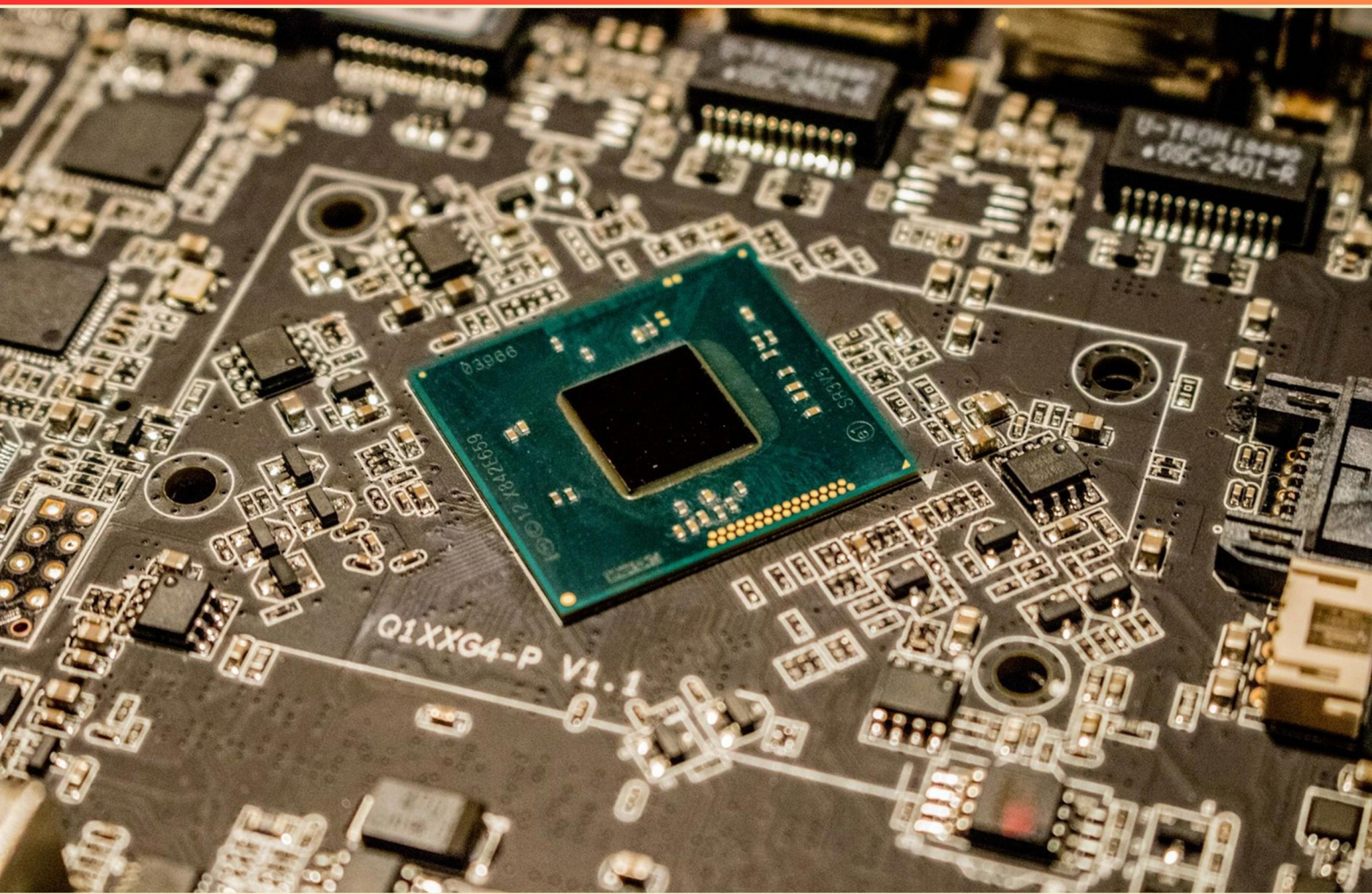


CE/EE 3161 UTD PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR
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. Which term describes a semiconductor device containing transistors, capacitors, and resistors?**
 - A. Light-emitting diode.
 - B. Integrated circuit.
 - C. Transistor array.
 - D. Operating system.

- 2. Which scenario best illustrates a potential conflict of interest?**
 - A. An engineer is asked to evaluate a project in which they have a financial interest
 - B. An engineer volunteers for a charity
 - C. An engineer is offered a substantial gift to influence a decision
 - D. An engineer reports a safety violation

- 3. Which mechanisms ensure accountability?**
 - A. Cloud storage, backups
 - B. File change detection
 - C. Event logging, authentication
 - D. Encryption, access controls

- 4. Which action by patent trolls may threaten innovation and startups?**
 - A. Not using patents acquired to make/improve products
 - B. Suing others who try to use similar ideas covered in those patents just to make money
 - C. Filing more patents
 - D. Providing licenses

- 5. Which description correctly identifies the unit mismatch responsible for the Mars mission failure?**
 - A. Unit mismatch between pound-force and newtons
 - B. Unit mismatch between kilograms and pounds
 - C. Temperature unit mismatch
 - D. Pressure units incorrectly converted

6. What is the impedance $Z(\omega)$ of a series RLC circuit as a function of angular frequency ω ?
- A. $Z(\omega) = R + j(\omega L - 1/(\omega C))$
 - B. $Z(\omega) = R + \omega L - 1/(\omega C)$
 - C. $Z(\omega) = R - j(\omega L + 1/(\omega C))$
 - D. $Z(\omega) = R + j(\omega/L - 1/(\omega C))$
7. Which statement about copyrights is accurate?
- A. Copyrights are a way to control use of own original work by others
 - B. Copyrights guarantee perpetual protection
 - C. Copyrights protect ideas rather than expressions
 - D. Copyrights require patent protection to be valid
8. For an ideal op-amp in negative feedback configured as an inverting amplifier with input resistor R_{in} and feedback resistor R_f , what is the closed-loop gain?
- A. $A_v = -R_f / R_{in}$
 - B. $A_v = R_{in} / R_f$
 - C. $A_v = -R_{in} / R_f$
 - D. $A_v = R_f / R_{in}$
9. Which act gives students 18 years of age and older the right to request corrections to errors in their educational records?
- A. The Privacy Act of 1974
 - B. The Health Information Privacy Act
 - C. The Family Education Rights and Privacy Act
 - D. The Education Records Protection Act
10. Which statement is most accurate about ethics?
- A. It is the study and development of standards of 'right' and 'wrong.'
 - B. It is solely a matter of personal taste.
 - C. It is only concerned with legal compliance.
 - D. It is equivalent to predictive psychology.

Answers

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

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Explanations

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1. Which term describes a semiconductor device containing transistors, capacitors, and resistors?

- A. Light-emitting diode.
- B. Integrated circuit.**
- C. Transistor array.
- D. Operating system.

An integrated circuit is a semiconductor device that packs multiple electronic components—transistors, capacitors, and resistors—onto a single piece of silicon. This integration allows complex circuits to be built in a tiny, cost-effective package far smaller than assembling discrete parts. The other options don't fit: a light-emitting diode is just one diode that emits light; a transistor array consists of many transistors but isn't defined by including the passive components embedded in an IC; an operating system is software, not a hardware device.

2. Which scenario best illustrates a potential conflict of interest?

- A. An engineer is asked to evaluate a project in which they have a financial interest
- B. An engineer volunteers for a charity
- C. An engineer is offered a substantial gift to influence a decision**
- D. An engineer reports a safety violation

A situation where someone is offered a substantial gift to influence a decision directly shows how personal gain can pull against objective professional judgment. This creates a clear incentive to act in the giver's interest rather than in the best interest of safety, cost, or quality, which is exactly what a conflict of interest is meant to capture. The gift makes the engineer's decision vulnerable to external pressure, compromising impartiality even before any outcome is reached. By contrast, volunteering for charity is generally unrelated to professional decisions, reporting a safety violation reflects ethical duty, and having a financial stake in a project is a potential conflict but may be managed through disclosure and recusal rather than showing a direct external attempt to sway a specific decision. Thus, the gift to influence a decision most directly embodies the risk of conflicting interests.

3. Which mechanisms ensure accountability?

- A. Cloud storage, backups
- B. File change detection
- C. Event logging, authentication**
- D. Encryption, access controls

Accountability hinges on knowing who did what and having records of those actions. Authentication verifies a user's identity, while event logging records each significant action or event that occurs in the system. Together, they create an auditable trail that lets you attribute actions to specific users and verify that policies were followed. Other mechanisms like cloud storage and backups focus on data retention and availability; file change detection tracks modifications but doesn't tie them to a responsible user; encryption and access controls protect data and restrict who can act but don't automatically provide a log of who did what.

4. Which action by patent trolls may threaten innovation and startups?

- A. Not using patents acquired to make/improve products
- B. Suing others who try to use similar ideas covered in those patents just to make money**
- C. Filing more patents
- D. Providing licenses

Patent trolling harms innovation when the behavior centers on suing others who try to use ideas covered by those patents solely to extract money. That kind of litigation creates fear and uncertainty for startups, who may not have the deep pockets to fight lengthy lawsuits. The threat of costly legal battles can force them to settle, pause research, or abandon promising ideas, which slows down new products reaching the market and reduces competitive pressure that drives real innovation. In this landscape, actions like filing more patents or providing licenses can be legitimate business strategies—filing patents to protect ideas or licensing technology to others—without the immediate coercive impact on startups. Not using patents to build products describes a non-practicing stance, which is a related but different behavior and not the reactive pressure on others' work that truly undermines entrepreneurial risk-taking.

5. Which description correctly identifies the unit mismatch responsible for the Mars mission failure?

- A. Unit mismatch between pound-force and newtons**
- B. Unit mismatch between kilograms and pounds
- C. Temperature unit mismatch
- D. Pressure units incorrectly converted

The main idea is that all physical quantities must be expressed in a single, consistent unit system before you do calculations that drive a mission's performance. Here, force is involved, and you must convert between pound-force (lbf) and newtons (N) so you're not mixing two different unit schemes. One pound-force is about 4.44822 newtons. If thrust is given in pounds-force but the dynamics or guidance calculations expect newtons, you'll mistakenly scale the thrust by roughly 4.45. In a rocket, thrust relative to weight (the thrust-to-weight ratio) is what determines whether the vehicle can accelerate upward, how long a burn lasts, and how accurately you reach a target trajectory. A mismatch by a factor of ~4 would massively distort those calculations, leading to incorrect burn profiles, mis-timed maneuvers, and likely mission failure. The other kinds of unit mismatches mentioned—temperature or pressure conversions—can cause problems, but they don't produce the same direct, large-scale error in propulsion performance as mixing force units. Temperature or pressure issues tend to affect sensor readings, thermal control, or subsystem operating ranges, but the fundamental problem described here is a direct inconsistency in the force units used to design and command the propulsion system. Keep everything in one system (preferably SI: newtons, kilograms, meters, seconds) or perform careful, explicit conversions to avoid this kind of failure.

6. What is the impedance $Z(\omega)$ of a series RLC circuit as a function of angular frequency ω ?

- A. $Z(\omega) = R + j(\omega L - 1/(\omega C))$
- B. $Z(\omega) = R + \omega L - 1/(\omega C)$
- C. $Z(\omega) = R - j(\omega L + 1/(\omega C))$
- D. $Z(\omega) = R + j(\omega L - 1/(\omega C))$

Impedances add in a series circuit, so you sum the real part from the resistor with the reactive parts from the inductor and capacitor. The inductor contributes $Z_L = j\omega L$, and the capacitor contributes $Z_C = 1/(j\omega C) = -j/(\omega C)$. Putting them together with the resistor gives $Z(\omega) = R + j\omega L + (-j/(\omega C)) = R + j(\omega L - 1/(\omega C))$. This shows a real part R and an imaginary part that depends on the balance between ωL and $1/(\omega C)$. At the resonant frequency where $\omega L = 1/(\omega C)$, the imaginary part cancels and the impedance is purely resistive, $Z = R$. The correct expression reflects both the correct sign and the correct presence of the imaginary unit with the combined reactance.

7. Which statement about copyrights is accurate?

- A. Copyrights are a way to control use of own original work by others
- B. Copyrights guarantee perpetual protection
- C. Copyrights protect ideas rather than expressions
- D. Copyrights require patent protection to be valid

Copyrights give creators exclusive control over how others use their original works. They cover works fixed in a tangible form and let the author decide who can copy, distribute, perform, display, or create derivative works, with some allowed exceptions like fair use. This control is limited in time, not perpetual, and it applies to the expression itself rather than the underlying ideas or concepts. Patents aren't required for copyrights to be valid; patents and copyrights are separate forms of protection for different kinds of creations. So the statement that best fits how copyrights work is that they give creators control over how others can use their original works.

8. For an ideal op-amp in negative feedback configured as an inverting amplifier with input resistor R_{in} and feedback resistor R_f , what is the closed-loop gain?

- A. $A_v = -R_f / R_{in}$
- B. $A_v = R_{in} / R_f$
- C. $A_v = -R_{in} / R_f$
- D. $A_v = R_f / R_{in}$

In an ideal op-amp with negative feedback in the inverting configuration, the output adjusts so the inverting input sits at a virtual ground (approximately 0 V) because the noninverting input is tied to ground and the gain is very large. The input current through the input resistor is V_{in} divided by R_{in} , since the node is at ~ 0 V. That same current must flow through the feedback resistor, but toward the output, which forces the output to swing in the opposite direction. Using current balance: $(V_{in} - V_{minus})/R_{in} = (V_{minus} - V_{out})/R_f$. With $V_{minus} \approx 0$, this becomes $V_{in}/R_{in} = -V_{out}/R_f$, so $V_{out} = -(R_f/R_{in}) \cdot V_{in}$. Thus, the closed-loop gain is negative R_f divided by R_{in} , indicating inversion. The other forms either remove the negative sign or swap the ratio, which doesn't match the inverting configuration.

9. Which act gives students 18 years of age and older the right to request corrections to errors in their educational records?

- A. The Privacy Act of 1974
- B. The Health Information Privacy Act
- C. The Family Education Rights and Privacy Act**
- D. The Education Records Protection Act

Under FERPA, students who are 18 or older (or who are enrolled in a postsecondary institution) control their own educational records and can request corrections to any errors. The act defines what counts as an education record and requires schools to provide a clear process for amending information that is inaccurate, misleading, or violates privacy. If the school refuses to amend, the student can request a formal hearing and may place a statement with the record explaining their view. This combination of age-triggered rights and an amendment process is what makes this act the one that guards these rights. The Privacy Act covers federal agency records, HIPAA deals with health information, and there isn't another act at play here with the same focus on students' education records.

10. Which statement is most accurate about ethics?

- A. It is the study and development of standards of 'right' and 'wrong.'**
- B. It is solely a matter of personal taste.
- C. It is only concerned with legal compliance.
- D. It is equivalent to predictive psychology.

Ethics centers on what counts as right and wrong and on how those judgments are formed and applied in guiding actions and decisions. The statement that ethics is the study and development of standards of 'right' and 'wrong' best captures that it's about forming normative guidelines, not merely personal preferences, and not just following laws. It's broader than legality, since something can be legal but unethical, and vice versa. It's also distinct from predictive psychology, which aims to forecast behavior rather than prescribe norms. This description most accurately reflects what ethics entails.

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://cee3161utd.examzify.com>

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

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