DOST Science Practice Exam (Sample)

Study Guide

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. 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. **Two complete sets of chromosomes define which ploidy state?**

   A. Haploid

   B. Chromosome

   C. Diploid

   D. Monoploid

2. **Heat transfer without a medium, such as through space, is called what?**

   A. Conduction

   B. Convection

   C. Evaporation

   D. Radiation

3. **Which process describes a solid turning directly into a gas?**

   A. Sublimation

   B. Condensation

   C. Melting

   D. Deposition

4. **In a cross Aa x Aa, the fraction of offspring that are recessive homozygous aa?**

   A. 1/2 (50%)

   B. 1/4 (25%)

   C. 3/4 (75%)

   D. 0 (none)

5. **Diffusion describes movement from higher to lower concentration without energy.**

   A. Diffusion

   B. Osmosis

   C. Endocytosis

   D. Active Transport

6. What are electrons in the outermost shell called?

- **A. Valence electrons**
- **B. Core electrons**
- **C. Orbiting electrons**
- **D. Alpha particles**

7. Which term means cell drinking?

- **A. Phagocytosis**
- **B. Pinocytosis**
- **C. Endocytosis**
- **D. Exocytosis**

8. Bounded by double membrane (inner - cristae) produces ATP.

- **A. Chloroplast**
- **B. Nucleus**
- **C. Mitochondrion**
- **D. Lysosome**

9. Study of the structure of living organisms via dissection

- **A. Physiology**
- **B. Immunology**
- **C. Botany**
- **D. Anatomy**

10. A metamorphic process dominated by high differential stress and deformation without necessarily high temperature is called which type?

- **A. Contact metamorphism**
- **B. Regional metamorphism**
- **C. Dynamic metamorphism**
- **D. Hydrothermal metamorphism**

Answers

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

Explanations

1. Two complete sets of chromosomes define which ploidy state?

A. Haploid

B. Chromosome

C. Diploid

D. Monoploid

Ploidy is determined by how many complete chromosome sets are present in a cell. A cell with two complete chromosome sets is in the diploid state. In many organisms, including humans, this is the typical condition for somatic (body) cells, which carry pairs of homologous chromosomes—one set from each parent. Gametes, in contrast, contain only a single set and are haploid. When two haploid gametes unite during fertilization, the diploid state is restored in the offspring. The term chromosomal count describes the structures themselves, while monoploid is an uncommon term used in specific contexts to refer to a single chromosome set, not two. So, having two complete chromosome sets best corresponds to the diploid state.

2. Heat transfer without a medium, such as through space, is called what?

A. Conduction

B. Convection

C. Evaporation

D. Radiation

Heat transfer without a medium occurs via radiation, which is the emission and absorption of electromagnetic waves. This lets energy travel through empty space, like the Sun warming Earth through vacuum. Conduction needs direct contact between materials, and convection relies on moving fluids, so they don't happen in space. Evaporation is a phase change, not a transport mode. Objects radiate energy based on their temperature (and how easily they emit), so hotter bodies send out more radiation. This is why radiation is the proper term for heat moving through space.

3. Which process describes a solid turning directly into a gas?

A. Sublimation

B. Condensation

C. Melting

D. Deposition

This item tests how phase changes can skip the liquid stage, turning a solid straight into a gas. Sublimation occurs when a solid gains enough energy to overcome the forces holding its particles, so they escape directly into the surrounding air as vapor. This often happens at higher temperatures or lower pressures for substances with a high vapor pressure in the solid state, such as dry ice, which sublimes at room temperature. The other processes involve a liquid forming or a gas becoming a solid: condensation is gas turning into liquid, melting is solid turning into liquid, and deposition is gas turning directly into a solid. So sublimation is the direct solid-to-gas change described.

4. In a cross Aa x Aa, the fraction of offspring that are recessive homozygous aa?

A. 1/2 (50%)

B. 1/4 (25%)

C. 3/4 (75%)

D. 0 (none)

When two Aa parents mate, each offspring can inherit either A or a from each parent, yielding four equally likely genotype combinations: AA, Aa, Aa, and aa. The recessive homozygous genotype is the aa outcome, which occurs in only one of the four possibilities. So, the fraction of offspring that are recessive homozygous is one out of four, i.e., about twenty-five percent. This also reflects the 1:2:1 genotype ratio for a monohybrid cross with complete dominance.

5. Diffusion describes movement from higher to lower concentration without energy.

A. Diffusion

B. Osmosis

C. Endocytosis

D. Active Transport

Movement from a region of higher concentration to one of lower concentration without using cellular energy is diffusion. This happens because molecules are in constant random motion; when there's more of a substance on one side, collisions push them into the less concentrated area, creating a net flow down the concentration gradient until even distribution is reached. It's a passive process, so it does not require ATP or other energy. Endocytosis and active transport, by contrast, rely on energy and involve vesicles or carrier proteins moving substances, often against their gradient. Osmosis is a special case of diffusion focused on water crossing a semipermeable membrane; the situation described fits the general, broad idea of diffusion best.

6. What are electrons in the outermost shell called?

A. Valence electrons

B. Core electrons

C. Orbiting electrons

D. Alpha particles

The outermost-shell electrons are called valence electrons. These are the electrons that occupy the outer energy level and are the ones that participate most directly in bonding with other atoms, shaping an element's chemical properties and reactivity. For example, elements in the same group have the same number of valence electrons, which explains similar bonding behavior. Core electrons are the inner electrons and don't primarily drive bonding; orbiting electrons is not a standard term for a specific group, and alpha particles are not electrons at all.

7. Which term means cell drinking?

A. Phagocytosis

B. Pinocytosis

C. Endocytosis

D. Exocytosis

Pinocytosis is the process that fits cell drinking. In this form of endocytosis, the cell membrane folds inward to form small vesicles that capture extracellular fluid and dissolved solutes, effectively sampling the surrounding environment. It's typically non-selective, which is why it's described as cell drinking. By contrast, phagocytosis handles large particles like bacteria (cell eating), exocytosis releases substances from the cell, and endocytosis is the broader term that includes both pinocytosis and phagocytosis.

8. Bounded by double membrane (inner - cristae) produces ATP.

A. Chloroplast

B. Nucleus

C. Mitochondrion

D. Lysosome

This describes the mitochondrion, the organelle where most ATP is produced through oxidative phosphorylation. The inner membrane is folded into cristae, which greatly increases the surface area available for hosting the electron transport chain and ATP synthase. As electrons travel along the chain, protons are pumped across the membrane, creating a gradient. ATP synthase uses this proton motive force to synthesize ATP from ADP in the matrix. The matrix itself hosts the citric acid cycle, supplying NADH and FADH2 to drive the chain. While chloroplasts also generate ATP through photosynthesis, they have a different internal organization (thylakoids) and don't rely on cristae. The nucleus and lysosome don't produce ATP, so the mitochondrion is the best match for the description.

9. Study of the structure of living organisms via dissection

A. Physiology

B. Immunology

C. Botany

D. Anatomy

Anatomy focuses on the structure and organization of living organisms. Dissection is a classic method used to expose internal organs, tissues, and their spatial relationships, allowing us to map how parts are arranged within an organism. This direct observation helps connect the form of body parts with how they work together. Other fields study different aspects: physiology looks at how the body functions, immunology studies the immune system, and botany concerns plants.

10. A metamorphic process dominated by high differential stress and deformation without necessarily high temperature is called which type?

A. Contact metamorphism

B. Regional metamorphism

C. Dynamic metamorphism

D. Hydrothermal metamorphism

This item tests understanding of metamorphism by the condition that mainly drives the change. When rocks are squeezed and deformed under high differential stress, with deformation playing the primary role, the metamorphism is dynamic (also called cataclastic) metamorphism. It often occurs in fault zones where rocks experience directed pressure as they are sheared, and the temperatures may not be very high. The textures formed reflect the deformation—fabrics created by grinding and crushing of grains rather than new minerals formed by heat. In contrast, contact metamorphism is driven by high temperature from nearby magma, typically localized and heat-dominated; regional metamorphism involves large-scale high temperature and pressure from burial and tectonic thickening, not just deformation; and hydrothermal metamorphism is governed by hot fluids altering minerals chemically, with deformation being a secondary, not primary, factor.

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://dostscience.examzify.com

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