Information Systems Technician Second Class (IT2) Advancement 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. How many miles per second does light travel?

A. 186,000 miles per second

B. 186,000 miles per hour

C. 186,000 kilometers per second

D. 1,860,000 miles per second

2. Explain NAT vs PAT and provide a scenario for each.

A. NAT uses port multiplexing; PAT uses fixed mapping

B. NAT translates private addresses to a public address one-to-one; PAT translates many private addresses to a single public address using port numbers.

C. NAT and PAT are synonyms; Both map private to public addresses

D. NAT is used to connect LANs; PAT translates MAC addresses

3. Which IPv6 address type is routable on the Internet?

A. Link-Local

B. Global Unicast

C. Loopback

D. Unique Local

4. What is a primary security benefit of offline backups in ransomware mitigation?

A. They provide the fastest possible restoration from backup

B. They protect backup data from being encrypted by ransomware by storing it offline

C. They eliminate the need for backups

D. They automatically detect ransomware

5. What is the term used for a message destined for more than one addressee?

A. Multiple address message

B. Broadcast message

C. Group message

D. Point-to-point message

6. What term describes the rate at which the disturbance travels through a medium?

A. Velocity

B. Frequency

C. Wavelength

D. Amplitude

7. Special handling designation messages are identified by an oblique signal, a slash mark, and which element repeated after the five related security characters?

A. The appropriate assigned designator repeated

B. An encryption key repeated

C. A color code

D. A priority flag

8. Which practice best mitigates SQL injection attacks?

A. Input validation and parameterized queries

B. Firewall blocking all ports

C. Disable logging

D. Use of steganography

9. The frequency of a sound is referred to as what?

A. Pitch

B. Intensity

C. Loudness

D. Quality

10. In routing messages, which series publication governs the procedures and any national or regional defense organization supplements that apply?

A. ACP-117

B. ACP-118

C. ACP-119

D. ACP-120

Answers

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

Explanations

1. How many miles per second does light travel?

A. 186,000 miles per second

B. 186,000 miles per hour

C. 186,000 kilometers per second

D. 1,860,000 miles per second

Light travels in a vacuum at a fixed speed: about 3.0 × 10^8 meters per second, which is roughly 186,000 miles per second. The option that states 186,000 miles per second is the best choice because it matches this standard value, using the correct units (miles per second). The exact speed is 186,282 miles per second, but rounding to 186,000 is common for educational questions. The other options misstate the units or the magnitude: miles per hour uses a per-hour rate, which isn't the standard way to express light's speed; kilometers per second would be about 299,792 km/s, not 186,000; and 1,860,000 miles per second is ten times too large.

2. Explain NAT vs PAT and provide a scenario for each.

A. NAT uses port multiplexing; PAT uses fixed mapping

B. NAT translates private addresses to a public address one-to-one; PAT translates many private addresses to a single public address using port numbers.

C. NAT and PAT are synonyms; Both map private to public addresses

D. NAT is used to connect LANs; PAT translates MAC addresses

NAT and PAT address how private devices reach the Internet by mapping private addresses to public ones, but they differ in how many internal hosts share a public address and how that mapping is done. With NAT in its typical one-to-one form, each private IP is paired with a unique public IP. External hosts see distinct public addresses for each internal device, and inbound traffic can be directed straight to the specific internal host. A common scenario is a business that has multiple public IPs and assigns a dedicated public address to each server. For example, a file server with private 10.0.0.10 maps to public 198.51.100.10, and an application server with private 10.0.0.20 maps to public 198.51.100.20. This provides direct access to each internal server from the Internet without port sharing. PAT, or many-to-one NAT using port numbers, lets many private addresses share a single public IP. The router keeps track of which internal device a given connection belongs to by using different port numbers. This is common in home or small-office networks where all devices appear to the Internet from one public address. Outgoing connections from different internal hosts use different source ports on the same public IP, so replies are routed back to the correct internal device. For instance, multiple devices behind a single router with public IP 203.0.113.5 can browse the Web simultaneously; the router assigns unique source ports (like 12345, 12346, etc.) so responses come back to the right internal host. If inbound access is needed, port forwarding can direct specific public ports to a chosen internal host.

3. Which IPv6 address type is routable on the Internet?

A. Link-Local

B. Global Unicast

C. Loopback

D. Unique Local

Global Unicast addresses are the IPv6 addresses intended for Internet-wide routing. They are publicly routable and globally unique, typically drawn from the 2000::/3 space, so devices with these addresses can be reached across the Internet whenever proper routes exist. In contrast, Link-Local addresses (FE80::/10) exist only on a single link and are used for local communication, such as neighbor discovery and automatic configuration; routers do not forward them. The Loopback address (::1) is reserved for testing and communication within the same host and isn't routable to other devices. Unique Local addresses (FC00::/7) are meant for private use within an organization and are not intended to be reachable on the public Internet, though they can be routed inside private networks. So, the address type that is designed to be routable on the Internet is the Global Unicast type.

4. What is a primary security benefit of offline backups in ransomware mitigation?

A. They provide the fastest possible restoration from backup

B. They protect backup data from being encrypted by ransomware by storing it offline

C. They eliminate the need for backups

D. They automatically detect ransomware

The key idea is that offline backups are kept separate from the online environment so ransomware can't reach them. Ransomware typically encrypts files on machines that are connected to the network and on accessible backup storage. When backups are stored offline—an air-gapped or removable-media approach—they aren't reachable by the malware, so they remain intact and can be used to restore systems after an attack. This is why offline backups are a strong defense: they create a recovery option that the ransomware cannot easily corrupt. The other statements don't describe the true benefit: offline backups don't inherently provide the fastest restoration, they don't eliminate the need for backups, and they don't automatically detect ransomware.

5. What is the term used for a message destined for more than one addressee?

A. Multiple address message

B. Broadcast message

C. Group message

D. Point-to-point message

A message destined for more than one addressee is described as a multiple address message. This term emphasizes that the addressee field includes more than one recipient, so the message is routed to several destinations rather than a single one. Distinguishing this from a point-to-point message, which goes to one person, helps clarify delivery scope. A broadcast message is typically sent to everyone in a network or system, not just a defined set of recipients, and a group message targets a predefined group, which may or may not involve listing multiple individual addresses. The idea of multiple addresses focuses on the explicit labeling of several recipients in the message, making it the best fit for this scenario.

6. What term describes the rate at which the disturbance travels through a medium?

A. Velocity

B. Frequency

C. Wavelength

D. Amplitude

The rate at which a disturbance travels through a medium is its velocity (the wave's propagation speed). Velocity is how far the wave pattern moves per unit time, and for a given wave in a medium you can relate it with the equation $v = f \lambda$, where f is the frequency and λ is the wavelength. Frequency tells you how often the disturbance repeats at a fixed point (cycles per second), not how fast the wave itself moves. Wavelength is the distance between identical points in successive cycles, which combined with frequency determines the speed but isn't the rate of travel by itself. Amplitude is the maximum displacement of the medium, i.e., how big the disturbance is, not how fast it moves. So velocity is the term that describes how quickly the disturbance propagates through the medium. For example, sound travels through air at about 343 m/s at room temperature; if the frequency is 440 Hz, the wavelength is roughly 0.78 m, and the wave's velocity is the speed at which those crests move through the air.

7. Special handling designation messages are identified by an oblique signal, a slash mark, and which element repeated after the five related security characters?

A. The appropriate assigned designator repeated

B. An encryption key repeated

C. A color code

D. A priority flag

Special handling designation in messages is signaled by a specific marker that begins with an oblique signal and a slash, followed by five related security characters. After those five characters, the element that is repeated is the appropriate assigned designator. This designator pinpoints who is responsible for the message and ensures the correct unit or office handles and routes it. It's not about an encryption key, a color code, or a separate priority flag, which serve different purposes in messaging.

8. Which practice best mitigates SQL injection attacks?

A. Input validation and parameterized queries

B. Firewall blocking all ports

C. Disable logging

D. Use of steganography

Preventing SQL injection starts by making sure user input is treated strictly as data, not as part of the SQL code. The most effective way to achieve this is using input validation to enforce acceptable formats and, more importantly, parameterized (prepared) queries. Parameterized queries separate the SQL code from the data being supplied, so any user input is bound as a value rather than executable code. This defense stops attempts to alter the query structure with injected SQL because the database treats the input as data only, no matter what characters are supplied. Input validation adds another layer by rejecting inputs that don't meet expected patterns, lengths, or types. Other options don't address how the application builds and executes database queries. A firewall blocks network access but can't prevent harmful data from reaching the application or stop it from being used to modify a query once inside the app. Disabling logging removes visibility into potential attacks and doesn't fix the vulnerability. Steganography has no relation to database security or SQL query handling.

9. The frequency of a sound is referred to as what?

A. Pitch

B. Intensity

C. Loudness

D. Quality

The frequency of a sound is what determines its pitch. Frequency is how often a sound wave repeats each second, measured in hertz, and our ears interpret that rate as how high or low the tone sounds. A higher frequency produces a higher-pitched sound, while a lower frequency yields a lower-pitched one. That's why pitch is the best term for describing frequency. The other terms describe different aspects: intensity is about how much energy the sound carries (often related to loudness), loudness is the perceived strength of the sound, and quality (timbre) is the color or character of the tone that lets us distinguish different sounds even when they have the same pitch and loudness.

10. In routing messages, which series publication governs the procedures and any national or regional defense organization supplements that apply?

A. ACP-117

B. ACP-118

C. ACP-119

D. ACP-120

Routing messages relies on a standard publication that defines how messages should be routed and how any national or regional supplements are integrated. ACP-117 is the publication that covers these routing procedures and explicitly allows for supplements from national or regional defense organizations. This makes it the authoritative source for how routing is done and how additional rules are incorporated. The other ACP series address different aspects of defense communications and do not specifically govern routing procedures with supplements, so they aren't the best fit for this question.

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://it2advancement.examzify.com

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