ASSESSMENT AND QUALIFICATIONS ALLIANCE (AQA) GCSE BIOLOGY PAPER 2 PRACTICE EXAM (SAMPLE)

STUDY GUIDE

Prepare with structure. Pass with confidence

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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

1. **Which one of the following acids is the second member of the carboxylic acids series?**

   A. Butanoic acid

   B. Methanoic acid

   C. Propanoic acid

   D. Ethanoic acid

2. **How is soda-lime glass traditionally produced?**

   A. By mixing clay and water

   B. By heating sand, sodium carbonate, and limestone

   C. By melting down recycled glass

   D. By cooling boron trioxide rapidly

3. **What is a common example of a composite material?**

   A. Steel

   B. Wood

   C. Reinforced concrete

   D. Glass

4. **How does increasing the surface area of solid reactants in a solution affect the reaction rate?**

   A. It decreases the overall temperature

   B. It increases the potential energy of the reactants

   C. It increases the frequency of collisions

   D. It decreases the reaction rate

5. **Which metals are combined to create bronze?**

   A. Iron and carbon

   B. Copper and tin

   C. Copper and zinc

   D. Silver and gold

6. How is desalination carried out?

A. By filtering through sand

B. By distillation or by processes that use membranes such as reverse osmosis

C. By boiling and condensing sea water only

D. By adding chemicals to clump salt

7. What is the name of the ester formed from ethanoic acid and ethanol?

A. Propyl ethanoate

B. Butyl acetic acid

C. Ethyl ethanoate

D. Ethyl acetate

8. Which of the following best describes an everyday pure substance?

A. A substance that has been chemically altered

B. A substance that contains multiple ingredients

C. A substance that has had nothing added to it

D. A substance that is always a solid

9. What does DNA stand for?

A. Deoxyribonucleotide acid

B. Deoxyribonucleic acid

C. Deoxyribose nucleic acid

D. DNA is an acronym for a protein type

10. What type of fibers are used in fibreglass composites?

A. Carbon fibers

B. Wood fibers

C. Glass fibers

D. Metal fibers

Answers

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

Explanations

1. Which one of the following acids is the second member of the carboxylic acids series?

A. Butanoic acid

B. Methanoic acid

C. Propanoic acid

D. Ethanoic acid

The second member of the carboxylic acids series is ethanoic acid. Carboxylic acids are a family of organic compounds that contain a carboxyl group (-COOH). The naming of carboxylic acids is based on the number of carbon atoms present in the longest chain. In this series, methanoic acid, which has one carbon atom, is the first member. Ethanoic acid, with two carbon atoms, follows as the second member. Propanoic acid has three carbon atoms and is the third member, while butanoic acid contains four carbon atoms, making it the fourth in the series. This sequence of carboxylic acids can be illustrated as follows: methanoic acid (1 carbon) ethanoic acid (2 carbons) propanoic acid (3 carbons) butanoic acid (4 carbons). Therefore, the correct answer reflects the proper order of these compounds in the context of their carbon chain length.

2. How is soda-lime glass traditionally produced?

A. By mixing clay and water

B. By heating sand, sodium carbonate, and limestone

C. By melting down recycled glass

D. By cooling boron trioxide rapidly

Soda-lime glass is traditionally produced through a process that involves heating a mixture of sand (silica), sodium carbonate (soda), and limestone. This combination is key to forming the glass, as each component plays a specific role in the process. Silica, which is the primary ingredient, provides the glass with its basic structure and transparency. Sodium carbonate lowers the melting point of the silica, making it easier to work with during the manufacturing process. Limestone, on the other hand, helps to stabilize the mixture and improve the durability of the glass. When these materials are heated together, they undergo a chemical reaction that allows them to melt and fuse, eventually forming a liquid glass that can be shaped and cooled into various forms. This method is a well-established and efficient way to create glass products, making option B the correct response.

3. What is a common example of a composite material?

A. Steel

B. Wood

C. Reinforced concrete

D. Glass

A common example of a composite material is reinforced concrete. Composite materials are made from two or more constituent materials that possess different physical or chemical properties. When combined, these materials create a material with enhanced properties. In the case of reinforced concrete, it combines concrete, which is strong in compression but weak in tension, with steel reinforcement bars (rebar), which are strong in tension. This combination results in a material that can withstand both compressive and tensile forces, making it ideal for use in construction where strength and durability are vital. Steel, wood, and glass are not classified as composite materials by themselves. Steel is a pure alloy, wood is a natural material composed of cellulose fibers, and glass is typically a single material made from silica. In contrast, reinforced concrete exemplifies the advantages of using a composite material to improve performance in applications requiring strength and resistance to various forces.

4. How does increasing the surface area of solid reactants in a solution affect the reaction rate?

A. It decreases the overall temperature

B. It increases the potential energy of the reactants

C. It increases the frequency of collisions

D. It decreases the reaction rate

Increasing the surface area of solid reactants in a solution significantly enhances the reaction rate due to the increased frequency of collisions between the reactants. When the surface area is large, more particles of the solid are exposed to the solution, making it easier for them to collide with solvent molecules or other reactants in the solution. These collisions are crucial for the reaction to occur, as they allow the reactant particles to interact and form products. As a result, with more opportunities for collisions thanks to the increased surface area, the overall rate of the reaction will be faster. This is particularly important in reactions involving solids in liquids, where the solid must come into contact with the liquid for the reaction to proceed effectively. Increasing surface area is a common strategy employed in various chemical processes, such as in catalysis and in enhancing reaction rates in industrial applications.

5. Which metals are combined to create bronze?

A. Iron and carbon

B. Copper and tin

C. Copper and zinc

D. Silver and gold

Bronze is an alloy primarily composed of two metals: copper and tin. The process of combining copper and tin creates a material that is harder and more durable than pure copper, making it suitable for a variety of applications such as tools, weapons, and decorative items. This combination takes advantage of the different properties of the two metals, enhancing the overall characteristics of the resulting alloy. In contrast, the other options consist of different metal combinations that do not produce bronze. For example, iron and carbon form steel, copper and zinc create brass, and silver and gold are often used together in jewelry but do not form bronze. The distinct properties of bronze stemming from its copper and tin composition are what make it historically significant in metalworking and various industries.

6. How is desalination carried out?

A. By filtering through sand

B. By distillation or by processes that use membranes such as reverse osmosis

C. By boiling and condensing sea water only

D. By adding chemicals to clump salt

Desalination is primarily achieved through distillation or processes that utilize membranes, such as reverse osmosis. Distillation involves boiling seawater to separate the water vapor from the salt and other impurities, then condensing the vapor back into liquid form. This effectively removes the salt content. Reverse osmosis, on the other hand, uses a semi-permeable membrane that allows water molecules to pass through while blocking the passage of salt and other larger particles. In both methods, the goal is to produce fresh, potable water from saline water sources. This is crucial in many areas where freshwater is scarce, making the understanding of these processes important for addressing global water shortages. The other methods described, such as filtering through sand or adding chemicals to clump salt, do not effectively remove dissolved salts to produce fresh water. Boiling and condensing seawater alone, without the use of more efficient methods like membranes, may not be practical for large-scale desalination needs.

7. What is the name of the ester formed from ethanoic acid and ethanol?

A. Propyl ethanoate

B. Butyl acetic acid

C. Ethyl ethanoate

D. Ethyl acetate

The ester formed from ethanoic acid and ethanol is known as ethyl acetate. This compound results from a condensation reaction between ethanol, which is a two-carbon alcohol, and ethanoic acid, a two-carbon carboxylic acid. During this process, a water molecule is removed, leading to the formation of the ester link. Ethyl acetate is particularly significant due to its uses in food flavorings, perfumes, and as an industrial solvent. The naming follows the convention of using the alkyl group derived from the alcohol (in this case, ethyl from ethanol) combined with the name of the acid (acetic acid, in its ester form known as ethanoate). In contrast, the other choices refer to different structures or groups. For example, propyl ethanoate contains a different alcohol (propanol), while butyl acetic acid relates to a butanol and acetic acid combination rather than ethanol. Therefore, the accurate name for the ester formed from ethanoic acid and ethanol specifically is ethyl acetate.

8. Which of the following best describes an everyday pure substance?

A. A substance that has been chemically altered

B. A substance that contains multiple ingredients

C. A substance that has had nothing added to it

D. A substance that is always a solid

A pure substance is defined as a material that consists of only one type of particle, meaning it has a uniform and definite composition. When considering the options provided, describing a pure substance as one that has had nothing added to it accurately reflects this definition. In practical terms, this means that a pure substance can be a single element, like gold or oxygen, or a chemical compound, like water (H O) or carbon dioxide (CO), as long as it is not mixed with any other substances. This distinguishes it from mixtures, which involve multiple components that can vary in proportion and composition. The other options highlight characteristics that do not align with the definition of a pure substance. For example, a chemically altered substance may contain multiple new compounds, and a substance with multiple ingredients clearly indicates a mixture rather than purity. The assertion that a pure substance must always be a solid is also misleading, as pure substances can exist as solids, liquids, or gases. Therefore, identifying a pure substance as one that has had nothing added to it captures its essence accurately.

9. What does DNA stand for?

A. Deoxyribonucleotide acid

B. Deoxyribonucleic acid

C. Deoxyribose nucleic acid

D. DNA is an acronym for a protein type

DNA stands for Deoxyribonucleic acid, which accurately describes the molecular structure and composition of the molecule. The term "deoxyribonucleic" indicates that the sugar component of DNA is deoxyribose, and "acid" refers to the phosphate backbone that makes DNA an acid. The presence of nucleotides, which are made up of a sugar (deoxyribose), a phosphate group, and a nitrogenous base, further underscores the term. This precise terminology is essential in the fields of genetics and molecular biology, as it provides a clear understanding of the structure and function of DNA in storing and transmitting genetic information.

10. What type of fibers are used in fibreglass composites?

A. Carbon fibers

B. Wood fibers

C. Glass fibers

D. Metal fibers

Fibreglass composites are primarily made using glass fibers, which are created by drawing molten glass into thin strands. This provides the composite material with several beneficial properties, including high strength, light weight, and resistance to corrosion. Glass fibers are ideal for use in construction, automotive, and aerospace applications because they offer a good balance between strength and flexibility, along with excellent insulating properties. The other materials listed have different properties and applications. Carbon fibers are known for their high strength-to-weight ratio and are typically used in high-performance applications like sports equipment and aerospace but are not used in fibreglass composites. Wood fibers can add reinforcement to some materials but do not provide the same characteristics as glass fibers and are usually used in composite materials for different purposes, like in engineered wood products. Metal fibers could contribute strength in specific contexts but are not suitable for the structure or characteristics typical of fibreglass composites.

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://aqa-gcse-biologypaper2.examzify.com

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