

NMAT BIOLOGY PRACTICE TEST (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. Which type of species is characterized by producing few offspring with high survival probabilities?**
 - A. R-selected species
 - B. K-selected species
 - C. Endangered species
 - D. Invasive species

- 2. Which of the following is NOT a characteristic of polygenic traits?**
 - A. Does not show continuous variation
 - B. Often influenced by environment
 - C. Controlled by multiple genes
 - D. Quantitative in nature

- 3. What role does abscisic acid play in plants?**
 - A. Cell division
 - B. Stimulates fruit ripening
 - C. Signals thirst
 - D. Promotes stem elongation

- 4. What is the marine zone located off the shore of the continental shelf?**
 - A. Neritic zone
 - B. Oceanic zone
 - C. Benthic zone
 - D. Aphotic zone

- 5. What hormone, produced by the pancreas, raises blood glucose levels?**
 - A. Insulin
 - B. Glucagon
 - C. Calcitonin
 - D. Follicle Stimulating Hormone

6. Which reproductive process starts during fetal development and ends at menopause, producing one viable cell per parent cell?
- A. Oogenesis
 - B. Spermatogenesis
 - C. Fertilization
 - D. Embryogenesis
7. Which hormone primarily influences metabolic rate and is secreted by the thyroid gland?
- A. Insulin
 - B. Thyroxine (T₄)
 - C. Glucagon
 - D. Parathyroid Hormone
8. Which process regenerates NAD⁺ and produces ethanol, lactic acid, or CO₂?
- A. Aerobic respiration
 - B. Anaerobic respiration
 - C. Krebs's cycle
 - D. Fermentation
9. What does the intertidal zone represent in a marine biome?
- A. Area submerged by water
 - B. Land meets water
 - C. Deep ocean floor
 - D. Coral reefs
10. Which organelle is associated with storage and breakdown of cellular waste in plant cells?
- A. Centriole
 - B. Rough ER
 - C. Central vacuole
 - D. Chloroplasts

Answers

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

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Explanations

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1. Which type of species is characterized by producing few offspring with high survival probabilities?

- A. R-selected species
- B. K-selected species**
- C. Endangered species
- D. Invasive species

K-selected species are characterized by a reproductive strategy that involves producing fewer offspring, each of which has a higher chance of survival to adulthood. This reproductive strategy is often observed in stable environments where competition for resources tends to be high. K-selected species invest significant parental care and resources into raising their young, ensuring that the offspring are well-equipped to thrive in their environment. For example, larger mammals like elephants and humans typically fall into this category, as they have longer gestation periods and invest more time in caring for their young compared to species that are r-selected. In contrast, r-selected species are known for producing many offspring with the expectation that many will not survive. Species that are endangered or invasive do not specifically define a reproductive strategy based on the number of offspring; instead, they are classified based on their ecological status or impact.

2. Which of the following is NOT a characteristic of polygenic traits?

- A. Does not show continuous variation**
- B. Often influenced by environment
- C. Controlled by multiple genes
- D. Quantitative in nature

Polygenic traits are characterized by their complexity and the influence of multiple genes, which contributes to the range of phenotypic outcomes observed in a population. A key feature of polygenic traits is that they exhibit continuous variation, meaning that these traits do not fall into distinct categories but instead show a spectrum of phenotypes. In contrast to polygenic traits, traits strongly influenced by a single gene tend to show discrete forms, such as having either a dominant or recessive phenotype. Therefore, stating that polygenic traits do not show continuous variation is incorrect, as one of their defining characteristics is exactly that continuous range of phenotypes. Polygenic traits are also influenced by environmental factors, underscoring the interaction between genetic predisposition and environmental context. These traits are controlled by multiple genes, contributing to their complexity and quantitative nature, which allows for a measurable range in traits across individuals.

3. What role does abscisic acid play in plants?

- A. Cell division
- B. Stimulates fruit ripening
- C. Signals thirst**
- D. Promotes stem elongation

Abscisic acid (ABA) plays a significant role in plant physiology, particularly in response to environmental stress. One of its primary functions is to signal the plant to conserve water during times of drought or when soil moisture levels are low. When plants experience drought stress, ABA levels increase, which triggers responses such as closing stomata (the small pores on leaves) to reduce water loss through transpiration. In this way, ABA acts as a signaling molecule that helps plants manage their water supply by essentially communicating their "thirst" to conserve their resources. This hormone's actions are crucial for plant survival in adverse conditions. In contrast, other options such as promoting cell division, stimulating fruit ripening, or promoting stem elongation are associated with different plant hormones, such as cytokinins, ethylene, and gibberellins, respectively. Therefore, while abscisic acid is focused on stress response and water conservation, the roles highlighted in the other choices pertain to different aspects of plant growth and development.

4. What is the marine zone located off the shore of the continental shelf?

- A. Neritic zone
- B. Oceanic zone**
- C. Benthic zone
- D. Aphotic zone

The marine zone located off the shore of the continental shelf is referred to as the oceanic zone. This area begins where the continental shelf ends, typically marked by a steep drop-off. The oceanic zone encompasses a vast body of water that is deeper than the continental shelf and includes the majority of the world's oceans. In terms of ecological characteristics, the oceanic zone is characterized by deeper waters with less light penetration compared to the neritic zone, which is closer to shore and stretches from the high-water mark to the edge of the continental shelf. The oceanic zone supports different types of marine life, primarily pelagic organisms such as fishes, whales, and other species adapted to these deeper waters. Overall, the oceanic zone is an essential part of marine ecology, comprising open ocean waters that sustain diverse marine life and participation in global biological and chemical cycles.

5. What hormone, produced by the pancreas, raises blood glucose levels?

- A. Insulin
- B. Glucagon**
- C. Calcitonin
- D. Follicle Stimulating Hormone

The hormone that raises blood glucose levels is glucagon. This peptide hormone is produced by the alpha cells of the pancreas and plays a crucial role in glucose metabolism. When blood glucose levels are low, glucagon is released into the bloodstream. Its primary function is to stimulate the liver to convert stored glycogen into glucose and subsequently release it into the blood, thus increasing blood glucose levels. In addition to glycogen breakdown, glucagon also promotes gluconeogenesis, a process where the liver produces glucose from non-carbohydrate sources, further contributing to the rise in blood glucose levels. This hormone acts in opposition to insulin, which lowers blood glucose levels by facilitating the uptake of glucose into cells and promoting its storage as glycogen. Understanding glucagon's role provides insight into how the body regulates energy balance and responds to changes in blood sugar levels, particularly during fasting or between meals when glucose is needed for energy.

6. Which reproductive process starts during fetal development and ends at menopause, producing one viable cell per parent cell?

A. Oogenesis

B. Spermatogenesis

C. Fertilization

D. Embryogenesis

Oogenesis is the reproductive process that begins during fetal development in females and continues through various stages until menopause. This process involves the maturation of oocytes, or egg cells, and is characterized by the production of a single viable ovum (egg) from each parent cell, specifically from an oogonium through several stages including mitosis, meiosis, and maturation. During fetal development, the primary oocytes are formed and enter a stage of arrested development until puberty. Upon reaching puberty, these oocytes resume development in a cyclical pattern influenced by hormonal changes, eventually leading to ovulation, where one matured ovum is released, while the other potential eggs degenerate. This cyclical nature continues until menopause, the point at which a female's reproductive hormones decline, and ovulation ceases altogether. In contrast, spermatogenesis occurs continually in males, producing numerous sperm cells rather than one viable sperm per parent cell. Fertilization refers to the actual union of an egg and sperm, and embryogenesis is the process following fertilization, which involves the development of the embryo. Thus, oogenesis is specifically unique in its timing within the female reproductive lifecycle and its output, which culminates in the production of one functional egg from each round of meiosis

7. Which hormone primarily influences metabolic rate and is secreted by the thyroid gland?

A. Insulin

B. Thyroxine (T4)

C. Glucagon

D. Parathyroid Hormone

Thyroxine, also known as T4, is the hormone that primarily influences metabolic rate and is secreted by the thyroid gland. This hormone plays a crucial role in regulating the body's metabolism, which includes the speed at which the body converts food into energy. It affects the metabolic processes in almost every tissue in the body, elevating metabolism in cells and thereby influencing weight management, energy levels, and how the body uses carbohydrates, fats, and proteins. Thyroxine does this by enhancing the overall energy expenditure of the body, increasing oxygen consumption, and stimulating protein synthesis. Its secretion is controlled by another hormone, Thyroid Stimulating Hormone (TSH), which is produced by the pituitary gland in response to thyrotropin-releasing hormone (TRH) from the hypothalamus. In summary, the role of thyroxine is pivotal in maintaining metabolic balance, making it essential for growth, development, and general metabolic regulation.

8. Which process regenerates NAD⁺ and produces ethanol, lactic acid, or CO₂?

- A. Aerobic respiration
- B. Anaerobic respiration**
- C. Krebs's cycle
- D. Fermentation

The process that regenerates NAD⁺ and produces ethanol, lactic acid, or CO₂ is fermentation. During fermentation, cells convert carbohydrates into acids or alcohol in the absence of oxygen, enabling glycolysis to continue by recycling NADH back to NAD⁺. This regeneration of NAD⁺ is crucial as it allows glycolysis to persist and produce ATP, even when oxygen is limited. In alcohol fermentation, commonly occurring in yeast, glucose is converted into ethanol and carbon dioxide. In lactic acid fermentation, which takes place in certain bacteria and animal muscle cells, glucose is converted into lactic acid. Both types of fermentation serve to maintain the flow of energy production by ensuring a steady supply of NAD⁺, which is essential for the continuation of glycolytic processes. This is vital in conditions where aerobic respiration cannot occur, such as during intense exercise or in an anaerobic environment.

9. What does the intertidal zone represent in a marine biome?

- A. Area submerged by water
- B. Land meets water**
- C. Deep ocean floor
- D. Coral reefs

The intertidal zone is the region of the shoreline that is exposed to the air at low tide and submerged under water at high tide. This dynamic environment occurs where land meets water, defining its unique ecological characteristics. Organisms in this zone have adapted to the changing conditions of being submerged and exposed, such as variations in salinity, temperature, and desiccation stress. It is important to note that while the intertidal zone does include areas that are submerged at high tide, it is primarily characterized by the alternating exposure between land and water. The intertidal zone is essential for understanding marine biodiversity as it supports various species that are specially adapted to such fluctuating environments. This makes the intertidal zone a critical area for studying ecological interactions between marine and terrestrial environments.

10. Which organelle is associated with storage and breakdown of cellular waste in plant cells?

- A. Centriole
- B. Rough ER
- C. Central vacuole**
- D. Chloroplasts

The central vacuole is a crucial organelle found in plant cells that plays a significant role in the storage and breakdown of cellular waste. This large, membrane-bound structure occupies a substantial portion of the cell's volume and is filled with a solution called cell sap, which contains various substances such as ions, sugars, and other metabolites. The central vacuole functions to store waste products, thus helping to maintain the internal environment of the cell. It enables the recycling of cellular components by breaking down macromolecules and waste materials through its enzymatic activities. This process not only keeps the cell clean but also allows the recovery of useful substances that can be used for other cellular activities. Additionally, the central vacuole helps maintain turgor pressure in plant cells, which is essential for structural support and growth. While other organelles like chloroplasts and the rough endoplasmic reticulum have specific functions related to photosynthesis and protein synthesis, respectively, they do not specialize in waste management like the central vacuole does. Understanding the role of the central vacuole is essential when studying plant cell physiology and the overall functioning of plant cells in managing waste and maintaining homeostasis.

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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://nmatbiology.examzify.com>

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

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