

CISCO CERTIFIED NETWORK ASSOCIATE (CCNA) GROUP 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. Attenuation is defined as the loss of signal strength as distance increases.**
 - A. Loss of signal strength as distance increases
 - B. Time for a signal to travel
 - C. Leakage of signals
 - D. Strengthening of a signal
- 2. During encapsulation at the data link layer for Ethernet, which address is added?**
 - A. The logical address is added.
 - B. The physical address is added.
 - C. The IP address is added.
 - D. The process port number is added.
- 3. Which OSI physical layer term describes the process by which one wave modifies another wave?**
 - A. Modulation
 - B. IEEE
 - C. EIA/TIA
 - D. Air
- 4. Which protocol is used to resolve hostnames to IP addresses on the Internet?**
 - A. DHCP
 - B. FTP
 - C. ARP
 - D. DNS
- 5. What is the purpose of the FCS field in a frame?**
 - A. To Obtain the MAC Address of the Sending Node
 - B. To Verify the Logical Address of the Sending Node
 - C. To Compute the CRC Header for the Data Field
 - D. To Determine If Errors Occurred in the Transmission and Reception

- 6. What OSI physical layer term describes the capacity at which a medium can carry data?**
- A. Bandwidth
 - B. IEEE
 - C. EIA/TIA
 - D. Air
- 7. Which media communication type does not require media arbitration in the data link layer?**
- A. deterministic
 - B. half-duplex
 - C. full-duplex
 - D. controlled access
- 8. Which statement describes the correct direction of encapsulation when a PC sends data to the network in TCP/IP?**
- A. Data is sent from the internet layer to the network access layer.
 - B. Packets are sent from the network access layer to the transport layer.
 - C. Segments are sent from the transport layer to the internet layer.
 - D. Frames are sent from the network access layer to the internet layer.
- 9. Which statement about media access control is accurate?**
- A. Data link layer protocols define the rules for access to different media.
 - B. It is responsible for error-correcting data at the transport layer.
 - C. It defines routing between networks.
 - D. It performs data compression for transmission.
- 10. Which OSI layers are encompassed by the TCP/IP model's Application layer?**
- A. Application, Presentation, and Session
 - B. Application and Transport
 - C. Physical and Data Link
 - D. Network and Transport

Answers

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

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Explanations

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1. Attenuation is defined as the loss of signal strength as distance increases.

A. Loss of signal strength as distance increases

B. Time for a signal to travel

C. Leakage of signals

D. Strengthening of a signal

Attenuation is the decrease in signal strength as it travels through a medium or along a link. As distance increases, factors like conductor resistance, connector losses, and the medium's properties cause the signal to weaken, which is why we measure attenuation in decibels to understand how far a signal can travel before it becomes too weak. This concept is different from propagation delay, which is about the time a signal takes to traverse a path, and from leakage or crosstalk, which involve signals escaping or interfering with other channels, or from amplification, which strengthens a signal. So the statement describing the loss of signal strength as distance increases correctly captures attenuation.

2. During encapsulation at the data link layer for Ethernet, which address is added?

A. The logical address is added.

B. The physical address is added.

C. The IP address is added.

D. The process port number is added.

At the data link layer, Ethernet encapsulation adds a frame header that uses the device's physical (MAC) addresses to deliver the frame on the local network. The Ethernet header includes the destination MAC address and the source MAC address, along with an EtherType field that indicates the next protocol in the stack. These MAC addresses are hardware identifiers tied to network interfaces, which is why they're called physical addresses. IP addresses belong to the network layer and are carried inside the payload after encapsulation, not added at this layer. Port numbers belong to the transport layer (TCP/UDP) and are part of the transport header, not the Ethernet data-link header.

3. Which OSI physical layer term describes the process by which one wave modifies another wave?

A. Modulation

B. IEEE

C. EIA/TIA

D. Air

Modulation. In the physical layer, information is carried by altering a carrier wave to encode the data. This change can be in amplitude, frequency, or phase, producing a modulated signal that travels over the medium. Modulation lets the signal fit the channel's bandwidth and distance constraints and helps distinguish transmissions from noise. The other terms point to standards bodies or the transmission medium rather than the signaling method used to encode data.

4. Which protocol is used to resolve hostnames to IP addresses on the Internet?

- A. DHCP
- B. FTP
- C. ARP
- D. DNS**

DNS translates human-friendly hostnames into the numeric IP addresses used by computers on the Internet. When you type a web address, your device asks a DNS resolver to find the corresponding IP. The resolver may query a chain that starts at the root servers, moves to the appropriate top-level domain servers, and finally reaches the domain's authoritative server to obtain the IP, with results cached to speed future lookups. This system makes it possible to reach sites by name rather than remembering numeric addresses, and its hierarchical design plus caching keeps lookups scalable and efficient. Other options don't fit because DHCP assigns IP addresses and other network configuration to hosts, not domain name mappings; ARP resolves IP addresses to MAC addresses on a local network, not Internet-wide hostnames to IPs; and FTP is a file transfer protocol, not a name-to-address resolution service.

5. What is the purpose of the FCS field in a frame?

- A. To Obtain the MAC Address of the Sending Node
- B. To Verify the Logical Address of the Sending Node
- C. To Compute the CRC Header for the Data Field
- D. To Determine If Errors Occurred in the Transmission and Reception**

The main concept is error detection using a Frame Check Sequence (CRC). The FCS is a CRC value appended to the end of the frame. The sender computes the CRC over the frame's contents (header and data) and places the result in the FCS. When the frame is received, the NIC recalculates the CRC over what was received and compares it to the FCS. If they match, the frame is considered to have arrived without detectable errors; if they don't, a transmission error occurred and the frame is discarded or flagged for error handling. This mechanism detects many bit errors, including burst errors, but it does not validate MAC addresses or logical addresses, and it applies to the whole frame rather than just the header.

6. What OSI physical layer term describes the capacity at which a medium can carry data?

- A. Bandwidth**
- B. IEEE
- C. EIA/TIA
- D. Air

Bandwidth is the capacity of a transmission medium to carry data, and in the OSI physical layer it denotes the maximum data rate the medium can support under ideal conditions. This capacity is determined by the channel's usable frequency range and the signaling method used, and it's typically expressed in bits per second. In practice, the actual throughput can be lower due to overhead, protocol efficiency, and network load. Standards bodies like IEEE and EIA/TIA set specifications and interfaces, but they describe how things connect and operate, not the medium's maximum carrying capacity. The term "air" doesn't describe a measurable data-carrying capacity. So bandwidth is the term that captures the medium's ability to carry data.

7. Which media communication type does not require media arbitration in the data link layer?

- A. deterministic
- B. half-duplex
- C. full-duplex**
- D. controlled access

Full-duplex provides a dedicated, bidirectional link between two devices, so there is no shared channel for contention. Because the path is point-to-point and separate for sending and receiving, there's no possibility of other devices "fighting" for the same medium, and no arbitration mechanism is needed to decide who can transmit. Transmit and receive can occur simultaneously, with flow control handling pacing if necessary. In contrast, half-duplex on a shared Ethernet segment requires arbitration (like CSMA/CD) to manage access and avoid collisions, and deterministic or controlled access schemes coordinate transmissions through tokens or schedules. So the type that does not require media arbitration is full-duplex.

8. Which statement describes the correct direction of encapsulation when a PC sends data to the network in TCP/IP?

- A. Data is sent from the internet layer to the network access layer.
- B. Packets are sent from the network access layer to the transport layer.
- C. Segments are sent from the transport layer to the internet layer.**
- D. Frames are sent from the network access layer to the internet layer.

In TCP/IP, encapsulation happens as data moves downward through the stack, with each layer wrapping the data in its own header and handing it to the next lower layer. The transport layer creates a segment, and this segment is then passed to the internet layer to be encapsulated inside an IP datagram. This first downward step—segments moving from the transport layer to the internet layer—is the correct description of how data is encapsulated when a PC sends data to the network. So the best statement is that segments are sent from the transport layer to the internet layer. The other ideas describe later steps or mix up the units used at each layer (frames are created at the network access layer, not passed upward to the internet layer).

9. Which statement about media access control is accurate?

- A. Data link layer protocols define the rules for access to different media.
- B. It is responsible for error-correcting data at the transport layer.**
- C. It defines routing between networks.
- D. It performs data compression for transmission.

Access to the shared medium is controlled by the data link layer, specifically the MAC sublayer, which defines how devices coordinate transmissions and how they are addressed on that medium. Different media have different MAC rules (for example, CSMA/CD in traditional Ethernet and CSMA/CA in Wi-Fi), so saying that data link layer protocols define the rules for access to different media is accurate. Other activities mentioned—error correction at the transport layer, routing between networks, and data compression—aren't handled by the MAC layer. Error handling across transport is end-to-end (not MAC), routing is a network-layer function, and compression isn't a MAC responsibility.

10. Which OSI layers are encompassed by the TCP/IP model's Application layer?

A. Application, Presentation, and Session

B. Application and Transport

C. Physical and Data Link

D. Network and Transport

In TCP/IP, the Application layer handles the functions of the upper OSI layers—those that deal with end-user applications, data formatting, and session management. Specifically, OSI layers five (Session), six (Presentation), and seven (Application) are encompassed because the protocols and services the Application layer supports (like HTTP, DNS, and FTP) rely on dialogue control, data representation, and application-level processing that the OSI model assigns to those top layers. The TCP/IP Application layer therefore consolidates those three OSI layers into one, since the upper-layer concerns are implemented together in practice. Lower OSI layers map to other TCP/IP layers: Physical and Data Link correspond to the Link/Network Interface layer, Network maps to the Internet layer, and Transport remains as a separate layer within TCP/IP. That's why only the upper three OSI layers fit into the TCP/IP Application layer.

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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://ccnagroup.examzify.com>

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

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