

TEXAS A&M UNIVERSITY (TAMU) HORT 201 HORTICULTURAL SCIENCE AND PRACTICES EXAM 1 PRACTICE (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 tissue is primarily responsible for long-distance transport of water within plants?**
 - A. Phloem
 - B. Cortex
 - C. Xylem
 - D. Epidermis
- 2. During the Carboniferous period, which plant groups were dominant?**
 - A. Ferns and Horsetails
 - B. Conifers and Gnetophytes
 - C. Mosses and Liverworts
 - D. Flowering plants
- 3. The male reproductive organ of a flower is the stamen.**
 - A. Stamen
 - B. Pistil
 - C. Petal
 - D. Sepal
- 4. Which statement is true about mitochondria and energy production?**
 - A. The mitochondrion is the site of cellular respiration.
 - B. The mitochondria are pigment organelles.
 - C. The mitochondria synthesize DNA.
 - D. Photosynthesis occurs in mitochondria.
- 5. Which statement about xylem transport is false?**
 - A. The xylem in stems transports water and minerals.
 - B. The xylem in stems transports sugars and other organic materials.
 - C. Xylem transports water and minerals from roots to shoots.
 - D. Xylem is involved in the transport of water and dissolved substances.

- 6. The cambium is active throughout the plant's life cycle and continuously adds new growth rings.**
- A. True
 - B. Only during juvenile stage
 - C. Only after flowering
 - D. False
- 7. Bud differentiation determines whether a bud will develop into which structures?**
- A. It determines leaf development only.
 - B. It decides the plant's color changes during development.
 - C. It determines leaf, flower, or shoot development depending on environmental cues.
 - D. It determines shoot growth only.
- 8. What personal protective equipment (PPE) is commonly recommended when applying pesticides?**
- A. Eye protection only
 - B. Gloves, eye protection, long sleeves, and depending on product, respirator or mask
 - C. Hearing protection only
 - D. Sunglasses only
- 9. Which statement is true about one molecule of glucose and ATP production?**
- A. One molecule of glucose yields zero ATP.
 - B. One molecule of glucose yields less than 20 ATP.
 - C. One molecule of glucose yields exactly 25 ATP.
 - D. One molecule of glucose can produce more than 30 ATP in cellular respiration.
- 10. Which statement about secondary growth in woody plants is true?**
- A. It can produce annual growth rings visible in cross-sections of stems.
 - B. It forms leaves and flowers.
 - C. It happens only in herbaceous plants.
 - D. It occurs only at the tips.

Answers

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

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Explanations

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1. Which tissue is primarily responsible for long-distance transport of water within plants?

- A. Phloem
- B. Cortex
- C. Xylem**
- D. Epidermis

Water moves from roots toward the shoots through the xylem, which is made of hollow, dead cells with thick lignified walls that form continuous tubes. This arrangement is perfect for a long-distance conduit because water can be pulled up the plant as a column. The pull comes from transpiration in the leaves, creating a negative pressure that draws water upward in a process called the cohesion-tension mechanism—the water molecules stick together and to the walls of xylem vessels, making a continuous column. Phloem, by contrast, transports sugars and other solutes (and some water accompanies that flow), but its main role isn't delivering water up the plant. Cortex serves storage and support in the tissue between the dermal layer and the vascular bundles, and the epidermis is the outer protective layer, not a transport tissue. So the tissue responsible for long-distance water transport is the xylem.

2. During the Carboniferous period, which plant groups were dominant?

- A. Ferns and Horsetails**
- B. Conifers and Gnetophytes
- C. Mosses and Liverworts
- D. Flowering plants

During the Carboniferous period, plant life was dominated by seedless vascular plants, especially ferns and horsetails, along with giant lycophytes that formed vast swamp forests. These tall, lush ecosystems thrived in the warm, humid climate and eventually produced the coal seams we associate with that era. Gymnosperms like conifers and gnetophytes existed, but they did not dominate the landscape at that time. Mosses and liverworts are bryophytes and stayed comparatively small, not forming the massive forests. Flowering plants had not yet become widespread or dominant. So the era's most prominent groups were ferns and horsetails.

3. The male reproductive organ of a flower is the stamen.

- A. Stamen**
- B. Pistil
- C. Petal
- D. Sepal

Understanding that flowers have separate male and female reproductive parts helps explain why this statement is true. The male reproductive organ of a flower is the stamen. It consists of a filament that supports the pollen-producing anther. The pollen carries the male gametophytes that fertilize the female ovules when transferred to the pistil. The female reproductive organ is the pistil, made up of the stigma, style, and ovary, which receives pollen and houses the ovules. Petals and sepals are not reproductive organs themselves—petals attract pollinators, sepals protect the developing bud. Some flowers have both male and female parts in the same bloom, but the stamen remains the male component.

4. Which statement is true about mitochondria and energy production?

A. The mitochondrion is the site of cellular respiration.

B. The mitochondria are pigment organelles.

C. The mitochondria synthesize DNA.

D. Photosynthesis occurs in mitochondria.

Cellular respiration happens mainly in mitochondria, where most ATP is produced. After glucose is broken down in the cytosol by glycolysis, the resulting pyruvate enters the mitochondrion and is used in the citric acid cycle inside the matrix. The energy from these reactions feeds electrons through the inner-membrane electron transport chain, creating a proton gradient that powers ATP synthase to make ATP from ADP and inorganic phosphate. The folds of the inner membrane, called cristae, increase surface area for these processes. Mitochondria do contain their own DNA, but their primary role is energy production rather than DNA synthesis. The other statements are inaccurate: pigment-containing organelles are chloroplasts, and photosynthesis occurs in chloroplasts, not mitochondria.

5. Which statement about xylem transport is false?

A. The xylem in stems transports water and minerals.

B. The xylem in stems transports sugars and other organic materials.

C. Xylem transports water and minerals from roots to shoots.

D. Xylem is involved in the transport of water and dissolved substances.

Xylem's job is to move water and dissolved minerals from the roots up through the plant to the shoots, using the transpiration pull and a continuous water column that is maintained by cohesion and adhesion. The conduits in mature xylem are effectively dead cells, forming pipes that transport water but not sugars. Sugars and other organic materials are carried mainly by the phloem, which distributes photoassimilates from sources to sinks throughout the plant. So the statement claiming xylem transports sugars and other organic materials is false, because that function belongs to the phloem. The other statements—xylem in stems transporting water and minerals, moving from roots to shoots, and handling water and dissolved substances—are correct descriptions of xylem transport.

6. The cambium is active throughout the plant's life cycle and continuously adds new growth rings.

A. True

B. Only during juvenile stage

C. Only after flowering

D. False

The cambium is a lateral meristem that drives secondary growth by producing new xylem inward and phloem outward, increasing the stem's girth over time. In woody plants, the cambium stays active for much of the plant's life, continuously adding new layers of vascular tissue. In temperate species, this seasonal activity often shows up as growth rings—one ring per growing season—so you can see a record of years of growth as the cambium forms distinct layers. There can be dormant years during harsh conditions, so a ring may not form every single year, but the cambium itself remains capable of activity across much of the plant's life, and over many years it adds new rings. In tropical species, rings may be less distinct, yet the cambium still contributes to secondary growth.

7. Bud differentiation determines whether a bud will develop into which structures?

- A. It determines leaf development only.
- B. It decides the plant's color changes during development.
- C. It determines leaf, flower, or shoot development depending on environmental cues.**
- D. It determines shoot growth only.

Bud differentiation is the process by which a bud's meristem commits to a specific developmental identity. Depending on environmental cues that influence hormonal signals—like day length and temperature—a bud may become a leaf-bearing shoot, a flowering (floral) meristem, or another type of shoot. So the same bud can develop into leaves, a flower, or a shoot based on those cues, making leaf, flower, or shoot development the correct idea. The other options are too narrow, focusing only on leaves, only on shoot growth, or on color changes, and they don't reflect the role of environmental signals in determining bud fate.

8. What personal protective equipment (PPE) is commonly recommended when applying pesticides?

- A. Eye protection only
- B. Gloves, eye protection, long sleeves, and depending on product, respirator or mask**
- C. Hearing protection only
- D. Sunglasses only

Protecting yourself from pesticide exposure relies on wearing the right gear as the product label directs. When applying pesticides, gloves, eye protection, and long sleeves create a barrier against dermal exposure, while a respirator or mask is needed for products that release fumes or present inhalation risk. The exact PPE depends on the product's formulation, concentration, and warnings, so always follow the label. Eye protection guards the eyes from splashes, gloves prevent skin absorption, and long sleeves reduce skin exposure. A respirator or mask addresses inhalation hazards that clothing and eye protection can't stop. Hearing protection isn't standard for most applications unless the label or employer requires it for noise, and sunglasses alone do not protect against splashes or inhalation. So the combination including gloves, eye protection, long sleeves, and a respirator or mask as required by the product best minimizes risk.

9. Which statement is true about one molecule of glucose and ATP production?

- A. One molecule of glucose yields zero ATP.**
- B. One molecule of glucose yields less than 20 ATP.
- C. One molecule of glucose yields exactly 25 ATP.
- D. One molecule of glucose can produce more than 30 ATP in cellular respiration.

Energy from one glucose molecule is captured through three main stages of cellular respiration, with the majority coming from oxidative phosphorylation. Glycolysis in the cytoplasm provides a net gain of 2 ATP and generates NADH. The citric acid cycle (Krebs) and the accompanying pyruvate oxidation produce additional NADH and FADH₂. These carriers feed the electron transport chain, where most ATP is synthesized as protons flow back through ATP synthase. When you tally the ATP from substrate-level phosphorylation (a small amount) and the ATP produced via oxidative phosphorylation from the NADH and FADH₂, the total comes to about 30–32 ATP per glucose in most cells. Therefore, the true statement is that one glucose can yield more than 30 ATP in cellular respiration. The idea of yielding zero ATP would ignore all the energy captured, and numbers like less than 20 or exactly 25 don't reflect the actual distribution of ATP production across these pathways.

10. Which statement about secondary growth in woody plants is true?

- A. It can produce annual growth rings visible in cross-sections of stems.**
- B. It forms leaves and flowers.
- C. It happens only in herbaceous plants.
- D. It occurs only at the tips.

Secondary growth widens stems and roots through lateral meristems, mainly the vascular cambium and cork cambium. In woody plants, these meristems add secondary xylem (wood) on the inside and secondary phloem on the outside, increasing girth over time. The activity of the cambium changes with the seasons in many species, so a new layer is laid down each year. This creates growth rings when you cut a cross-section: early wood forms in the spring with larger vessels, and late wood forms later in the growing season with smaller vessels, producing a visible ring for that year. Leaves and flowers come from primary growth at the tips, not from secondary growth, and secondary growth is typical of many woody perennials, not restricted to herbaceous plants. So the statement about annual growth rings in cross-sections is the true one.

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:

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

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