

SQA NATIONAL 5 BIOLOGY 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 type of carbohydrates do humans primarily store?**
 - A. Fructose
 - B. Sucrose
 - C. Starch
 - D. Glycogen
- 2. Which of the following is a role of antibodies in the immune system?**
 - A. To provide structural support
 - B. To destroy pathogens
 - C. To transport oxygen
 - D. To regulate metabolism
- 3. Which organ is primarily responsible for glycogen storage in the body?**
 - A. Pancreas
 - B. Liver
 - C. Kidney
 - D. Heart
- 4. What type of neuron carries impulses from the central nervous system to muscles or glands?**
 - A. Sensory neuron
 - B. Interneuron
 - C. Motor neuron
 - D. Unipolar neuron
- 5. Which letters represent the names of bases in DNA and mRNA?**
 - A. A, G, C, T, U
 - B. A, G, C, U, T
 - C. A, T, C, G, U
 - D. A, T, U, C, G

- 6. Which factor from the environment, such as predation or disease, affects population dynamics by leading to the death of some individuals?**
- A. Carrying capacity
 - B. Selection pressure
 - C. Biotic potential
 - D. Environmental resistance
- 7. What term describes a substance composed of carbon, hydrogen, and oxygen, such as sugar or starch?**
- A. Carbohydrate
 - B. Protein
 - C. Lipid
 - D. Nucleic Acid
- 8. What type of tissue is primarily involved in supporting and connecting other tissues and organs?**
- A. Epithelial tissue
 - B. Muscle tissue
 - C. Connective tissue
 - D. Nervous tissue
- 9. Which hormone produced by the pancreas is responsible for triggering the conversion of glycogen into glucose in the liver?**
- A. Insulin
 - B. Glucagon
 - C. Hemoglobin
 - D. Growth Hormone
- 10. What are female gametes produced by the ovaries known as?**
- A. Sperm
 - B. Eggs
 - C. Ovules
 - D. Ova

Answers

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

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Explanations

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1. What type of carbohydrates do humans primarily store?

- A. Fructose
- B. Sucrose
- C. Starch
- D. Glycogen**

Humans primarily store carbohydrates in the form of glycogen. Glycogen is a polysaccharide that is composed of many glucose units linked together. This storage form is crucial for maintaining blood sugar levels and providing energy during periods of fasting or intense physical activity. When glucose is abundant, such as after a meal, the body converts excess glucose into glycogen, primarily in the liver and muscle tissues. During times when energy is needed quickly, glycogen can be broken down back into glucose to be used by the body's cells for fuel. This process helps to ensure that the body has a readily available energy source regardless of food intake. In contrast, fructose and sucrose are not primarily stored forms of carbohydrates in humans. Fructose is a simple sugar found in fruits, while sucrose, or table sugar, is a disaccharide made up of glucose and fructose. Starch is primarily a storage form of carbohydrate in plants, not animals, and therefore is not stored in human bodies like glycogen is.

2. Which of the following is a role of antibodies in the immune system?

- A. To provide structural support
- B. To destroy pathogens**
- C. To transport oxygen
- D. To regulate metabolism

Antibodies play a critical role in the immune system by specifically targeting and neutralizing pathogens such as bacteria and viruses. When a pathogen enters the body, the immune system recognizes it as foreign. Antibodies are produced by B cells and bind to specific antigens on the surface of these pathogens. This binding can neutralize the pathogen directly, preventing it from infecting cells, or mark it for destruction by other immune cells through a process known as opsonization. In contrast, structural support, transportation of oxygen, and regulation of metabolism are not functions of antibodies. Structural support is typically provided by proteins such as collagen and keratin. Hemoglobin, found in red blood cells, is responsible for transporting oxygen, while metabolic regulation is managed by enzymes and hormones, none of which involve antibodies. Thus, the correct understanding of the role of antibodies is essential to comprehend how the immune system protects the body.

3. Which organ is primarily responsible for glycogen storage in the body?

- A. Pancreas
- B. Liver**
- C. Kidney
- D. Heart

The liver is primarily responsible for glycogen storage in the body. Glycogen is a form of stored glucose, which serves as a key energy reserve. When blood glucose levels are high, such as after a meal, the liver takes up excess glucose and converts it into glycogen through a process called glycogenesis. This stored glycogen can later be converted back into glucose when the body requires energy, such as between meals or during physical activity. The liver's unique role in regulating blood sugar levels and its capacity to store large amounts of glycogen make it critical for maintaining overall metabolic homeostasis. The liver can store about 100 grams of glycogen in an adult, releasing glucose into the bloodstream when it's needed, ensuring that the body's energy supply is stable. In contrast, the pancreas primarily produces hormones like insulin and glucagon that regulate blood sugar levels rather than storing glycogen. The kidneys have roles in filtering blood and regulating electrolytes and waste products but are not involved in glycogen storage. The heart's main function is to pump blood and does not play a role in glycogen storage either. Consequently, the liver stands out as the organ chiefly responsible for this crucial metabolic process.

4. What type of neuron carries impulses from the central nervous system to muscles or glands?

- A. Sensory neuron
- B. Interneuron
- C. Motor neuron**
- D. Unipolar neuron

The correct choice identifies a motor neuron, which plays a crucial role in the nervous system by transmitting impulses away from the central nervous system (CNS) to target tissues such as muscles or glands. Motor neurons are essential for initiating movement by causing muscle contractions and for triggering glandular responses. In terms of structure, motor neurons have long axons that extend from the CNS to their respective muscles or glands, allowing them to effectively relay signals that lead to movement or secretion. This process is an integral part of the functioning of the muscular and endocrine systems. While sensory neurons carry impulses from sensory receptors to the CNS, enabling perception of stimuli, and interneurons facilitate communication between sensory and motor neurons within the CNS, it is specifically the motor neurons that are responsible for conveying the signals that result in muscle movements and glandular activities. Unipolar neurons, which typically function in sensory systems, do not serve this purpose either. Thus, the motor neuron is distinct in its function of transferring impulses out of the central nervous system, making it the appropriate answer for this question.

5. Which letters represent the names of bases in DNA and mRNA?

A. A, G, C, T, U

B. A, G, C, U, T

C. A, T, C, G, U

D. A, T, U, C, G

The correct identification of the bases in DNA and mRNA is represented by the sequence A, G, C, T, U. In DNA, the bases are adenine (A), guanine (G), cytosine (C), and thymine (T). When it comes to mRNA, it has the same bases as DNA, except that thymine is replaced by uracil (U). Thus, when referring to the bases found in both DNA and mRNA, we can list them altogether: A, G, C (which are common in both), T (specific to DNA), and U (specific to RNA). This reasoning highlights why "A, G, C, T, U" is the correct selection, as it effectively captures the complete range of nucleotide bases found in both nucleic acids, with consideration of their unique as well as common bases.

6. Which factor from the environment, such as predation or disease, affects population dynamics by leading to the death of some individuals?

A. Carrying capacity

B. Selection pressure

C. Biotic potential

D. Environmental resistance

The correct choice highlights the influence of selection pressure on population dynamics. Selection pressure refers to any external factor, such as predation, disease, or competition, that impacts the survival and reproduction of individuals within a population. When selection pressures are applied, they can result in increased mortality rates for less fit individuals, thereby affecting population size and composition over time. This phenomenon can lead to evolutionary changes as certain traits become favorable for survival in the face of these pressures. Carrying capacity, on the other hand, is the maximum population size that an environment can sustain indefinitely, influenced by available resources rather than specific mortality factors. Biotic potential refers to the maximum reproductive capacity of an organism under optimal environmental conditions, which does not directly account for environmental factors leading to death. Environmental resistance encompasses various limiting factors in an ecosystem that prevent populations from growing indefinitely, which includes selection pressures but is a broader term. Hence, selection pressure distinctly identifies how specific factors impact individual mortality within a population.

7. What term describes a substance composed of carbon, hydrogen, and oxygen, such as sugar or starch?

A. Carbohydrate

B. Protein

C. Lipid

D. Nucleic Acid

The term that describes a substance composed of carbon, hydrogen, and oxygen, such as sugar or starch, is carbohydrate. Carbohydrates are organic compounds that serve as a major energy source for living organisms. They can be classified into simple carbohydrates, like sugars, and complex carbohydrates, such as starches, which are made up of long chains of sugar molecules. In contrast, proteins are made from amino acids and primarily contain carbon, hydrogen, oxygen, and nitrogen, while lipids are fatty compounds that also include carbon and hydrogen, often with considerably fewer oxygen atoms compared to carbohydrates. Nucleic acids, such as DNA and RNA, are composed of nucleotides and contain carbon, hydrogen, oxygen, nitrogen, and phosphorus. Therefore, the specific combination of carbon, hydrogen, and oxygen in a ratio typical of carbohydrates is what distinguishes them as a separate class of biomolecules.

8. What type of tissue is primarily involved in supporting and connecting other tissues and organs?

A. Epithelial tissue

B. Muscle tissue

C. Connective tissue

D. Nervous tissue

Connective tissue is primarily involved in supporting and connecting other tissues and organs in the body. It plays a crucial role in providing structural support, elasticity, and the ability to withstand forces. This category of tissue includes bone, adipose (fat) tissue, cartilage, blood, and lymph, each serving specific functions that contribute to the overall integrity and function of the body. Unlike epithelial tissue, which primarily covers and lines surfaces, or muscle tissue, which is responsible for movement, connective tissue serves to bind and support other tissues. Nervous tissue, though essential for communication and signaling within the body, does not directly support and connect physical structures in the way that connective tissue does. Thus, connective tissue is the correct answer due to its key role in providing the scaffold that supports various organs and tissue types, ensuring that they function together effectively.

9. Which hormone produced by the pancreas is responsible for triggering the conversion of glycogen into glucose in the liver?

- A. Insulin
- B. Glucagon**
- C. Hemoglobin
- D. Growth Hormone

The hormone produced by the pancreas that triggers the conversion of glycogen into glucose in the liver is glucagon. This process, known as glycogenolysis, occurs when the body needs to increase blood glucose levels, typically when they drop between meals or during periods of physical activity. Glucagon is released by the alpha cells of the pancreas when blood glucose levels are low. It binds to receptors on liver cells, initiating a signaling cascade that leads to the breakdown of glycogen, which is a stored form of glucose. The glucose that is released into the bloodstream then helps to restore blood glucose levels to a normal range, providing energy for metabolism and functioning of various tissues, particularly during times of fasting or increased energy demand. Insulin, on the other hand, has the opposite effect, promoting the storage of glucose as glycogen in the liver and facilitating the uptake of glucose by cells when blood sugar levels are high. Hemoglobin is a protein in red blood cells responsible for oxygen transport and does not play a role in glucose metabolism. Growth hormone influences growth and metabolism but does not directly regulate glycogen to glucose conversion. Thus, glucagon is correctly identified as the hormone responsible for stimulating glycogen breakdown into glucose in the liver.

10. What are female gametes produced by the ovaries known as?

- A. Sperm
- B. Eggs**
- C. Ovules
- D. Ova

The female gametes produced by the ovaries are known as ova. The term "ova" refers specifically to the mature female reproductive cells that are capable of being fertilized by male sperm. In biological terms, gametes are reproductive cells that combine during fertilization to form a new organism, and in females, this process occurs in the ovaries where ova are developed and released. In the context of reproduction, these ova play a crucial role as they carry the genetic material from the female parent. Therefore, the correct identification of female gametes as ova allows for a better understanding of female reproductive biology and the fundamental processes of sexual reproduction.

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://sqanational5biology.examzify.com>

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

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