Assessment and Qualifications Alliance (AQA) GCSE Biology Paper 2 Practice Exam (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

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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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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 of the following best describes a composite material?

A. A single homogenous material

B. A combination of metals only

C. A material made from two different materials

D. A type of polymer created through addition reactions

2. Which chemical is used in the test for sulfate ions?

A. Sodium hydroxide

B. Barium chloride

C. Silver nitrate

D. Hydrochloric acid

3. Which of the following is a polymer made from ethene?

A. Polystyrene

B. Low density poly(ethene) (LDPE)

C. Polyvinyl chloride

D. Polypropylene

4. What is chromatography primarily used for?

A. To combine substances

B. To separate mixtures

C. To purify substances

D. To measure chemical reactions

5. Which factor does NOT affect the rate of a reaction?

A. Concentration of reactants

B. Color of reactants

C. Temperature

D. Presence of a catalyst

6. What are the necessary conditions for fermentation to produce ethanol?

A. Aerobic conditions at 20-25°C

B. Anaerobic conditions at 25-35°C

C. Aerobic conditions at 30-40°C

D. Anaerobic conditions at 15-25°C

7. What happens when carbonate ions react with dilute acid?

A. A blue precipitate forms

B. Carbon dioxide gas is produced

C. A colorless solution remains

D. Hydrogen gas is released

8. What is formed when amino acids react via condensation polymerisation?

A. Nucleic acids

B. Polypeptides

C. Monosaccharides

D. Proteins

9. Phosphorus in fertilizers is most important for what plant function?

A. Energy transfer and photosynthesis

B. Regulating water intake

C. Promoting resistance to diseases

D. Stimulating production of chlorophyll

10. What is a repeating unit in polymer chemistry?

A. A single large molecule in a polymer

B. A part of a polymer that can connect end to end

C. A type of catalyst used in polymerization

D. A small molecule that cannot form polymers

Answers

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

Explanations

1. Which of the following best describes a composite material?

A. A single homogenous material

B. A combination of metals only

C. A material made from two different materials

D. A type of polymer created through addition reactions

A composite material is best described as a material made from two different materials. Composites take advantage of the unique properties of each constituent material to provide enhanced overall performance that neither material would achieve alone. For example, a common composite is fiberglass, which combines glass fibers and resin to create a strong yet lightweight material used in various applications, from boat hulls to car bodies. The other options do not accurately capture the essence of composite materials. A single homogenous material would not exhibit the combined properties of different materials; a combination of metals only excludes non-metal components, which are often crucial in composites; and a type of polymer created through addition reactions refers specifically to a category of polymers rather than a broader combination of materials. Thus, the choice highlighting the combination of different materials correctly encompasses the nature of composite materials.

2. Which chemical is used in the test for sulfate ions?

A. Sodium hydroxide

B. Barium chloride

C. Silver nitrate

D. Hydrochloric acid

The test for sulfate ions involves the use of barium chloride. When barium chloride is added to a solution containing sulfate ions, a white precipitate of barium sulfate forms if sulfate is present. This reaction is a classic confirmatory test for sulfate ions and is based on the low solubility of barium sulfate in water. Sodium hydroxide is often used in different tests, such as those for testing metal ions, but it does not specifically indicate the presence of sulfate ions. Similarly, silver nitrate is used to test for chloride ions, forming a white precipitate of silver chloride, and hydrochloric acid is primarily used in acid-base reactions and does not serve as a reagent for sulfate detection. The specific reaction of barium chloride with sulfate ions makes it the correct choice for identifying the presence of sulfate in a solution.

3. Which of the following is a polymer made from ethene?

A. Polystyrene

B. Low density poly(ethene) (LDPE)

C. Polyvinyl chloride

D. Polypropylene

Low density poly(ethene) (LDPE) is indeed a polymer made from ethene. Ethene, also known as ethylene, is a simple alkene hydrocarbon with the formula C2H4. When ethene molecules undergo a polymerization process, they link together to form long chains, resulting in polymers like LDPE. LDPE is characterized by its branched structure, which creates a less dense arrangement of polymer chains. This branching is a result of the polymerization process and contributes to its flexible and durable properties. LDPE is commonly used in applications such as plastic bags, food wrap, and various containers due to its lightweight nature and resistance to moisture. In contrast, other options listed are different types of polymers derived from other monomers. Polystyrene is made from styrene, polyvinyl chloride is derived from vinyl chloride, and polypropylene is synthesized from propylene. None of these polymers originate from ethene, making LDPE the correct choice in this context.

4. What is chromatography primarily used for?

A. To combine substances

B. To separate mixtures

C. To purify substances

D. To measure chemical reactions

Chromatography is primarily used to separate mixtures, which is fundamental to its function and application in various scientific fields. The technique takes advantage of the different chemical and physical properties of substances within a mixture, such as solubility and affinity to stationary or mobile phases. During the process, a mixture is placed on a stationary phase, such as paper or a column filled with a solid material, and a solvent (the mobile phase) is moved through or along this stationary phase. The components of the mixture travel at different rates depending on their interactions with both the stationary and mobile phases, leading to their separation. This ability to separate components makes chromatography a vital tool in fields such as chemistry, biochemistry, and environmental science, where it is commonly used to analyze the composition of substances, identify chemicals, or separate components for further study.

5. Which factor does NOT affect the rate of a reaction?

A. Concentration of reactants

B. Color of reactants

C. Temperature

D. Presence of a catalyst

The rate of a chemical reaction is influenced by several factors, including the concentration of reactants, temperature, and the presence of a catalyst. These factors affect how often molecules collide and the energy of these collisions. The concentration of reactants plays a crucial role because a higher concentration increases the number of particles in a given volume, leading to more frequent collisions and a faster reaction rate. Temperature affects the kinetic energy of the particles; as temperature rises, particles move faster, leading to more collisions and increased energy during those collisions, which can also speed up the reaction. A catalyst provides an alternative reaction pathway with a lower activation energy, effectively increasing the rate of reaction without being consumed in the process. In contrast, the color of reactants does not influence the rate of a reaction. While it can provide visual information about the reactants or the progress of a reaction, it does not affect the kinetic or thermodynamic properties involved in reaction rates. Therefore, this factor does not have a direct impact on how quickly a reaction occurs.

6. What are the necessary conditions for fermentation to produce ethanol?

A. Aerobic conditions at 20-25°C

B. Anaerobic conditions at 25-35°C

C. Aerobic conditions at 30-40°C

D. Anaerobic conditions at 15-25°C

Fermentation is a metabolic process that converts sugars into ethanol and carbon dioxide, primarily carried out by yeast. For effective fermentation to produce ethanol, anaerobic conditions are essential. This means there is no oxygen present, as oxygen would lead to aerobic respiration, which does not produce ethanol. The temperature range of 25-35°C is optimal for fermentation because it provides a suitable environment for the yeast's enzymes to function efficiently. Within this temperature range, yeast can maximize its activity and effectively ferment sugars into ethanol. Under anaerobic conditions, the yeast ferments glucose, leading to the production of ethanol and carbon dioxide. This is in contrast to aerobic processes which would typically result in the complete oxidation of glucose to carbon dioxide and water, yielding no ethanol. Therefore, the combination of anaerobic conditions and the specified temperature range is key for effective fermentation aimed at producing ethanol.

7. What happens when carbonate ions react with dilute acid?

A. A blue precipitate forms

B. Carbon dioxide gas is produced

C. A colorless solution remains

D. Hydrogen gas is released

When carbonate ions react with dilute acid, carbon dioxide gas is produced as a direct result of the chemical reaction that occurs. This reaction typically involves a carbonate compound, which releases carbon dioxide when it reacts with an acid. For example, if calcium carbonate (found in substances like limestone) is mixed with hydrochloric acid, it produces calcium chloride, water, and carbon dioxide gas, which can be observed as effervescence or bubbling. The formation of carbon dioxide during this reaction is a key identifying characteristic, as the gas can be collected or observed escaping from the solution. The reaction demonstrates the acid's ability to break down the carbonate compound into simpler products, one of which is the gaseous carbon dioxide. The other options do not describe the primary outcome of this reaction accurately; hence they do not apply. For instance, a blue precipitate is not characteristic of a carbonate and acid reaction, nor does a colorless solution remain, as the reaction specifically results in the release of gas. Additionally, the release of hydrogen gas is not relevant to the reaction involving carbonate ions and dilute acids.

8. What is formed when amino acids react via condensation polymerisation?

A. Nucleic acids

B. Polypeptides

C. Monosaccharides

D. Proteins

During the process of condensation polymerisation, amino acids undergo a chemical reaction where they join together, releasing a molecule of water in the process. This reaction forms a bond known as a peptide bond between the amino group of one amino acid and the carboxyl group of another. As multiple amino acids continue to link together through this series of condensation reactions, they create a chain known as a polypeptide. Polypeptides can vary in length and structure, ultimately folding into specific three-dimensional shapes that contribute to their function in biological systems. While it is true that polypeptides can be further processed and modified to create functional proteins, the direct outcome of the condensation polymerisation of amino acids specifically results in the formation of polypeptides. This foundational process is essential in the biosynthesis of proteins, which are critical for numerous cellular functions and structures. In this context, nucleic acids refer to molecules like DNA and RNA, which are formed from nucleotides, not amino acids. Monosaccharides are simple sugars made from carbohydrate molecules, not related to amino acid condensation. Lastly, while proteins are made from polypeptides, the term "polypeptides" specifically describes the chain formed directly through the condensation of amino acids.

9. Phosphorus in fertilizers is most important for what plant function?

A. Energy transfer and photosynthesis

B. Regulating water intake

C. Promoting resistance to diseases

D. Stimulating production of chlorophyll

Phosphorus plays a crucial role in energy transfer within plant cells, particularly through its involvement in the formation of ATP (adenosine triphosphate), which is the primary energy carrier in all living organisms. In addition to energy transfer, phosphorus is also vital for photosynthesis, as it is a key component of nucleic acids (DNA and RNA) and phospholipids, which are essential for cellular structure and function. By being part of ATP, phosphorus directly influences the energy available for various metabolic processes, including the synthesis of organic compounds during photosynthesis. This energy is used by the plant to convert light energy into chemical energy, which is then stored in sugars and other organic molecules. While the other choices mention important plant functions, they do not directly relate to the primary function of phosphorus. For example, regulating water intake is more closely associated with potassium, and while phosphorus may contribute somewhat to disease resistance and chlorophyll production, its most critical role is in energy transfer and facilitating photosynthesis, underscoring the essential nature of phosphorus in promoting healthy plant growth and development.

10. What is a repeating unit in polymer chemistry?

A. A single large molecule in a polymer

B. A part of a polymer that can connect end to end

C. A type of catalyst used in polymerization

D. A small molecule that cannot form polymers

In polymer chemistry, the repeating unit refers to a part of the polymer that can connect end to end. Polymers are made up of long chains of repeated subunits, which are known as monomers. When these monomers link together through a process called polymerization, they form a larger structure— the polymer. The repeating unit is crucial because it determines the properties of the polymer, including its strength, flexibility, and chemical resistance. Each repeating unit typically consists of a specific arrangement of atoms, enabling it to bond with other identical units in a way that constructs a vast network. This characteristic of linking allows for the diversity of polymers that exist, each with unique properties derived from the various combinations and arrangements of their repeating units. In contrast, a single large molecule does not describe the repeated nature of the components of a polymer. A type of catalyst used in polymerization relates to the process of forming polymers but does not define what a repeating unit is. Lastly, a small molecule that cannot form polymers does not fit the definition of a repeating unit, as repeating units are specifically the components that make up polymers rather than entities that cannot contribute to polymer formation.

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!