

IB MARINE SCIENCE STANDARD LEVEL (SL) PRACTICE EXAM (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What characterizes a Partially Mixed Estuary?**
 - A. Freshwater forms a single, well-mixed layer with seawater throughout the estuary.
 - B. Salinity gradually increases from freshwater at the surface to more saline water at depth due to limited vertical mixing.
 - C. Saltwater forms a wedge that intrudes into the river channel at the surface.
 - D. The estuary shows complete vertical mixing with uniform salinity.
- 2. Which circulation is driven by density differences arising from temperature and/or salinity?**
 - A. Surface Current
 - B. Langmuir Circulation
 - C. Undercurrent
 - D. Thermohaline Circulation
- 3. Which process turns loose sediment into rock?**
 - A. Mineral
 - B. Lithification
 - C. Evaporite
 - D. Neritic Sediment
- 4. Which term describes a long stretch of coastline that acts as a sediment-management unit with connected beaches and headlands?**
 - A. Beach
 - B. Delta
 - C. Coastal Cell
 - D. Coral Reef
- 5. Which common zooplankton crustacean is widely found in marine ecosystems and important in food webs?**
 - A. Angiosperm
 - B. Copepod
 - C. Cyanobacterium
 - D. Foraminifera

- 6. Which coastal feature is the depression that lies between the shore and offshore longshore bars?**
- A. Lagoon
 - B. Inlet
 - C. Moraine
 - D. Longshore Trough
- 7. Which term describes the order of fully aquatic mammals such as whales and dolphins?**
- A. Chordata
 - B. Cetacea
 - C. Cnidaria
 - D. Drag
- 8. Which term describes the ecological change in community structure over time after a disturbance?**
- A. Evolution
 - B. Migration
 - C. Succession
 - D. Adaptation
- 9. Which term describes free-floating organisms that drift with currents and cannot swim against them?**
- A. Nekton
 - B. Phytoplankton
 - C. Plankton
 - D. Plankter
- 10. Which boundary forms where plates push together and mountain ranges, island arcs, and trenches form?**
- A. Convergent Plate Boundary
 - B. Divergent Plate Boundary
 - C. Crust
 - D. Density

Answers

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1. B
2. D
3. B
4. C
5. B
6. D
7. B
8. C
9. C
10. A

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Explanations

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1. What characterizes a Partially Mixed Estuary?

- A. Freshwater forms a single, well-mixed layer with seawater throughout the estuary.
- B. Salinity gradually increases from freshwater at the surface to more saline water at depth due to limited vertical mixing.**
- C. Saltwater forms a wedge that intrudes into the river channel at the surface.
- D. The estuary shows complete vertical mixing with uniform salinity.

This question tests how salinity varies with depth in different estuary mixing regimes. In a partially mixed estuary, vertical mixing is not strong enough to erase the freshwater–saltwater differences, so a distinct vertical gradient forms. Freshwater remains near the surface while more saline water is found deeper, leading to salinity increasing with depth. That pattern matches the description of a partially mixed estuary: a halocline exists, and there is some stratification because vertical mixing is limited. The other patterns describe different setups—well-mixed estuaries have uniform salinity throughout, salt-wedge estuaries feature a sharp intrusion of saltwater along the bottom with little vertical mixing, and complete vertical mixing would erase any salinity difference, yielding uniform salinity.

2. Which circulation is driven by density differences arising from temperature and/or salinity?

- A. Surface Current
- B. Langmuir Circulation
- C. Undercurrent
- D. Thermohaline Circulation**

Density differences in seawater created by temperature and salinity variations drive a global, deep-ocean circulation known as thermohaline circulation. Cold, salty water becomes dense enough to sink in polar regions, pulling water from above and spreading it as a deep current that travels across basins. As this dense water moves poleward or equatorward, it is upwelled elsewhere and warmed or diluted, becoming less dense and rising to close the loop. This slow, large-scale overturning transports heat and nutrients through the ocean and operates independently of the wind-driven surface currents. The other options describe surface or near-surface flows driven by winds, wave effects, or general subsurface movement, not the density-driven process tied to temperature and salinity.

3. Which process turns loose sediment into rock?

- A. Mineral
- B. Lithification**
- C. Evaporite
- D. Neritic Sediment

Transforming loose sediment into rock is lithification. This diagenetic process happens as sediment layers accumulate and are buried, increasing pressure which compacts the grains (compaction). At the same time, minerals dissolved in pore water precipitate and cement the grains together (cementation). Together, these steps reduce porosity and turn loose sediment into solid rock, producing typical sedimentary rocks like sandstone, siltstone, or mudstone depending on grain size. The other terms aren't processes that convert loose sediment into rock: a mineral is just a substance; an evaporite is a rock formed by evaporation leaving minerals behind; neritic sediment refers to a type of sediment from nearshore environments.

4. Which term describes a long stretch of coastline that acts as a sediment-management unit with connected beaches and headlands?

- A. Beach
- B. Delta
- C. Coastal Cell**
- D. Coral Reef

A coastal cell is a long stretch of coastline that acts as a sediment-management unit with connected beaches and headlands. Within a cell, sediment is moved mainly alongshore by longshore drift, and the boundaries—often headlands or engineered structures—limit exchange with neighboring sections. This framing helps explain how erosion and deposition occur across a linked set of beaches and why actions in one part of the coast can affect adjacent areas. The other terms describe individual features rather than a linked sediment system: a beach is just a single landform, a delta forms at a river mouth, and a coral reef is a biological structure.

5. Which common zooplankton crustacean is widely found in marine ecosystems and important in food webs?

- A. Angiosperm
- B. Copepod**
- C. Cyanobacterium
- D. Foraminifera

Copepods are tiny crustacean zooplankton that are found throughout the marine environment. They are one of the most abundant groups of zooplankton and play a crucial role in food webs: they graze on phytoplankton and then become prey for many larger animals, from small fish to seabirds and whales. This makes them a major conduit for transferring energy from primary producers to higher trophic levels. The other options aren't crustaceans—they're a flowering plant (angiosperm), a photosynthetic bacterium (cyanobacterium), and a single-celled protist with a calcium carbonate shell (foraminifera). That combination of being a crustacean and a key prey-predator link in oceans is why copepods are the best answer.

6. Which coastal feature is the depression that lies between the shore and offshore longshore bars?

- A. Lagoon
- B. Inlet
- C. Moraine
- D. Longshore Trough**

Sediment being moved by waves along the coast builds offshore ridges called longshore bars. The space between the shoreline and these offshore bars forms a low, elongated depression—the longshore trough. This trough results from the action of longshore currents and wave energy scouring the seabed between the shore and the bars, creating a distinct trough-like feature. Other options don't fit this description: a lagoon is water behind a barrier that's often enclosed from the open sea; an inlet is a channel that connects a lagoon to the sea; and a moraine is a glacially formed accumulation of rock and soil.

7. Which term describes the order of fully aquatic mammals such as whales and dolphins?

- A. Chordata
- B. Cetacea**
- C. Cnidaria
- D. Drag

Taxonomic classification places fully aquatic mammals such as whales and dolphins in the order Cetacea. In taxonomy, Cetacea is an order within the class Mammalia and includes two main groups: baleen whales (Mysticeti) and toothed whales (Odontoceti). This grouping reflects their shared evolutionary lineage and adaptations for life in the ocean, rather than broad phylum-level traits. The other terms are not the correct taxonomic rank for these animals: Chordata is a higher-level phylum that includes all animals with a notochord, Cnidaria is a separate phylum (jellyfish, corals), and Drag isn't a biological group.

8. Which term describes the ecological change in community structure over time after a disturbance?

- A. Evolution
- B. Migration
- C. Succession**
- D. Adaptation

Ecological succession describes how a community's species composition and structure change over time after a disturbance. Right after disturbance, pioneer species establish and begin to alter the environment (like soil, light, or nutrients), making it possible for other species to settle. As conditions shift, different organisms replace the earlier ones, leading to changes in biomass and diversity until the community settles into a more stable configuration under the prevailing environment. This process can be primary (starting from bare land) or secondary (recovery after soil and some organisms remain). The other terms don't describe this orderly, time-ordered change in who lives there. Evolution refers to genetic changes within populations across generations; migration is the movement of organisms into or out of an area; adaptation is a trait change that improves fitness, which can occur during succession but isn't the pattern describing the sequence of community changes itself.

9. Which term describes free-floating organisms that drift with currents and cannot swim against them?

- A. Nekton
- B. Phytoplankton
- C. Plankton**
- D. Plankter

Plankton are organisms that drift with the water and are carried by currents, with little ability to swim against them. Nekton are the swimmers—animals that actively move through the water, like fish and squid. Phytoplankton are the photosynthetic members of the drifting community, but the term that describes the entire drifting group is plankton. Plankter is not the standard label used in most textbooks. So, the best term for free-floating organisms that drift with currents and cannot swim against them is plankton.

10. Which boundary forms where plates push together and mountain ranges, island arcs, and trenches form?

A. Convergent Plate Boundary

B. Divergent Plate Boundary

C. Crust

D. Density

Collisions between tectonic plates create compressional boundaries. When two continental plates push toward each other, the rock is squeezed upward to form mountain ranges. If an oceanic plate is involved, it is forced beneath the adjacent plate in a process called subduction, generating a deep trench at the boundary. The subducted slab melts and magma rises, producing volcanoes that can form island arcs on the overlying plate. Divergent boundaries involve plates pulling apart, which builds up ridges and rift valleys rather than mountains. Crust and density are properties, not boundary types. So the situation described corresponds to a convergent plate boundary.

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Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://ibmarinesciencesl.examzify.com>

We wish you the very best on your exam journey. You've got this!

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