Cisco Certified Network Associate (CCNA) 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. Don’t worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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. Which command will show the OSPF process number and router ID in addition to other OSPF parameters?

A. #show ip protocols

B. #show running-config

C. #display ospf information

D. #show ip route

2. Which statement is true for half-duplex Ethernet?

A. It allows simultaneous sending and receiving of data

B. It operates in a shared collision domain

C. It requires a dedicated circuit

D. It always utilizes maximum throughput

3. What happens on a Frame Relay network when the CIR is exceeded?

A. All traffic is queued for later transmission

B. Traffic is dropped without warning

C. All excess traffic is marked as discard eligible

D. Traffic will be rerouted to a different path

4. What is the primary purpose of VLAN segmentation in a network?

A. To increase the number of broadcast domains

B. To reduce network complexity

C. To enhance performance by limiting broadcast traffic

D. To provide physical separation of devices

5. What command is required to set the time on an NTP server?

A. set time

B. clock set HOUR.MINUTE.SECOND MONTH DAY YEAR

C. sync time

D. ntp time

6. What is the CIDR notation for a subnet mask of 255.255.255.224?

A. /23

B. /25

C. /27

D. /28

7. What Netflow component can be applied to an interface to track IPv4 traffic?

A. Flow controller

B. Flow sampler

C. Flow monitor

D. Flow analyzer

8. What term is used to describe the process of controlling data flow and ensuring a valid PPP connection?

A. Session establishment

B. Protocol negotiation

C. Link management

D. Data encapsulation

9. Which command displays HSRP status and configuration details on a router?

A. #show hsrp

B. #show standby

C. #display standby

D. #check hsrp status

10. Acknowledgements and flow control are characteristics of which OSI layer?

A. Layer 2

B. Layer 4

C. Layer 5

D. Layer 3

Answers

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

Explanations

1. Which command will show the OSPF process number and router ID in addition to other OSPF parameters?

A. #show ip protocols

B. #show running-config

C. #display ospf information

D. #show ip route

The command that displays the OSPF process number and router ID, along with other OSPF parameters, is "show ip protocols." This command provides vital information about the OSPF configuration and its operational parameters on the router. It lists details such as the OSPF routing process ID, router ID, networks being advertised, timers, and more, making it an essential command for network troubleshooting and verification of OSPF settings. The other commands serve different purposes: "show running-config" displays the entire current configuration of the router, which includes OSPF settings but does not focus specifically on OSPF details. "display ospf information" is not a valid command in Cisco IOS, as this syntax aligns more with other manufacturers' devices. Lastly, "show ip route" is used to display the routing table and provides insights into the routing paths but does not detail OSPF-specific parameters like the process number or router ID.

2. Which statement is true for half-duplex Ethernet?

A. It allows simultaneous sending and receiving of data

B. It operates in a shared collision domain

C. It requires a dedicated circuit

D. It always utilizes maximum throughput

The correct statement regarding half-duplex Ethernet is that it operates in a shared collision domain. In a half-duplex communication system, devices can either send or receive data at any given time, but not both simultaneously. This results in the possibility of collisions occurring when two devices attempt to send data at the same time, hence the term "shared collision domain." In such a setup, devices must wait for the medium to be clear before they can transmit data, which can lead to delays. The nature of half-duplex allows for simpler implementation compared to full-duplex systems, which require more complex handling to manage simultaneous data flows. Half-duplex systems do not require a dedicated circuit; they share the bandwidth with other devices, which reinforces the point that they operate within a shared environment. While maximum throughput can be high under optimal conditions, the reality is that the presence of potential collisions can reduce effective throughput, making it not a guarantee for every scenario.

3. What happens on a Frame Relay network when the CIR is exceeded?

A. All traffic is queued for later transmission

B. Traffic is dropped without warning

C. All excess traffic is marked as discard eligible

D. Traffic will be rerouted to a different path

In a Frame Relay network, when the Committed Information Rate (CIR) is exceeded, the behavior of the network is designed to manage excess traffic efficiently. The correct answer indicates that all excess traffic is marked as "discard eligible." When a frame exceeds the CIR, it is classified as excess traffic, meaning it may be subject to being dropped if the network is congested. This marking as discard eligible allows the Frame Relay network to provide a balance between quality of service and efficient use of bandwidth. Frame Relay is a cost-effective solution that prioritizes committed traffic while still allowing for bursts of excess usage when needed, understanding that some excess traffic may not be delivered under high load conditions. This mechanism ensures that important or critical data can be prioritized while still allowing for higher data volume when the network permits. Each data frame is treated based on its eligibility for being discarded if there is congestion, facilitating a more efficient management of bandwidth resources. Other options do not accurately reflect the behavior of Frame Relay when the CIR is exceeded. For example, queuing all traffic would not reflect the typical management style of Frame Relay, which is focused on efficient bandwidth use. Traffic that is simply dropped without warning does not capture the importance of marking excess traffic. Lastly, rer

4. What is the primary purpose of VLAN segmentation in a network?

A. To increase the number of broadcast domains

B. To reduce network complexity

C. To enhance performance by limiting broadcast traffic

D. To provide physical separation of devices

The primary purpose of VLAN segmentation in a network is to enhance performance by limiting broadcast traffic. When VLANs are implemented, each VLAN creates a separate broadcast domain. This means that broadcast packets sent by devices within one VLAN do not propagate to devices in other VLANs. As a result, this segmentation helps to reduce the volume of broadcast traffic that reaches all devices on a network, which can significantly enhance overall network performance, especially in environments with many devices communicating frequently. This selective communication reduces unnecessary data transmission, which can lead to improved bandwidth usage and decreased latency. By effectively managing broadcast traffic, VLANs can also mitigate issues related to broadcast storms, where excessive broadcasts can degrade network performance. Other options, while valid considerations in networking, do not capture the primary objective of VLAN segmentation as directly. Increasing the number of broadcast domains allows for improved traffic management, but the core benefit is more about controlling broadcast traffic rather than merely increasing domains. Reducing network complexity and providing physical separation, while important, are secondary effects of VLAN implementation rather than the primary purpose.

5. What command is required to set the time on an NTP server?

A. set time

B. clock set HOUR.MINUTE.SECOND MONTH DAY YEAR

C. sync time

D. ntp time

The command needed to set the time on an NTP server is "clock set HOUR.MINUTE.SECOND MONTH DAY YEAR." This command allows an administrator to manually configure the current date and time on the network device to align with the actual time. It involves specifying the hour, minute, second, month, day, and year in a structured format, ensuring precision in timekeeping which is essential for various network operations, including logging, time-stamping, and synchronization with other devices. This command is particularly important in environments relying on Network Time Protocol (NTP), as a properly set time is critical for the NTP operation to function effectively. It ensures that the server can accurately synchronize time with other devices configured as NTP peers or clients, maintaining consistency across the network. The other options do not represent valid commands for setting time on an NTP server. For example, "set time" and "sync time" are not recognized commands in Cisco IOS for time configuration, and "ntp time" does not pertain to manually setting the time but rather would relate to configuring NTP settings without actually setting the device's clock.

6. What is the CIDR notation for a subnet mask of 255.255.255.224?

A. /23

B. /25

C. /27

D. /28

CIDR notation is used to denote the number of bits that are set to '1' in a subnet mask. The subnet mask of 255.255.255.224 can be broken down into binary: - The first three octets, 255.255.255, correspond to 11111111.11111111.11111111, which is 24 bits set to '1'. - The last octet, 224, is represented in binary as 11100000, which adds another 3 bits set to '1'. When you combine these, you have a total of 24 + 3 = 27 bits set to '1'. Therefore, the CIDR notation for the subnet mask of 255.255.255.224 is /27. The other options reflect incorrect sums of the bits in the subnet mask, as /23, /25, and /28 correspond to different configurations of subnet masks that do not match the binary representation of 255.255.255.224.

7. What Netflow component can be applied to an interface to track IPv4 traffic?

A. Flow controller

B. Flow sampler

C. Flow monitor

D. Flow analyzer

The correct answer is flow monitor. A flow monitor is a component in Cisco's NetFlow that allows you to collect and analyze IP traffic flows that pass through an interface. By attaching a flow monitor to a specific interface, you can track and measure various metrics associated with IPv4 traffic, such as source and destination IP addresses, protocols, and the volume of data transferred. Flow monitors work in conjunction with other NetFlow components, allowing you to define specific data collection criteria and output the flow data for analysis. This capability is essential for network monitoring, performance analysis, and troubleshooting, providing insights into network usage and behavior. The other components have different roles in the context of NetFlow. Flow controllers typically manage the overall function of flow processing but are not directly involved in the tracking of traffic. Flow samplers are used to create a sample of the traffic rather than capturing all traffic flows. Flow analyzers focus on the analysis of the collected flow data instead of the actual monitoring of traffic on an interface.

8. What term is used to describe the process of controlling data flow and ensuring a valid PPP connection?

A. Session establishment

B. Protocol negotiation

C. Link management

D. Data encapsulation

The correct answer is link management. Link management is a critical aspect of the Point-to-Point Protocol (PPP) that involves overseeing the establishment, maintenance, and termination of the connection between two devices. This process ensures that data can flow smoothly and securely over the established link. It covers various tasks such as monitoring the link status, managing error corrections, and handling link challenges. While session establishment refers to the initiation of a connection, protocol negotiation involves determining the protocols to be used once the link is established. Data encapsulation pertains to the method of wrapping data packets with the necessary headers and trailers for transmission, which is a separate step in the data communication process. Therefore, link management is specifically focused on the ongoing control of that link, making it the term that best describes the process of managing data flow and ensuring a valid PPP connection.

9. Which command displays HSRP status and configuration details on a router?

A. #show hsrp

B. #show standby

C. #display standby

D. #check hsrp status

The command that displays the HSRP (Hot Standby Router Protocol) status and configuration details on a router is the "show standby" command. This command provides critical information about the HSRP groups configured on the router, including the virtual IP address, the priority of the router, which router is currently the active and standby router, and the timers for hello and hold times. It allows network administrators to check the operational status of the HSRP implementation and troubleshoot any potential issues. While there are other commands related to HSRP, they do not serve the same purpose. For example, there is no standard "show hsrp" command in the Cisco IOS that provides the same level of detail, nor does "display standby" exist in typical Cisco command syntax. The "check hsrp status" command does not exist either, making the "show standby" command the correct choice for retrieving HSRP status and configuration details.

10. Acknowledgements and flow control are characteristics of which OSI layer?

A. Layer 2

B. Layer 4

C. Layer 5

D. Layer 3

Acknowledgements and flow control are features associated with the transport layer of the OSI model, which is the fourth layer. The transport layer is responsible for ensuring reliable data transfer between devices, and it handles error detection and correction as well as the management of data flow to prevent congestion. Acknowledgements are used to confirm the successful receipt of data packets, allowing the sender to know whether the data has been received correctly. Flow control mechanisms help to manage the rate of data transmission between sender and receiver, ensuring that the sender does not overwhelm the receiver with too much data at once. In contrast, other layers have different responsibilities: the data link layer deals with node-to-node data transfer and framing, the session layer manages sessions and controls dialogues between applications, and the network layer is responsible for routing packets across multiple networks. Thus, the transport layer, as the one that supports acknowledgements and flow control, is clearly the correct answer.

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://ciscoccna.examzify.com

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