

NCTI FIELD TECH IV PROGRESSION PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. When a CO switch provides business telephone switching services, it is referred to as what?**
 - A. Centrex
 - B. ISDN
 - C. VoIP
 - D. PBX

- 2. What is a key characteristic of a public network?**
 - A. It is designed only for private use
 - B. It requires subscriptions for access
 - C. It is widely accessible to any user
 - D. It is exclusively used for government communications

- 3. Which of the following is a function of hubs and repeaters?**
 - A. Provide for cable extension
 - B. Filter network traffic
 - C. Encrypt data packets
 - D. Route data to multiple paths

- 4. Which Fast Ethernet standard allows sending frames at 100 Mbps over Category 5E UTP or fiber optic cabling?**
 - A. IEEE 802.3z
 - B. IEEE 802.3u
 - C. IEEE 802.3x
 - D. IEEE 802.3ab

- 5. What is the primary limitation of using coaxial cable for networking?**
 - A. It is less durable than fiber-optic cables
 - B. It has limited bandwidth compared to fiber-optics
 - C. It cannot be used over long distances
 - D. It requires complex installation procedures

- 6. Which of the following network topologies forms a closed loop?**
- A. Star topology
 - B. Mesh topology
 - C. Ring topology
 - D. Bus topology
- 7. When troubleshooting a network, why is it important to establish symptoms first?**
- A. To verify network speed
 - B. To understand user experiences
 - C. To determine hardware compatibility
 - D. To assess bandwidth usage
- 8. Which protocol has a header of 5 bytes and a trailer of 3 bytes?**
- A. Transmission Control Protocol
 - B. Point-to-Point Protocol
 - C. Internet Control Message Protocol
 - D. User Datagram Protocol
- 9. An Application Layer utility transmits network administration and control messages between nodes. Which service should it use?**
- A. TCP
 - B. UDP
 - C. ICMP
 - D. ARP
- 10. At which point in a one-way, multiple hop, end-to-end IP communications session will a frame have to be built?**
- A. At the sending host's LAN port
 - B. At the receiving host's LAN port
 - C. At the sender's gateway
 - D. At each hop's router outbound port

Answers

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

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Explanations

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1. When a CO switch provides business telephone switching services, it is referred to as what?

- A. Centrex**
- B. ISDN
- C. VoIP
- D. PBX

When a Central Office (CO) switch provides business telephone switching services, it is referred to as Centrex. Centrex is a service provided by a local telephone company that allows businesses to have their own private branch exchange (PBX) functionality without needing to maintain physical switching equipment on their premises. This means that the telephone service is managed and switched at the CO, allowing businesses to take advantage of features such as call forwarding, voicemail, and conference calling, all managed through the provider's infrastructure. Centrex is particularly beneficial for smaller businesses that might not have the resources or need to invest in their own PBX systems, yet still require advanced telephony features. By using Centrex, businesses can enjoy a reliable communication system without the upfront costs and maintenance associated with owning and operating a PBX. The other responses represent different technologies and services: ISDN (Integrated Services Digital Network) is a set of communication standards for simultaneous voice, data, and video transmissions; VoIP (Voice over Internet Protocol) refers to the technology that enables voice communications over the internet; and PBX (Private Branch Exchange) is a private telephone network within a business. Each of these options serves distinct purposes that do not specifically align with the role of CO in providing centralized

2. What is a key characteristic of a public network?

- A. It is designed only for private use
- B. It requires subscriptions for access
- C. It is widely accessible to any user**
- D. It is exclusively used for government communications

A public network is fundamentally characterized by its broad accessibility to a wide audience. This means that any user, regardless of their specific affiliation or subscription status, can connect and utilize the network. Public networks, like the Internet, allow for open access, facilitating communication and the sharing of information across various domains and user groups. In contrast, private networks are limited to specific users or organizations and are designed for restricted access. The requirement for subscriptions applies to certain types of networks, but it does not define the nature of public networks, which are often free to access. Additionally, the concept of a public network does not restrict its use to government communications; in fact, it is utilized by individuals, businesses, and various entities for a myriad of purposes. Therefore, the key characteristic that sets a public network apart is its accessibility to any user.

3. Which of the following is a function of hubs and repeaters?

- A. Provide for cable extension
- B. Filter network traffic
- C. Encrypt data packets
- D. Route data to multiple paths

The function of hubs and repeaters primarily revolves around the ability to extend network connectivity over a greater distance. Hubs operate at the physical layer of the OSI model, simply taking in a signal on one port and broadcasting it to all other ports. This capability effectively allows devices on the same network segment to communicate with each other, even if they are physically separated by longer cable runs. Repeaters, on the other hand, regenerate signals to ensure that they can travel further distances without losing quality. For example, when a signal travels over a long cable length, it may degrade, leading to potential data loss or communication errors. By using repeaters, these signals can be amplified and sent further, helping to maintain the integrity of data transmission over extended distances. In contrast, the functions of filtering network traffic, encrypting data packets, and routing data to multiple paths are associated with more advanced networking devices, such as switches, routers, and security appliances. These devices operate at higher layers of the OSI model and have the capabilities necessary to manage data flow, secure transmissions, and facilitate complex routing decisions that are beyond the simple functionality of hubs and repeaters.

4. Which Fast Ethernet standard allows sending frames at 100 Mbps over Category 5E UTP or fiber optic cabling?

- A. IEEE 802.3z
- B. IEEE 802.3u
- C. IEEE 802.3x
- D. IEEE 802.3ab

The standard that allows sending frames at 100 Mbps over Category 5E UTP or fiber optic cabling is IEEE 802.3u. This specification defines Fast Ethernet, which operates at the speed of 100 Mbps and is designed to be an upgrade to 10 Mbps Ethernet. It supports both twisted pair cabling (like Category 5E) and fiber optic connections, making it flexible for various networking environments. The use of Category 5E cabling is particularly important, as it enhances data transmission capabilities while maintaining compatibility with existing Ethernet standards. IEEE 802.3u provides specifications that enable devices to communicate over these media efficiently, thus ensuring robust performance in local area network (LAN) setups. In comparison, other standards listed focus on different aspects; for example, IEEE 802.3z is associated with Gigabit Ethernet, while IEEE 802.3ab specifies the use of 1000BASE-T, which extends Gigabit Ethernet speeds over twisted pair cabling. IEEE 802.3x deals with full-duplex operation and flow control, not the specific data rate of 100 Mbps.

5. What is the primary limitation of using coaxial cable for networking?

- A. It is less durable than fiber-optic cables
- B. It has limited bandwidth compared to fiber-optics**
- C. It cannot be used over long distances
- D. It requires complex installation procedures

The choice indicating that coaxial cable has limited bandwidth compared to fiber-optics accurately identifies a significant limitation of coaxial cable. Coaxial cables, which consist of a copper core and an insulating layer covered by a conductive shield, have a maximum data transmission capacity that falls short when compared to fiber-optic cables. Fiber-optics utilize light to transmit data, allowing for dramatically higher bandwidth capabilities—often exceeding several terabits per second. This makes fiber-optic technology much better suited for modern high-speed networking demands, including extensive data transfer and streaming applications. The bandwidth limitation of coaxial cables restricts the amount of data that can be transmitted simultaneously, which can lead to congestion in high-traffic situations and limit overall network performance. This characteristic is particularly relevant in environments where large volumes of data need to be transmitted quickly and reliably, hence making fiber-optic solutions more favorable for extensive networks, data centers, and telecommunications infrastructures.

6. Which of the following network topologies forms a closed loop?

- A. Star topology
- B. Mesh topology
- C. Ring topology**
- D. Bus topology

The correct answer is the network topology that forms a closed loop is the ring topology. In a ring topology, each device is connected to exactly two other devices, creating a circular data path. As a result, data travels in one direction along the ring until it reaches its destination, making it a closed loop. This structure can help in reducing collision domains and can also simplify the process of sending data from one node to another. While other topologies have their own unique features, they do not form a closed loop in the same manner. For instance, in a star topology, all devices are connected to a central hub or switch, leading to a star-like formation that does not have a continuous loop. In a mesh topology, every device is interconnected, but this does not imply a singular continuous path; rather, it enhances redundancy and reliability. Lastly, in a bus topology, devices are connected to a single central cable, and while data can flow in both directions along the bus line, it lacks the loop structure characteristic of a ring topology. Thus, the defining feature of a closed loop is specific to the ring topology, making it the correct answer.

7. When troubleshooting a network, why is it important to establish symptoms first?

- A. To verify network speed
- B. To understand user experiences**
- C. To determine hardware compatibility
- D. To assess bandwidth usage

Establishing symptoms first when troubleshooting a network is crucial because it provides insight into users' experiences and perceptions regarding the network's performance. Understanding the specific issues that users are facing helps in accurately identifying the problem and narrowing down potential causes. User experiences can include factors such as slow connectivity, intermittent outages, or specific applications not functioning as intended. By gathering this information upfront, a technician can prioritize troubleshooting efforts more effectively, focusing on the most impactful problems first. This user-centric approach enhances the efficiency of the troubleshooting process, leading to quicker resolutions and improved overall satisfaction. The other options, while important in different aspects of network management, do not directly address the initial troubleshooting phase. For instance, verifying network speed and assessing bandwidth usage are more technical aspects that could come later in the troubleshooting process, rather than being foundational to understanding the user's experience. Determining hardware compatibility, while important in some contexts, is not as immediately relevant to the symptom identification phase. Therefore, understanding user experiences directly informs and guides the troubleshooting efforts.

8. Which protocol has a header of 5 bytes and a trailer of 3 bytes?

- A. Transmission Control Protocol
- B. Point-to-Point Protocol**
- C. Internet Control Message Protocol
- D. User Datagram Protocol

The Point-to-Point Protocol (PPP) is known for its specific framing structure, which indeed includes a header of 5 bytes and a trailer of 3 bytes. This protocol is widely used for establishing direct connections between two network nodes and provides a standard method for encapsulating multiple network layer protocols over point-to-point links. The structure of PPP's frame consists of a 1-byte flag at the beginning and end to indicate the start and end of the frame, a 2-byte address field, a 1-byte control field, and a protocol field that varies in size but adds up to a total of 5 bytes for the header. The trailer, typically consisting of a Frame Check Sequence (FCS) for error detection, is usually 2 bytes plus an additional byte for the ending flag, which results in a total trailer size of 3 bytes. Understanding that other protocols like Transmission Control Protocol (TCP), Internet Control Message Protocol (ICMP), and User Datagram Protocol (UDP) have different header and trailer lengths is essential. For instance, TCP has a minimum header size of 20 bytes (without options) and no trailer, while UDP has an 8-byte header and no trailer. ICMP also has a standard header size but

9. An Application Layer utility transmits network administration and control messages between nodes. Which service should it use?

- A. TCP
- B. UDP**
- C. ICMP
- D. ARP

The correct response involves understanding the role of various protocols operating at the Application Layer and their services. An Application Layer utility that transmits network administration and control messages is best served by employing ICMP (Internet Control Message Protocol). ICMP is a network layer protocol used primarily for diagnostics and error messaging. It helps in sending control messages such as destination unreachable, time exceeded, echo requests and replies (used in ping utilities), and other network communication tools. This makes ICMP ideal for tasks that require network management and control, as it is specifically designed for these purposes rather than for transmitting general application data. In contrast, while TCP is connection-oriented and guarantees delivery of messages, it is designed for transferring larger amounts of application data reliably at higher layers. UDP, on the other hand, is connectionless and used for scenarios where speed is more critical than reliability, such as streaming media or real-time communications. ARP (Address Resolution Protocol) operates at a lower layer, mainly handling the mapping of IP addresses to MAC addresses on local area networks, which does not fit the context of network administration messages. Therefore, the protocol tailored for transmitting control and administrative messages within the context of networking tools is ICMP.

10. At which point in a one-way, multiple hop, end-to-end IP communications session will a frame have to be built?

- A. At the sending host's LAN port
- B. At the receiving host's LAN port
- C. At the sender's gateway
- D. At each hop's router outbound port**

In a one-way, multiple hop, end-to-end IP communications session, a frame needs to be constructed at the outbound port of each hop's router. This is because, at each hop, the data packet must be encapsulated into a frame suitable for the specific link layer technology that connects the router to the next network segment. When data is transmitted across networks, it is sent in packets at the network layer (IP layer), but to move those packets over physical mediums, they must be framed. Each router examines the incoming packet, processes it (which can include routing decisions), and then builds a new frame to send it out on the respective outbound link, which may involve adjusting for things like the frame format, address encapsulation, and error checking. Considering the options provided: while the sending host's LAN port is responsible for building the initial frame for transmission, this question specifically focuses on the scenario involving multiple hops. The receiving host won't build a frame until it's processing the final arrival, but that doesn't apply to the hops in between. The sender's gateway performs routing but does not need to build a new frame unless it is the first router in the path. Thus, the crucial framing activity occurs at each hop's router as they pass the

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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