zones may also be called by these names (know this incase a question asks them using this name):
 - Supralittoral may also be known as: high tide zone, high littoral zone, splash zone
 - Intertidal may also be known as: upper intertidal zone, lower intertidal zone
 - Sublittoral may also be known as: submerged zone, subtidal zone, low tide zone
- What adaptations help organisms live in the harsh conditions of the rocky shore? (See page 6 from lesson 03.06 and this [article](#))

OVERALL - no particular lesson (previous modules)

- Be able to identify the parts of a hypothesis and indicate the different variables (independent, dependent, control)

Lesson 03.04 Honors: Sound in the Sea (FOR HONORS STUDENTS ONLY)

- The speed of sound is affected by water's temperature, salinity, and pressure. The three graphs below display how water's properties change in the open ocean. It is apparent that water's temperature decreases with depth, whereas water's salinity and pressure increase with depth. What happens to the speed of sound as water's temperature, salinity, and pressure change (as shown in the graphs below)?



- How is the speed of sound affected by the medium through which it moves? (See page 3 of lesson 03.04)