Western Governors University (WGU) ITEC2022 D386 Hardware and Operating Systems Essentials 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 TCP/IP suite layer handles the transport control protocol (TCP)?**

   A. Network

   B. Transport

   C. Application

   D. Data Link

2. **What type of cloud service provides hardware infrastructure and operating system software for running client applications?**

   A. Infrastructure as a Service (IaaS)

   B. Software as a Service (SaaS)

   C. Platform as a Service (PaaS)

   D. Function as a Service (FaaS)

3. **Which network topology is characterized by a central hub or switch?**

   A. Star topology

   B. Bus topology

   C. Ring topology

   D. Mesh topology

4. **A client's computer emits a loud clicking noise and will not boot. What is the most likely cause?**

   A. Power supply failure

   B. Motherboard defects

   C. Magnetic hard drive failure

   D. Software corruption

5. **Which type of network topology is known for being inexpensive and simple to set up but challenging to modify?**

   A. Star

   B. Mesh

   C. Bus

   D. Ring

6. Which technique can be used by DNS to battle email spam?

A. Sender Policy Framework (SPF)

B. Domain Keys Identified Mail (DKIM)

C. Domain Name System Security Extensions (DNSSEC)

D. Post Office Protocol (POP)

7. What type of hypervisor runs directly on the host's hardware rather than on top of the operating system?

A. Type 1 VM

B. Type 2 VM

C. Hybrid VM

D. Hosted VM

8. What is the main protocol at the internet layer of the TCP/IP layer and also considered the workhorse of the TCP/IP?

A. Electronic Mail Protocol (EMP)

B. Internet Protocol (IP)

C. Simple Mail Transfer Protocol (SMTP)

D. Hypertext Transfer Protocol (HTTP)

9. A client on a budget wants to purchase a new hard drive with fast access times and needs at least 4 TB for storage. Which type of hard drive would be ideal?

A. 7200 RPM magnetic hard drive

B. 5400 RPM magnetic hard drive

C. Solid State Drive (SSD)

D. Hybrid hard drive

10. Which device provides passive protection against attacks on network- and cloud-based resources?

A. Firewall

B. Router

C. Intrusion Detection System (IDS)

D. Switch

Answers

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

Explanations

1. Which TCP/IP suite layer handles the transport control protocol (TCP)?

A. Network

B. Transport

C. Application

D. Data Link

The correct answer identifies the layer responsible for the transport control protocol (TCP) as the Transport layer. In the TCP/IP suite, the Transport layer is crucial for providing communication services directly to the application processes running on different hosts. It enables reliable data transfer, flow control, and error recovery, which are essential for maintaining the integrity and order of the data packets being sent across the network. TCP operates at this layer, managing the segmentation of data into smaller packets and ensuring that these packets are delivered reliably to the recipient. It establishes a connection-oriented service that guarantees that data is sent and received in the correct sequence, offering error-checking mechanisms to validate the integrity of the transmitted data. Understanding the roles of the different layers in the TCP/IP model is important. While the Network layer is responsible for routing data across different networks, and the Application layer provides interfaces for applications to communicate, the Data Link layer is focused on the physical transmission of data over the network infrastructure. Each layer has distinct functions and relies on the others to provide comprehensive communication protocols. The Transport layer's operation is fundamental to the effectiveness of the TCP protocol, making it essential for robust network communications.

2. What type of cloud service provides hardware infrastructure and operating system software for running client applications?

A. Infrastructure as a Service (IaaS)

B. Software as a Service (SaaS)

C. Platform as a Service (PaaS)

D. Function as a Service (FaaS)

The correct answer is Platform as a Service (PaaS). PaaS provides a comprehensive environment that includes not only the hardware infrastructure but also the operating system software needed for developers to build, deploy, and manage applications. It abstracts the underlying hardware and networking components, allowing developers to focus more on coding and application development rather than managing the infrastructure. PaaS typically provides tools and services such as database management, development frameworks, and application hosting, which are crucial for running client applications seamlessly. This allows for greater efficiency and scalability in software development, making it easier for developers to collaborate and innovate. Other options like Infrastructure as a Service (IaaS) focus primarily on providing virtualized computing resources over the internet, which may include networking and storage but typically requires the user to manage the operating system and application software. Software as a Service (SaaS) delivers complete software solutions over the internet without the user having to worry about the underlying infrastructure or platform. Function as a Service (FaaS), on the other hand, is a serverless computing model that runs specific functions in response to events, serving a different purpose than that of providing a complete environment for application development and deployment.

3. Which network topology is characterized by a central hub or switch?

A. Star topology

B. Bus topology

C. Ring topology

D. Mesh topology

The star topology is characterized by a central hub or switch, which acts as a focal point for network connections. In this configuration, each network device (like computers or printers) connects directly to the central hub. This design allows for easy addition or removal of devices without disrupting the entire network. Because all data transmissions pass through the central hub, it simplifies monitoring and managing traffic across the network. If a device fails, it does not affect the rest of the network, as the connections are independent. This makes troubleshooting more straightforward since issues can be isolated to individual connections or devices without impacting the overall network functionality. In contrast, other topologies, such as bus, ring, and mesh, utilize different connection methodologies which either involve shared transmission mediums or more complex interconnections among devices, making them less straightforward than the star design.

4. A client's computer emits a loud clicking noise and will not boot. What is the most likely cause?

A. Power supply failure

B. Motherboard defects

C. Magnetic hard drive failure

D. Software corruption

A loud clicking noise coming from a computer that won't boot is typically indicative of issues related to the hard drive, specifically a failure of a magnetic hard drive. This sound is often referred to as the "click of death," which occurs when the hard drive's read/write heads repeatedly fail to position themselves correctly over the disk platters. In many cases, this sound signals that the internal components of the hard drive are malfunctioning, which may be due to mechanical failure or damage within the drive. When the read/write heads continuously attempt to access data but cannot, the clicking noise becomes audible. This direct link between the noise and hard drive failure makes it the most plausible cause, especially since the symptoms include a failure to boot, which can often result from the operating system being unable to locate or access critical boot files stored on the hard drive. On the other hand, issues like power supply failures or motherboard defects typically do not present with a loud clicking noise, as they would more likely manifest through complete system failure, failure to power on, or erratic performance without such auditory cues. Software corruption, while it can prevent a system from booting, would not produce any audible signs like clicking; such issues are more related to data integrity rather than mechanical function

5. Which type of network topology is known for being inexpensive and simple to set up but challenging to modify?

A. Star

B. Mesh

C. Bus

D. Ring

The bus topology is characterized by its simplicity and cost-effectiveness, making it an appealing choice for small networks. In this configuration, all devices are connected to a single communication line or cable, known as the bus. This straightforward structure allows for easy setup and less cabling compared to other topologies, which is why it's often considered inexpensive. However, modifying a bus topology can indeed pose challenges. Since all devices share the same communication line, adding or removing devices requires careful consideration of where to place the new connections. Furthermore, a failure in the bus, such as a break in the cable, can bring down the entire network, making troubleshooting more complicated and maintenance harder. Thus, while bus topology is efficient in terms of resource usage and initial setup, its limitations in modifications and reliability make it less suitable for larger or more dynamic network environments.

6. Which technique can be used by DNS to battle email spam?

A. Sender Policy Framework (SPF)

B. Domain Keys Identified Mail (DKIM)

C. Domain Name System Security Extensions (DNSSEC)

D. Post Office Protocol (POP)

The correct answer leverages a technique that focuses on ensuring the authenticity and integrity of email messages. DomainKeys Identified Mail (DKIM) allows the sender to attach a digital signature to their emails, which can be verified by the recipient's mail server using a public key published in the DNS records of the sending domain. This method enables the recipient to confirm that the email has not been altered in transit and that it indeed comes from the claimed sender. By using DKIM, organizations can significantly reduce the chances of their emails being flagged as spam since the signature proves the message's legitimacy, making it difficult for spammers to forge emails from a legitimate domain. This authenticity check helps maintain the sender's reputation and prevents spam that misuses the domain. The other options, while relevant to email security, do not provide the same level of direct spam defense as DKIM does. For instance, Sender Policy Framework (SPF) focuses on specifying which mail servers are authorized to send mail on behalf of a domain, improving deliverability but not directly authenticating individual messages. Domain Name System Security Extensions (DNSSEC) is aimed at securing DNS data and ensuring its integrity, rather than directly addressing email messages themselves. Post Office Protocol (POP) is actually a

7. What type of hypervisor runs directly on the host's hardware rather than on top of the operating system?

A. Type 1 VM

B. Type 2 VM

C. Hybrid VM

D. Hosted VM

A Type 1 hypervisor, also known as a bare-metal hypervisor, operates directly on the host's hardware without needing an underlying operating system. This allows it to manage guest virtual machines more efficiently, as it has direct access to the physical resources of the host machine, such as the CPU, memory, and storage. Running directly on the hardware also leads to better performance and resource management because it eliminates the overhead associated with an intermediary operating system. In contrast, a Type 2 hypervisor runs on top of a conventional operating system. This means it relies on the host OS for resource management and system calls, which can introduce latency and reduce overall execution efficiency. Hybrid and hosted VMs generally refer to variations of these concepts; however, when it comes to hypervisors, the distinction is clear between those that operate directly on hardware and those that depend on an existing OS. Thus, considering the definitions and functional characteristics, the Type 1 hypervisor is indeed the correct choice here.

8. What is the main protocol at the internet layer of the TCP/IP layer and also considered the workhorse of the TCP/IP?

A. Electronic Mail Protocol (EMP)

B. Internet Protocol (IP)

C. Simple Mail Transfer Protocol (SMTP)

D. Hypertext Transfer Protocol (HTTP)

The Internet Protocol (IP) is fundamentally essential at the internet layer of the TCP/IP model and serves as the primary protocol responsible for addressing and routing packets of data across networks. It enables communication between devices by providing a standardized method for uniquely identifying each device connected to the network through IP addresses. As the foundational protocol of the TCP/IP suite, IP facilitates the delivery of data from the source to the destination, allowing different types of data to traverse the network. IP is classified further into versions, with IPv4 and IPv6 being the most commonly utilized. IPv4, for instance, uses 32-bit addressing and supports about 4.3 billion addresses, while IPv6, with its 128-bit addressing, vastly expands the number of available addresses. This role of IP as the "workhorse" highlights its critical function in ensuring that data packets reach their intended destination effectively, managing everything from routing to fragmenting data when necessary. In contrast, the other options listed serve different purposes within networking. Electronic Mail Protocol (EMP) is not a standard or recognized protocol in the TCP/IP suite. Simple Mail Transfer Protocol (SMTP) is specific to the sending of emails and operates at the application layer, while Hypertext Transfer Protocol (HTTP) is designed for

9. A client on a budget wants to purchase a new hard drive with fast access times and needs at least 4 TB for storage. Which type of hard drive would be ideal?

A. 7200 RPM magnetic hard drive

B. 5400 RPM magnetic hard drive

C. Solid State Drive (SSD)

D. Hybrid hard drive

The ideal choice for a client seeking a new hard drive with fast access times and a minimum storage capacity of 4 TB would be a solid state drive (SSD). SSDs significantly outperform traditional magnetic hard drives in terms of access times and data transfer speeds due to their lack of moving parts. They provide near-instantaneous access to data since they utilize flash memory, making them particularly beneficial for tasks that require rapid data retrieval. While magnetic hard drives like a 7200 RPM or a 5400 RPM hard drive may offer larger storage capacities at a lower cost, they do not match the performance levels of SSDs or even hybrid drives in terms of speed. The 7200 RPM drives are faster than 5400 RPM drives but still lag behind SSDs in access times. Hybrid drives offer a compromise by combining SSD technology with traditional magnetic storage, but for a client who prioritizes access speed, an SSD is the ideal choice. Additionally, SSDs are increasingly available in larger capacities, including 4 TB and beyond, making them a suitable option for users who require significant storage space without compromising on performance.

10. Which device provides passive protection against attacks on network- and cloud-based resources?

A. Firewall

B. Router

C. Intrusion Detection System (IDS)

D. Switch

An Intrusion Detection System (IDS) is designed to provide passive protection against attacks on network- and cloud-based resources by monitoring and analyzing traffic and system activities for signs of malicious behavior. Unlike some other security devices, an IDS does not take active measures to block or prevent attacks in real-time; instead, it passively observes network traffic and alerts administrators to potential security threats. This allows IT personnel to respond effectively to indications of unauthorized access or misuse. In the context of network security, other devices like firewalls and routers serve more proactive roles by controlling traffic flow or managing routing based on defined security rules. Firewalls, for instance, enforce security policies by actively blocking or allowing traffic, while routers determine the optimal paths for data packets but do not specifically monitor for security threats. Thus, the IDS's focus on detection and alerting rather than direct intervention qualifies it as a device providing passive protection.

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://wgu-itec2022-d386.examzify.com

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