Professor Messer's
CompTIA A+
CORE 1 220-1101
Practice Exams

James "Professor" Messer

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https://www.ProfessorMesser.com

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Trademark Acknowledgments

Warning and Disclaimer

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About the Author

James Messer is an information technology veteran whose career has included supercomputer operations, system administration, network management, and cybersecurity.

James is also the founder and CEO of Messer Studios, a leading publisher of training materials for IT certification exams. With over 140 million videos viewed and 630,000 subscribers, Professor Messer's training programs have helped thousands realize their goals of a profession in information technology.

Introduction

The CompTIA A+ is one of the most popular IT certifications in the industry, and I think it's also one of the most enjoyable study experiences. Whether you're just getting started in information technology or you're a seasoned veteran, you have to appreciate the vast array of hardware and software that's covered in the A+ exams. If you love technology, then the A+ certification is for you.

I've created these sample exams to help you learn what you'll need to pass the exam, but I also hope they provide some additional context and knowledge that you can use once the certification process is over.

In information technology, the learning process never ends. I wish you the best success on your journey!

- Professor Messer

The CompTIA A+ Certification

The 220-1101 A+ Core 1 certification covers many different topics, and includes everything from hardware troubleshooting to cloud technologies. Here's the breakdown of each domain and the percentage of each topic on the 220-1101 A+ exam:

Domain 1.0 - Mobile Devices - 15%
Domain 2.0 - Networking - 20%
Domain 3.0 - Hardware - 25%
Domain 4.0 - Virtualization and Cloud Computing - 11%
Domain 5.0 - Hardware and Network Troubleshooting - 29%

The practice exams in this book follow this breakdown, so you should find the distribution of questions on these practice exams to be very similar to what you'll find during your actual exam.

How to Use This Book

This book contains three separate 90-question practice exams; Exam A, Exam B, and Exam C. The exams are designed to emulate the format and complexity of the actual A+ exam.

- Take one exam at a time. The difficulty levels are similar between exams, so it doesn't matter which exam you take first.

- The 220-1101 A+ exam is 90 minutes in length, so you may want to set a timer when you start your practice exam. Time management is an important part of the exam.

- The first section of each practice exam is the list of questions. There's a link next to every question ("Quick Answer" or "The Details") that will jump immediately to the quick answer page or the detailed answer page. If you're using the digital version, your PDF reader keys can quickly jump back to the question page. Adobe Reader in Windows uses **Alt-Left arrow** and macOS Preview uses **Command-[** to move back to the previous view. Be sure to check your PDF reader for specific navigation options.

- The quick answer page is a consolidated list of the answers without any detail or explanation. If you want to quickly check your answer sheet, this is the page for you.

- A detailed answer is available for each exam question. This section repeats the question, the possible answers, and shows the answer with a detailed explanation. This section is formatted to show only one answer per page to avoid giving away the answer to any other questions. After reading the detailed answer, you can use the PDF reader's "back" button to quickly jump back to the questions.

- As you step through the exam, write down the answers in a separate window or use your PDF reader's annotation features to mark the answer. You can check the answers after the 90 minutes have elapsed.

- You can grade your results against the quick answer page. You might also want to check the detailed answer pages for information on why certain answers were considered correct or incorrect.

- After each detailed answer, a video link is available for more information on the topic. You can click the link in your PDF or use your smartphone camera app to view the QR (Quick Response) code on the page. Your camera app will provide a notification message that will launch the video page in your browser. The URL is also provided for manual entry.

You have the option of using each practice test as a 90 minute timed exam, or as a casual Q&A. Try stepping through each question, picking an answer, and then jumping to the detailed explanation to learn more about each possible answer.

Here's a scoring chart:

Less than 63 questions correct / 70% and lower
Use the exam objectives at the end of each detailed answer to determine where you might need some additional help.

63 to 72 questions correct / 70% to 80%
You're so close! Keep working on the areas you're missing and fill in those gaps.

73 to 81 questions correct / 80% to 90%
This is a strong showing, but some additional studying will help you earn points on the real exam.

Although the actual 220-1101 A+ exam does not calculate the final score as a percentage, getting an 85% on the practice exam can be considered a passing grade.

More than 81 questions correct / over 90%
You're ready for the real thing! Book your exam and pass your 220-1101 A+ exam!

The detailed answer pages break down every correct answer and every incorrect answer. Although it's useful to know when you got a question right, it's more important if you understand exactly why a question was marked wrong. If you understand all of the technologies on these sample exams, then you'll be ready for the real thing!

Practice Exam A
Performance-Based Questions

A1. Match the interface name to the picture:

HDMI	DB-9	Lightning
USB-C	RJ45	Micro-USB

[   ]

[   ]

[   ]

[   ]

[   ]

[   ]
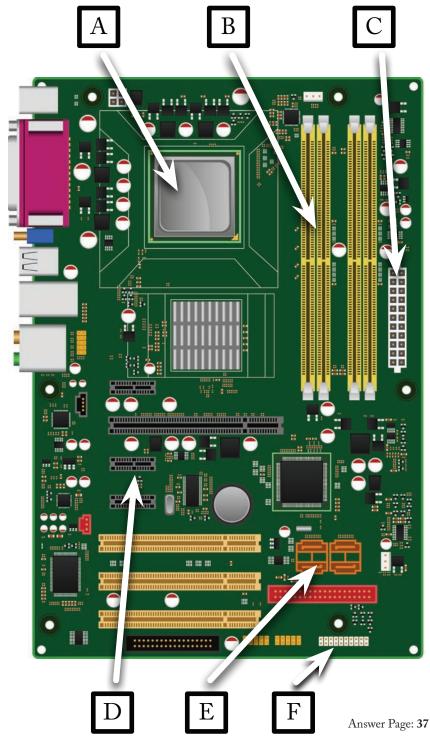
Answer Page: **33**

A2. Order these technologies from slowest throughput to fastest

SATA Revision 3.2

10GBASE-T

One stream of 802.11ax

Thunderbolt v3

USB 3.2 Gen 1

A3. Match the port number to the protocol. Not all port numbers will be used.

- -

tcp/389	tcp/80	tcp/110	tcp/3389
tcp/25	tcp/445	udp/161	tcp/143
tcp/22	tcp/23	udp/53	tcp/443

- -

	HTTPS
	LDAP
	DNS
	IMAP
	SNMP
	RDP
	SSH

A4. Identify the components on this motherboard:

A5. Configure a RAID array with these characteristics:

- Data remains available if a single drive fails
- Most efficient use of drive space
- Fastest access time
- Total storage size is not a priority

Select the RAID type and configure the three drive bays using the available drives.

The drives can be used multiple times, and not all drives will be used.

Select RAID Type	Drive A	Drive B	Drive C
0 1 5 1+0			

Available Drives:

SATA III	SATA III	SATA III	SATA III
-	-	-	-
1 TB HD	2 TB HD	4 TB HD	1 TB HD
-	-	-	-
15,000 RPM	10,000 RPM	7,200 RPM	5,600 RPM

Answer Page: **38**

Practice Exam A
Multiple Choice Questions

A6. The printer in the accounting department has stopped all printing processes. The print queue shows seven jobs in the queue waiting to be printed. Which of the following would be the BEST next troubleshooting step?

◯ **A.** Send a test job to the printer and move it to the top of the queue

◯ **B.** Restart the printer's spooler

◯ **C.** Install an updated version of the printer driver

◯ **D.** Delete everything in the queue and resend the print jobs

Quick Answer: **31**

The Details: **41**

A7. A system administrator has connected an external USB drive to a computer to transfer some documents. When booting the computer, the system tries to boot from the external drive and gives an error message. Which of the following would be the BEST way to prevent the USB drive from booting?

◯ **A.** Modify the BIOS to boot from the internal hard drive

◯ **B.** Modify the boot order in Windows Disk Management

◯ **C.** Rebuild the MBR on the external hard drive

◯ **D.** Disable the external drive in Device Manager

Quick Answer: **31**

The Details: **42**

A8. A user's print jobs to a new multifunction printer produce pages of garbled text, but jobs from other users are printing normally. Which of the following would be the MOST likely reason for this issue?

◯ **A.** Printer driver specifies secured prints

◯ **B.** Faulty network cable

◯ **C.** Print driver is configured for PCL

◯ **D.** Application is not authorized to print

Quick Answer: **31**

The Details: **43**

A9. A network connection in a conference room was installed years ago, and there's no documentation for the cable run. Connecting a device to the cable results in a successful Ethernet connection, so the other end of the cable should terminate somewhere in the wiring closet. Which of these tools would be the best choice to find the other end of the network connection?

○ **A.** Cable tester
○ **B.** Tone generator
○ **C.** Multimeter
○ **D.** Crimper

A10. A network administrator has received a ticket complaining of port flapping on an Ethernet switch. Which of the following would be the MOST likely reason for this issue?

○ **A.** Firewall rule is blocking traffic
○ **B.** Faulty crimp on an Ethernet connector
○ **C.** Excessive jitter measurements
○ **D.** Duplex mismatch

A11. A user has powered on their computer and received the message "Operating system not found." A check of the system shows that the SATA drive cables are properly connected. Which of the following would be the NEXT best troubleshooting step?

○ **A.** Boot to Safe Mode
○ **B.** Replace the boot drive
○ **C.** Restore from a known good backup
○ **D.** Check for removable drives

A12. A user is having an issue with a smartphone battery bulging and physically pushing the screen away from the phone. The rest of the phone appears to be operating normally. Which of the following should be the BEST next troubleshooting step?

◯ **A.** Power off the phone and contact support

◯ **B.** Upgrade to the latest OS version

◯ **C.** Replace the screen

◯ **D.** Perform a factory reset

A13. A client's laptop appears to boot normally, but nothing ever appears on the LCD. After closer inspection, you notice the output is visible but it's too faint to clearly see anything. What is the MOST likely cause of this issue?

◯ **A.** Video card

◯ **B.** Inverter

◯ **C.** Video driver

◯ **D.** Power adapter

A14. A graphics designer is experiencing increasing delays when accessing files on her hard drive. The user maintains a daily backup of all data on the drive. Which of these would be the BEST next troubleshooting step for this issue?

◯ **A.** Reinstall Windows

◯ **B.** Perform a hard drive diagnostic

◯ **C.** Restore from the daily backup

◯ **D.** Boot to Safe Mode

A15. Which of the following would be MOST likely found on an optical disc?

◯ **A.** Document archive

◯ **B.** Operating system boot files

◯ **C.** RAID parity files

◯ **D.** BIOS configurations

A16. When a user starts their computer, the screen remains
blank and the computer beeps twice. Which of these
would be the MOST likely cause of this issue?

   ❍ **A.** The boot device is not connected

   ❍ **B.** The memory is faulty

   ❍ **C.** The operating system has become corrupted

   ❍ **D.** The PC is infected with malware

Quick
Answer: **31**

The Details: **51**

A17. A firewall is configured to block email transfers from
a remote server. Which of the following ports is the
firewall blocking?

   ❍ **A.** 443

   ❍ **B.** 22

   ❍ **C.** 23

   ❍ **D.** 25

Quick
Answer: **31**

The Details: **52**

A18. A technician is connecting a laptop to an LCD projector
in a conference room. The display on the laptop
works properly, but the projector image is constantly
flickering and pixelating. The technician has modified
the resolution and refresh rates, but the projector image
continues to flicker. Which of the following would be the
BEST next troubleshooting step?

   ❍ **A.** Replace the video cable

   ❍ **B.** Disable the laptop display

   ❍ **C.** Replace the projector bulb

   ❍ **D.** Power cycle the projector

Quick
Answer: **31**

The Details: **53**

A19. The stylus on a Windows tablet will no longer interact
with the user interface. Which of these would be the
MOST likely cause of this issue?

   ❍ **A.** Digitizer

   ❍ **B.** Backlight

   ❍ **C.** Contrast

   ❍ **D.** Inverter

Quick
Answer: **31**

The Details: **54**

A20. A user in the accounting department needs to print a form on the laser printer on both sides of the page. Which of the following options should be configured in the accounting software?

❍ **A.** Collate

❍ **B.** Orientation

❍ **C.** Duplex

❍ **D.** Resolution

Quick Answer: **31**

The Details: **55**

A21. A user needs to connect their laptop to the wired Ethernet network, but the laptop does not have an integrated Ethernet interface. Which of the following would allow the laptop to connect to an Ethernet network? (Pick TWO)

❍ **A.** Docking station

❍ **B.** VGA interface

❍ **C.** USB to Ethernet adapter

❍ **D.** DisplayPort to HDMI cable

❍ **E.** DVI to HDMI adapter

❍ **F.** Bluetooth

Quick Answer: **31**

The Details: **56**

A22. A server administrator has received an alert showing one drive in a RAID 1 array has failed. Which of the following would be the best way to resolve this alert?

❍ **A.** Replace the bad drive and resync the array

❍ **B.** Replace all drives in the array and resync the array

❍ **C.** Replace the bad drive and restore from backup

❍ **D.** Convert the array to RAID 0 and replace the drive

❍ **E.** Replace all drives in the array and restore from backup

Quick Answer: **31**

The Details: **57**

A23. A system administrator is building a server for a data center in another country. The server will manage a print queue and provide a local storage partition for temporary file transfers. Which of the following power supply specifications will be the MOST important for this server?

○ **A.** Voltage input options

○ **B.** Number of PCIe connectors

○ **C.** Modular cabling

○ **D.** Fan noise rating

A24. Which of the following ports are used for file transfers? (Select TWO)

○ **A.** 21

○ **B.** 110

○ **C.** 25

○ **D.** 23

○ **E.** 20

○ **F.** 53

A25. Which of these technologies do not require a backlight to provide a viewable display?

○ **A.** LCD

○ **B.** IPS

○ **C.** OLED

○ **D.** LED

A26. A system administrator has tripped over an Ethernet cable and the cable's RJ45 connector has broken. Which of the following should be used to resolve this issue?

○ **A.** Punch-down tool

○ **B.** Tone generator and probe

○ **C.** Cable tester

○ **D.** Crimper

A27. A network administrator is troubleshooting a network outage, and she believes the issue is related to a bad switch. The old switch is then replaced with a newer model and the cabling is moved to the new switch. Which of the following should be the NEXT troubleshooting steps? (Choose TWO)

   ○ **A.** Test the theory

   ○ **B.** Verify full system functionality

   ○ **C.** Establish a plan of action

   ○ **D.** Identify the problem

   ○ **E.** Document the findings

Quick Answer: **31**

The Details: **62**

A28. A newly installed MFD provides an option to "scan to SMB." Which of the following would BEST describe this feature?

   ○ **A.** Print jobs can be sent from mobile devices

   ○ **B.** All scans are checked for malware

   ○ **C.** Files are stored on a Microsoft share

   ○ **D.** Documents are scanned from the cloud

Quick Answer: **31**

The Details: **63**

A29. What type of device connects multiple computers to the network, but becomes less efficient as network traffic increases?

   ○ **A.** Switch

   ○ **B.** Hub

   ○ **C.** Repeater

   ○ **D.** Router

Quick Answer: **31**

The Details: **64**

A30. In which of the following would a Lightning cable MOST likely be used?

   ○ **A.** Connect a server to a display monitor

   ○ **B.** Increase the available memory of a device

   ○ **C.** Remotely control a mobile device

   ○ **D.** Charge a mobile device

Quick Answer: **31**

The Details: **65**

A31. A network administrator would like to enable DHCP on a laptop, but they would like the same IP address to be assigned to the laptop each time it starts. Which of the following would provide this functionality?

○ **A.** Create an IP reservation on the DHCP server

○ **B.** Administratively configure the laptop's MAC address

○ **C.** Use APIPA addressing

○ **D.** Assign the laptop to a static IP VLAN

A32. A user is complaining about slow network performance from their workstation. A network technician checks the data closet and finds the wires are not properly seated in the 110 block. Which of the following should the technician use to correct this issue?

○ **A.** Crimper

○ **B.** Multimeter

○ **C.** Punch-down tool

○ **D.** Cable tester

A33. A user has just connected to a new wireless network, but they cannot view any Internet web sites. Their network configuration shows the IP address as 169.254.228.109, the subnet mask is 255.255.0.0, and they have not been assigned a default gateway. Which of these is the MOST likely cause of this issue?

○ **A.** The subnet mask is not correct

○ **B.** The Internet provider is experiencing a temporary outage

○ **C.** The DHCP server is down

○ **D.** The wireless adapter is not working properly

A34. A help desk technician needs to use different Windows versions to study for an industry certification exam. The technician currently uses a Windows desktop computer with 4 GB of RAM and a 750 GB free on the hard drive. Which of the following would be the BEST way to perform this task? (Choose TWO)

❍ **A.** Install a second monitor

❍ **B.** Install an additional hard drive

❍ **C.** Create a Windows Recovery Environment boot drive

❍ **D.** Upgrade the system RAM

❍ **E.** Install Windows guest VMs

A35. While configuring a new workstation in the lab, one of the engineers recommends using 255.255.255.0. What part of the configuration is this associated with?

❍ **A.** Default gateway

❍ **B.** Subnet mask

❍ **C.** DNS server

❍ **D.** IP address

A36. Which of the following BEST describes a Bluetooth network?

❍ **A.** PAN

❍ **B.** WAN

❍ **C.** LAN

❍ **D.** MAN

A37. Sam, a user in the accounting department, is migrating from Android to iOS. She would like all of her emails, contact lists, and calendar events to be moved to her new phone. Which of the following would be the BEST way to accomplish this task?

❍ **A.** Use a Windows-based migration tool

❍ **B.** Save the Android phone data as a CSV file

❍ **C.** Connect the new phone to the corporate Microsoft 365 service

❍ **D.** Use a USB-to-Lightning cable

A38. A user's smartphone shows a black screen and does not respond to any screen taps or button presses. A check of the SIM card shows a red label but no physical damage. Which of the following is the MOST likely reason for these issues?

❍ **A.** Overheating

❍ **B.** Digitizer failure

❍ **C.** Liquid damage

❍ **D.** Invalid SIM card

A39. A server administrator has been asked to configure the storage requirements for a new database server. The database owner requires the fastest performance and redundancy if a single drive fails. The storage array should support at least 8 TB of available space. Which of the following options would be the BEST choice?

❍ **A.** RAID 10 with 5,400 RPM, 8 TB drives

❍ **B.** RAID 5 with 10,000 RPM, 5 TB drives

❍ **C.** RAID 1 with 7,200 RPM, 8 TB drives

❍ **D.** RAID 0 with 15,000 RPM, 5 TB drives

A40. A user would like to access email from their Windows 10 laptop using a smartphone's Internet connection. Which of these technologies needs to be enabled on the laptop?

❍ **A.** LTE

❍ **B.** 802.11

❍ **C.** NFC

❍ **D.** IR

A41. A system administrator needs to upgrade a laptop from a hard drive to an SSD. Which of the following would provide the most efficient method of upgrading this system?

❍ **A.** Create an image of the hard drive and restore to the SSD

❍ **B.** Install a new Windows license and application files on the SSD

❍ **C.** Backup all user documents and copy them to another computer

❍ **D.** Compress the home directory and upload it to cloud storage

A42. A new employee has been assigned a corporate smartphone, but the camera and the installation of third-party apps has been disabled. Which of the following is the MOST likely reason for these issues?

❍ **A.** The smartphone is out of storage space

❍ **B.** The smartphone OS needs to be upgraded

❍ **C.** An MDM has disabled the features

❍ **D.** The smartphone hardware is faulty

A43. A system administrator is using a maintenance kit on a network-connected laser printer. Which of the following should be the LAST step when performing this maintenance?

❍ **A.** Examine the feed rollers

❍ **B.** Wait until the fuser unit cools down and replace it

❍ **C.** Reset the page counter

❍ **D.** Replace the power cord

A44. An application developer needs to test an application across all of the operating systems used by the company. Each operating system will be tested individually in a lab environment. The company would like to minimize any additional hardware purchases for this project. Which of the following would be the BEST way to test this application?

○ **A.** Purchase a system that is configured just above the hardware requirements for the highest-end operating system. Create separate VMs for each operating system.

○ **B.** Purchase individual test computers that match the hardware requirements for each OS. Install different operating systems on each test computer.

○ **C.** Designate existing user workstations to be used as testing systems. Run all application tests during non-working hours.

○ **D.** Purchase a system that matches the minimum hardware requirements for the highest-end operating system. Create a system image for each operating system and reimage the computer between tests.

A45. Which wireless standard can operate in the 5 GHz band and provides approximately 10 Gbit/sec of throughput?

○ **A.** 802.11ac

○ **B.** 802.11g

○ **C.** 802.11ax

○ **D.** 802.11n

A46. A user in the manufacturing department reports that every page printed from the central networked laser printer has a single black line extending from the top of the page to the bottom. Which of the following is the MOST likely cause of this issue?

○ **A.** The fuser is damaged

○ **B.** The printer language is not properly configured

○ **C.** The photosensitive drum is damaged

○ **D.** The toner is low

A47. Which mobile device connection is commonly used for making payments at a store checkout?

○ **A.** NFC

○ **B.** Infrared

○ **C.** Cellular

○ **D.** Bluetooth

Quick
Answer: **31**

The Details: **83**

A48. A company hosts a cloud-based application which includes redundant servers located in different data centers around the world. Which of the following cloud computing characteristics would BEST describe this application design?

○ **A.** Rapid elasticity

○ **B.** High availability

○ **C.** Non-metered

○ **D.** Desktop as a Service

Quick
Answer: **31**

The Details: **84**

A49. When printing a document on a laser printer, a user finds that all of the text on the page smears when touched. What is the MOST likely cause of this issue?

○ **A.** Fuser is damaged

○ **B.** Toner cartridge is low

○ **C.** Photosensitive drum has been scratched

○ **D.** Incorrect printer driver is installed

○ **E.** Printer cleaning process is not working

Quick
Answer: **31**

The Details: **85**

A50. A manager's computer is able to connect to Internet sites while in conference rooms or in the building courtyard. When the laptop is brought back to the manager's desk and placed into the docking station, the Internet access is unavailable but all other features are working. Which of the following should be the FIRST troubleshooting task for this issue?

○ **A.** Replace the docking station power supply

○ **B.** Upgrade the laptop BIOS

○ **C.** Replace the docking station

○ **D.** Check the docking station network cable

Quick
Answer: **31**

The Details: **86**

A51. A company is developing an internal application for smartphones and tablets. Which of the following would improve the security of the application's logon process?

 ❍ **A.** Data caps

 ❍ **B.** Two-factor authentication

 ❍ **C.** Bluetooth pairing

 ❍ **D.** NFC

A52. Which of the following would be MOST associated with an IoT device?

 ❍ **A.** Multithreading

 ❍ **B.** ARM

 ❍ **C.** Virtualization support

 ❍ **D.** ECC RAM

A53. What is the minimum category of unshielded copper cable for a 10 gigabit per second Ethernet link with a fifteen meter distance?

 ❍ **A.** Category 5

 ❍ **B.** Category 6

 ❍ **C.** Category 5e

 ❍ **D.** Category 6A

A54. An engineer has manually configured IP addresses for a small office that uses a cable modem for Internet connectivity. However, none of the devices configured with a manual IP address are able to browse Internet websites. All devices are connected to the cable modem with twisted-pair Ethernet cables. This is the configuration of one device:

IP address: 192.168.1.7
Subnet mask: 255.255.255.0
Default gateway: 192.168.1.1
DNS: 192.168.1.7

The engineer can successfully ping the local IP address and the default gateway address. Which of the following should be the NEXT troubleshooting step?

○ **A.** Check for duplicate IP addresses
○ **B.** Replace the Ethernet cable
○ **C.** Check the DNS configuration
○ **D.** Replace the cable modem

Quick Answer: **31**

The Details: **90**

A55. A user in a remote office is connecting a device using an F-connector. Which of the following would be MOST likely associated with this connection?

○ **A.** Cable modem
○ **B.** Switch
○ **C.** Punchdown block
○ **D.** DSL modem

Quick Answer: **31**

The Details: **91**

A56. A user in the accounting department has turned on their computer and received the message "Date and Time not set." Which of the following would be the MOST likely reason for this message?

○ **A.** The motherboard battery has discharged
○ **B.** Windows update has rebooted the computer
○ **C.** Daylight Saving Time occurred during the weekend
○ **D.** The BIOS was just upgraded

Quick Answer: **31**

The Details: **92**

A57. A user in the accounting department is connecting to their monitor using HDMI. The video appears normal, but the user does not hear any audio through the monitor's speakers. Which of the following would be the two MOST likely reasons for this audio issue? (Select TWO)

○ **A.** Video output does not match the native resolution

○ **B.** Audio controls are muted

○ **C.** Not enough bandwidth for audio

○ **D.** Internet connectivity is unavailable

○ **E.** OS is not configured for HDMI audio output

○ **F.** Display has a dead pixel

Quick
Answer: **31**

The Details: **93**

A58. A system administrator has created a cloud configuration which automatically monitors utilization for usage-based billing. Which of the following describes this cloud computing characteristic?

○ **A.** Metered

○ **B.** File synchronization

○ **C.** Rapid elasticity

○ **D.** High availability

Quick
Answer: **31**

The Details: **95**

A59. A group of wireless laptops in a conference room are reporting intermittent connectivity issues. The wired computers in the room are not experiencing any network problems. A check of the laptops shows that the IP addresses and configurations appear to be correct. Which of the following would be the best NEXT troubleshooting step?

○ **A.** Verify the wireless signal strength

○ **B.** Check the ARP table on the default gateway

○ **C.** Confirm the operation of the DHCP server

○ **D.** Perform a wire map on the network drops

Quick
Answer: **31**

The Details: **96**

A60. A server administrator has been asked to troubleshoot a system that has been slowing down over time. While examining the computer, the administrator can hear a series of clicks from the inside of the case. Which of the following should be the FIRST step to address this issue?

❍ **A.** Replace the motherboard

❍ **B.** Power the system off and back on

❍ **C.** Replace the hard drive

❍ **D.** Perform a full backup of the server

❍ **E.** Replace the power supply

A61. When pressing the power button on a desktop computer, the power indicator lights up but the computer does not display any message on the screen. The voltage at the wall outlet has been checked and it appears to be normal. The motherboard power connector voltage was checked, and the 12 volt pin was showing 6 volts. What is the MOST likely cause of this issue?

❍ **A.** The components that use 12 volt power are faulty

❍ **B.** The power supply is faulty

❍ **C.** The wall outlet voltage does not match the power supply

❍ **D.** The motherboard is faulty

A62. A manager in the marketing department is printing many copies of a twenty page document. The manager would like to print all twenty pages of the document before the next copy begins printing. What setting should the manager configure in the output settings?

❍ **A.** Duplex

❍ **B.** Collate

❍ **C.** Quality

❍ **D.** Orientation

A63. A remote user is visiting their corporate office. They have connected their laptop to the wireless network, but the corporate Internet access is performing much slower than their remote site network. Which of the following would be the most likely reason for this issue?

  ❍ **A.** The default gateway is incorrect

  ❍ **B.** The laptop has been assigned an APIPA address

  ❍ **C.** The user does not have permission to use the wireless network

  ❍ **D.** There is interference with the wireless signal

Quick Answer: **31**

The Details: **100**

A64. A manager needs to have access to the same files, contacts, and email messages across their MacBook, iPad, and iPhone devices. Which of the following would be the BEST way to provide this synchronization?

  ❍ **A.** Authenticate to iCloud on all devices

  ❍ **B.** Connect all devices to the MacBook using a Lightning cable

  ❍ **C.** Copy all user documents to Google Workspace

  ❍ **D.** Configure automatic updates in the App Store

Quick Answer: **31**

The Details: **101**

A65. A user is reporting that a shared laser printer in the marketing department is not printing from one particular application. The front panel of the printer shows that the printer is online and ready to receive print jobs. Other users in the department are able to successfully print to the printer. Which of the following would be the BEST next troubleshooting step?

  ❍ **A.** Power cycle the printer

  ❍ **B.** Restart the print spooler

  ❍ **C.** Perform a test print from the printer console

  ❍ **D.** Verify the network printer name in the application

Quick Answer: **31**

The Details: **102**

A66. A network administrator is connecting four company locations in different countries. Which of the following would BEST describe this configuration?

   ○ **A.** LAN

   ○ **B.** PAN

   ○ **C.** MAN

   ○ **D.** WAN

A67. A system administrator has received a report of customers receiving email messages from the company, but upon further analysis the administrator finds the messages were not actually sent by the corporation. Which of the following should be implemented to prevent these spoofed email messages?

   ○ **A.** Add multi-factor authentication to all email logins

   ○ **B.** Change the passwords on all email accounts

   ○ **C.** Configure an SPF record in the DNS

   ○ **D.** Modify the firewall rules to prevent outgoing emails

A68. A system administrator has configured a VM for dual processors, 16 GB of RAM, and 120 GB of disk space. Which of the following is required to start this VM?

   ○ **A.** Shared network address

   ○ **B.** Hypervisor

   ○ **C.** Virtual switch

   ○ **D.** Video display

A69. A site manager has noticed her smartphone has a short battery life when used at work, and the battery life is normal when working from home. The work location has limited mobile service reception, but most office services are provided over the local 802.11 Wi-Fi network. The site manager does not enable Bluetooth on her smartphone. Which of the following would be the BEST way to extend the battery life of her mobile device?

○ **A.** Disable 802.11 Wi-Fi

○ **B.** Disable the cellular radio at work

○ **C.** Replace the battery

○ **D.** Enable Bluetooth on the mobile device

A70. A desktop computer has just abruptly shut off, and pressing the power button doesn't restart the system. There are no fans spinning, no lights are on, and no messages appear on the display. Which of these would be the MOST likely cause of this issue?

○ **A.** The BIOS is configured with a startup password

○ **B.** The LCD display backlight has failed

○ **C.** The power supply is faulty

○ **D.** The master boot record is corrupted

○ **E.** The boot sector is missing

A71. What kind of device is commonly used to filter traffic based on a predefined set of rules?

○ **A.** PoE switch

○ **B.** Repeater

○ **C.** DSL modem

○ **D.** Firewall

A72. Which of these connection types use coax to provide Internet data, voice, and video over the same wire?

○ **A.** DSL

○ **B.** Cable broadband

○ **C.** ONT

○ **D.** PoE

A73. A desktop administrator has been asked to troubleshoot a laptop computer that beeps during the power on process while the laptop screen remains dark. Which of the following would be the best NEXT troubleshooting step?

○ **A.** Implement a solution

○ **B.** Document findings

○ **C.** Establish a theory

○ **D.** Evaluate results

Quick Answer: **31**

The Details: **110**

A74. A user is pairing a Bluetooth headset to their smartphone. What type of security is used during the pairing process to authorize this connection?

○ **A.** 802.1X

○ **B.** Client certificate

○ **C.** Pre-shared key

○ **D.** PIN

○ **E.** Username and password

Quick Answer: **31**

The Details: **111**

A75. A company is deploying cloud-hosted virtual desktops for training room classes. The VMs have already been configured in the cloud. Which of the following is required to access these VMs using thin clients in the training room?

○ **A.** High-end video cards

○ **B.** Separate Internet connection

○ **C.** Mouse, keyboard, and monitor

○ **D.** Category 6A cabling

Quick Answer: **31**

The Details: **112**

A76. A technician has connected a laptop to an LCD. The LCD is displaying the correct information, but all of the content appears to be fuzzy and difficult to read. Which of the following is the MOST likely reason for this issue?

◯ **A.** The LCD display is faulty

◯ **B.** The laptop display adapter is incompatible with the LCD display

◯ **C.** The laptop resolution is incorrect

◯ **D.** The LCD display cable is faulty

Quick Answer: **31**

The Details: **113**

A77. An engineering firm is upgrading their storage array to include additional drive space for documents and designs. The primary goal is to provide high performance and uptime, even if two drives were to fail. Which of the following would be the BEST choice for this firm?

◯ **A.** RAID 1

◯ **B.** RAID 5

◯ **C.** RAID 0

◯ **D.** RAID 10

Quick Answer: **31**

The Details: **114**

A78. A network administrator is deploying a firewall to the cloud using an API to configure the device. Which of the following would BEST describe this deployment type?

◯ **A.** SDN

◯ **B.** IaaS

◯ **C.** LDAP

◯ **D.** DKIM

◯ **E.** VPN

Quick Answer: **31**

The Details: **115**

A79. A company needs to purchase a new printer for an open work area. The primary requirement of this printer is to be as quiet as possible. Which of these printer types would be the best fit for this requirement?

❍ **A.** Dot-matrix

❍ **B.** Inkjet

❍ **C.** Laser

❍ **D.** Thermal

A80. A user in the marketing department would like to use a stylus to provide input through an external digitizer. Which of the following would be the BEST choice for this requirement?

❍ **A.** LCD touchscreen

❍ **B.** Port replicator

❍ **C.** Wireless mouse

❍ **D.** Drawing pad

A81. A company has designed a platform to scale up when the application use increases during the day, and scale back down at night. Which of the following BEST describes this characteristic of cloud computing?

❍ **A.** Resource pooling

❍ **B.** Measured service

❍ **C.** Hybrid

❍ **D.** Rapid elasticity

A82. A user's tablet has stopped responding to any type of finger input on the screen. The clock and other tablet functions appear to be working. Which of the following would be the BEST way to correct this issue?

❍ **A.** Replace the screen

❍ **B.** Reset the wireless network

❍ **C.** Connect to a power source

❍ **D.** Restart the tablet

A83. A system administrator needs a secure method of storing encryption keys. Which of the following would be the BEST choice for this requirement?

❍ **A.** BIOS

❍ **B.** Secure Boot

❍ **C.** NTFS

❍ **D.** HSM

A84. A server administrator is upgrading the memory in a web server from 16 GB of non-ECC RAM to 64 GB of ECC RAM. After starting the system with the new memory, the computer beeps and nothing is displayed on the screen. Changing the number and location of new RAM modules results in the same beeping sounds and blank screen. After replacing the original 16 GB modules, the system starts normally. Which of the following is the MOST likely reason for this issue?

❍ **A.** The new memory is not compatible with the motherboard

❍ **B.** The new memory is faulty

❍ **C.** The BIOS needs to be updated

❍ **D.** The system is overheating during the startup process

A85. A workstation has been assigned an APIPA address. Which of the following would be the MOST likely reason for this assignment?

❍ **A.** The workstation is not connected to the wireless network

❍ **B.** The DNS server is misconfigured

❍ **C.** The network is using public Internet addresses

❍ **D.** The DHCP server is down

A86. Which of the following can be used to forward traffic based on a destination MAC address?

   ❍ **A.** Unmanaged switch

   ❍ **B.** Repeater

   ❍ **C.** Router

   ❍ **D.** Firewall

A87. A system administrator made some BIOS changes to a desktop computer running Windows 10, and now this message appears when starting the computer:

"This drive can only boot in UEFI mode."

Which of the following would be the BEST next troubleshooting step?

   ❍ **A.** Modify the boot drive sequence

   ❍ **B.** Enable Secure Boot

   ❍ **C.** Remove the BIOS password

   ❍ **D.** Boot the system with the Windows setup media

A88. A Windows user would like to temporarily store information from RAM onto their SSD. Which of the following features should be configured?

   ❍ **A.** Multi-channel memory

   ❍ **B.** ECC

   ❍ **C.** System Protection

   ❍ **D.** Virtual Memory

A89. A technician is installing a DSL modem in a data center. Which of the following connectors would be used to connect the DSL modem to the Internet provider line?

○ **A.** RS-232

○ **B.** RJ11

○ **C.** BNC

○ **D.** F-connector

A90. Which of the following would be the BEST choice for capturing an image from a printed page and saving it on a computer?

○ **A.** QR code reader

○ **B.** Optical drive

○ **C.** Flatbed scanner

○ **D.** Webcam

Practice Exam A
Multiple Choice Quick Answers

A6. B

A7. A

A8. C

A9. B

A10. B

A11. D

A12. A

A13. B

A14. B

A15. A

A16. B

A17. D

A18. A

A19. A

A20. C

A21. A and C

A22. A

A23. A

A24. A and E

A25. C

A26. D

A27. B and E

A28. C

A29. B

A30. D

A31. A

A32. C

A33. C

A34. D and E

A35. B

A36. A

A37. C

A38. C

A39. B

A40. B

A41. A

A42. C

A43. C

A44. A

A45. C

A46. C

A47. A

A48. B

A49. A

A50. D

A51. B

A52. B

A53. B

A54. C

A55. A

A56. A

A57. B and E

A58. A

A59. A

A60. D

A61. B

A62. B

A63. D

A64. A

A65. D

A66. D

A67. C

A68. B

A69. B

A70. C

A71. D

A72. B

A73. C

A74. D

A75. C

A76. C

A77. D

A78. A

A79. D

A80. D

A81. D

A82. D

A83. D

A84. A

A85. D

A86. A

A87. B

A88. D

A89. B

A90. C

Practice Exam A
Performance-Based Answers
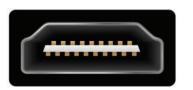
A1. Match the interface name to the picture:

Lightning

Lightning connectors are Apple proprietary connectors. These connectors provide an 8-pin digital signal between a mobile device and a computer.

RJ45

RJ45 connectors are 8P8C (Eight position, eight conductor) interfaces, and are commonly used for Ethernet network connections.

HDMI

HDMI is a common video connection type and is used across a wide variety of computing devices, LCD projectors, and display monitors.

Micro-USB

The relatively small micro-USB connector is commonly used to connect mobile devices to computers.

DB-9

DB-9 connectors are often used to communicate with modems, management interfaces, and any other RS-232 serial devices.

USB-C

USB-C connectors are used to connect and power external devices. The USB-C connector is reversible, so it can be inserted into an interface without maintaining a particular orientation.

More information:
220-1101, Objective 3.1 - Copper Connectors
https://professormesser.link/1101030110

A2. Order these technologies from slowest throughput to fastest:

> One stream of 802.11ax - ~1.2 Gbit/sec

> USB 3.2 Gen 1 - 5 Gbit/sec

> 10GBASE-T - 10 Gbit/sec

> SATA Revision 3.2 - 16 Gbit/sec

> Thunderbolt v3 - 40 Gbit/sec

It's useful to know the functionality and limitations of common technologies, and these will become especially helpful for questions asking for the best possible option for transferring data.

More information:
220-1101 - Section 2.3 - Wireless Network Standards
https://professormesser.link/1101020301

More information:
220-1101 - Section 3.1 - Peripheral Cables
https://professormesser.link/1101030104

More information:
220-1101 - Section 3.1 - Network Cables
https://professormesser.link/1101030101

More information:
220-1101 - Section 3.1 - SATA Device Cables
https://professormesser.link/1101030106

A3. Match the port number to the protocol. Not all port numbers will be used.

(tcp/443)   HTTPS - HyperText Transfer Protocol Secure

(tcp/389)   LDAP - Lightweight Directory Access Protocol

(udp/53)   DNS - Domain Name System

(tcp/143)   IMAP - Internet Message Access Protocol

(udp/161)   SNMP - Simple Network Management Protocol

(tcp/3389)   RDP - Remote Desktop Protocol

(tcp/22)   SSH - Secure Shell

Port numbers can be challenging to memorize, so you may want to consider making your own lab by adding some firewall rules in Windows Firewall or any third-party firewall front-end. Once you create firewall rules and work with some of the port numbers, you'll find they're much easier to remember.
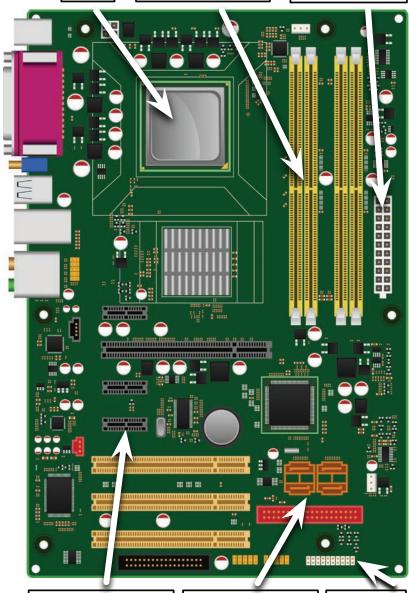
More information:
220-1101, Objective 2.1 - Common Network Ports
https://professormesser.link/1101020102

A4. Identify the components on this motherboard:

CPU | Memory slots | Main Power

PCI Express slot | SATA interfaces | Headers

More information:
220-1101, Objective 3.4 - Motherboard Connectors
https://professormesser.link/1101030403

A5. Configure a RAID array with these characteristics:

- Data remains available if a single drive fails
- Most efficient use of drive space
- Fastest access time
- Total storage size is not a priority

Select the RAID type and configure the three drive bays using the available drives.

The drives can be used multiple times, and not all drives will be used.

This question can be separated into two parts; deciding which type of RAID (Redundant Array of Independent Disks) to use, and choosing drives that meet the requested criteria.

Since data must be available if a drive fails, RAID 0 cannot be used. Four drives are required for RAID 1+0, so the only options remaining are RAID 1 and RAID 5. The most efficient use of drive space from those two options is RAID 5.

The fastest access time on the available drives is the 15,000 RPM (revolutions per minute) SATA III hard drive (The faster the RPMs, the better the access time). Although the 1 TB (terabyte) of available drive space is not the largest of the available drives, the requirements state that the storage size is not a priority.

More information:
220-1101, Objective 3.3 - RAID
https://professormesser.link/1101030302

Practice Exam A
Multiple Choice Detailed Answers

A6. The printer in the accounting department has stopped all printing processes. The print queue shows seven jobs in the queue waiting to be printed. Which of the following would be the BEST next troubleshooting step?

❍ **A.** Send a test job to the printer and move it to the top of the queue

❍ **B.** Restart the printer's spooler

❍ **C.** Install an updated version of the printer driver

❍ **D.** Delete everything in the queue and resend the print jobs

....

The Answer: B. Restart the printer's spooler
The print spooler is the software responsible for storing print jobs and sending them to the printer. If the printer spooler has failed or has stopped, then none of the print jobs will be sent to the printer.

The incorrect answers:
A. Send a test job to the printer and move it to the top of the queue
Since the print spooler is the issue, it won't matter where a print job might be in the queue. A test print job will sit at the top of the queue just like any other print job.

C. Install an updated version of the printer driver
The printer driver on a client workstation is responsible for formatting the print job in a way the printer can properly interpret during the printing process. Changing the print driver won't fix problems with the print spooler.

D. Delete everything in the queue and resend the print jobs
If the spooler is having problems, then deleting the print jobs will only require users to resend the print requests, which will then sit in the queue and not print.

More information:
220-1101, Objective 5.6 - Troubleshooting Printers
https://professormesser.link/1101050601

A7. A system administrator has connected an external USB drive to a computer to transfer some documents. When booting the computer, the system tries to boot from the external drive and gives an error message. Which of the following would be the BEST way to prevent the USB drive from booting?

❍ **A.** Modify the BIOS to boot from the internal hard drive
❍ **B.** Modify the boot order in Windows Disk Management
❍ **C.** Rebuild the MBR on the external hard drive
❍ **D.** Disable the external drive in Device Manager

....

The Answer: A. Modify the BIOS to boot from the internal hard drive
The boot order is managed in the system BIOS, and one way to avoid the computer from attempting to boot from an external storage device is to move the internal drive to have a higher boot priority.

The incorrect answers:
B. Modify the boot order in Windows Disk Management
Windows Disk Management is not used to configure the boot order of the computer. By the time Windows has loaded, the boot order has already been determined. The boot order is configured in the system BIOS.

C. Rebuild the MBR on the external hard drive
Rebuilding the MBR (Master Boot Record) of the external hard drive will not prevent the computer from attempting to boot to the drive. Rebuilding the MBR would only be necessary if the boot record was erased or damaged.

D. Disable the external drive in Device Manager
Since Windows Device Manager is only active after the system boots, disabling the external drive would not prevent the boot process. Disabling the drive in Device Manager would only prevent Windows from accessing the drive once the system was booted.

More information:
220-1101, Objective 5.2 -
Troubleshooting Common Hardware Problems
https://professormesser.link/1001050201

A8. A user's print jobs to a new multifunction printer produce pages of garbled text, but jobs from other users are printing normally. Which of the following would be the MOST likely reason for this issue?

❍ **A.** Printer driver specifies secured prints
❍ **B.** Faulty network cable
❍ **C.** Print driver is configured for PCL
❍ **D.** Application is not authorized to print

....

The Answer: C. Print driver is configured for PCL
The page description language configured in a printer driver must match the language on the printer. If a device prints to a PostScript printer using Hewlett-Packard's PCL (Printer Command Language), the output will appear garbled and unreadable.

The incorrect answers:
A. Printer driver specifies secured prints
Secured printing allows the user to associated their print job with a PIN (Personal Identification Number), and the job will not print until the PIN is entered at the printer console. This process does not cause the output to appear garbled or corrupted.

B. Faulty network cable
A faulty cable would cause the printer to receive data slowly or not at all. The output of the printer would not be affected by a faulty Ethernet cable.

D. Application is not authorized to print
A print authorization is commonly determined by the user's rights and permissions and is not based on the application. If a user did not have rights to print, then no print job would be queued and no output would be created.

More information:
220-1101, Objective 3.6 - Multifunction Devices
https://professormesser.link/1101030601

A9. A network connection in a conference room was installed years ago, and there's no documentation for the cable run. Connecting a device to the cable results in a successful Ethernet connection, so the other end of the cable should terminate somewhere in the wiring closet. Which of these tools would be the best choice to find the other end of the network connection?

○ **A.** Cable tester
○ **B.** Tone generator
○ **C.** Multimeter
○ **D.** Crimper

....

The Answer: B. Tone generator
A tone generator is used to produce an analog tone on the cable, and an inductive probe is used to "listen" for the tone on the other end of the cable.

The incorrect answers:
A. Cable tester
A cable tester could be used to confirm the wire map of the cable, but you would first need to locate both ends before that would be possible. A cable tester doesn't provide a way to locate both ends of a cable.

C. Multimeter
A multimeter could be used to verify continuity and the wire map of the cable, but both ends of the cable would need to be close to the multimeter. A multimeter can't be used to locate both ends of a cable.

D. Crimper
If the RJ45 connector on the cable was faulty, a crimper could be used to attach a new connector to the cable.

More information:
220-1101, Objective 2.8 - Network Tools
https://professormesser.link/1101020801

A10. A network administrator has received a ticket complaining of port flapping on an Ethernet switch. Which of the following would be the MOST likely reason for this issue?

❍ **A.** Firewall rule is blocking traffic

❍ **B.** Faulty crimp on an Ethernet connector

❍ **C.** Excessive jitter measurements

❍ **D.** Duplex mismatch

....

The Answer: B. Faulty crimp on an Ethernet connector
Port flapping describes a network interface that constantly transitions between connected and disconnected. This can sometimes be related to software or firmware, but is most likely associated with a hardware issue. For example, a faulty cable or connector could cause intermittent connectivity and create a flapping Ethernet port.

The incorrect answers:
A. Firewall rule is blocking traffic
Denying or allowing traffic on a firewall would not cause an Ethernet interface to physically disconnect or connect itself from the network.

C. Excessive jitter measurements
Jitter measures the time between network frames, and excessive jitter could disrupt real-time voice or video communication. However, excessive jitter would not cause an Ethernet interface to physically disconnect or connect.

D. Duplex mismatch
A duplex mismatch would certainly cause performance issues and slowdowns, but it would not cause an Ethernet link to constantly disconnect and reconnect.

More information:
220-1101, Objective 5.7 - Troubleshooting Networks
https://professormesser.link/1001050701

A11. A user has powered on their computer and received the message "Operating system not found." A check of the system shows that the SATA drive cables are properly connected. Which of the following would be the NEXT best troubleshooting step?

❍ **A.** Boot to Safe Mode

❍ **B.** Replace the boot drive

❍ **C.** Restore from a known good backup

❍ **D.** Check for removable drives

....

The Answer: D. Check for removable drives
If a USB (Universal Serial Bus) storage device is connected to a computer and the BIOS (Basic Input/Output System) is checking USB devices before the primary storage drive, the "Operating system not found" error could appear with some USB devices. To avoid this error, the boot order in the BIOS can be changed, or the USB device can be disconnected during the boot process and reconnected after the operating system has started.

The incorrect answers:
A. Boot to Safe Mode
Safe Mode is a Windows mode used to launch the operating system with minimal services and OS requirements. Safe Mode requires a bootable drive, so the error message in this question would prevent Safe Mode from starting.

B. Replace the boot drive
There's not enough information to determine if the boot drive is bad or faulty, so immediately replacing it would be premature. If there aren't any removable storage devices connected to the system, then running hardware diagnostics of the drive would be a good next step before considering a hardware replacement.

C. Restore from a known good backup
This question doesn't provide enough information about the state of the primary boot drive, so making any significant changes to the data on the drive would not be the best next step.

More information:
220-1101, Objective 5.3 - Troubleshooting Storage Devices
https://professormesser.link/1101050301

A12. A user is having an issue with a smartphone battery bulging and physically pushing the screen away from the phone. The rest of the phone appears to be operating normally. Which of the following should be the BEST next troubleshooting step?

❍ **A.** Power off the phone and contact support
❍ **B.** Upgrade to the latest OS version
❍ **C.** Replace the screen
❍ **D.** Perform a factory reset

....

The Answer: A. Power off the phone and contact support
A swollen battery indicates damage to the battery and could potentially be a fire hazard. The phone should be powered down and the damaged battery should be removed by a trained smartphone support technician.

The incorrect answers:
B. Upgrade to the latest OS version
Upgrading software on the smartphone will not fix a damaged battery. The best practice with a bulging or swollen battery is to power down the device and replace the battery.

C. Replace the screen
Although a bulging battery may damage other components, there's nothing in this question that indicates any damage to the screen. Any necessary repairs should take place after the damaged battery is replaced.

D. Perform a factory reset
A factory reset is a good option for troubleshooting unknown software issues, but it won't correct the damage to a battery. The smartphone should be powered off immediately and repaired.

More information:
220-1101, Objective 5.5 - Troubleshooting Mobile Devices
https://professormesser.link/1101050501

A13. A client's laptop appears to boot normally, but nothing ever appears on the LCD. After closer inspection, you notice the output is visible but it's too faint to clearly see anything. What is the MOST likely cause of this issue?

❍ **A.** Video card
❍ **B.** Inverter
❍ **C.** Video driver
❍ **D.** Power adapter

....

The Answer: B. Inverter
The inverter powers the CCFL (Cold Cathode Fluorescent Lamp) LCD (Liquid Crystal Display) backlight, allowing you to easily view the pixels on the display. Most newer laptops will use LED (Light Emitting Diode) backlights with existing DC (Direct Current) power and these LED lights don't require an inverter.

The incorrect answers:
A. Video card
A faulty video card might cause the video display to stop working completely, or the information on the screen may be corrupted. A faulty video adapter does not commonly cause the display to have a decreased backlight setting.

C. Video driver
Bad video drivers often cause issues with resolution settings or aspect ratios, but a bad video driver does not commonly affect the backlight settings.

D. Power adapter
A bad power adapter would cause a laptop to fail during the boot process or fail to properly charge a battery. A bad power supply would not usually cause everything to work properly except for the backlight.

More information:
220-1101, Objective 1.2 - Laptop Displays
https://professormesser.link/1101010201

A14. A graphics designer is experiencing increasing delays when accessing files on her hard drive. The user maintains a daily backup of all data on the drive. Which of these would be the BEST next troubleshooting step for this issue?

❍ **A.** Reinstall Windows

❍ **B.** Perform a hard drive diagnostic

❍ **C.** Restore from the daily backup

❍ **D.** Boot to Safe Mode

....

The Answer: B. Perform a hard drive diagnostic

Before making any changes, it would be useful to gather more information about this problem. A hardware diagnostic would determine if the hard drive itself is working properly. If the hard drive is operating normally, the troubleshooting process can then shift to the operating system and software.

The incorrect answers:

A. Reinstall Windows

Reinstalling Windows won't help if the hard drive is not operating properly. The installation process is also a time-consuming and significant change, so it's important to know if the underlying hardware is working.

C. Restore from the daily backup

The root cause of this issue hasn't been identified, so any significant change to the user's data would be premature. The user may have also modified some of this data since the backup was taken, so restoring the backup could potentially result in the loss of user data.

D. Boot to Safe Mode

Safe Mode will start Windows with a minimal configuration, and this could help troubleshoot software issues with the operating system itself. Before analyzing the software, it would be important to know if the underlying hardware is working properly.

More information:

220-1101, Objective 5.3 - Troubleshooting Storage Devices
https://professormesser.link/1101050301

A15. Which of the following would be MOST likely found on an optical disc?

○ **A.** Document archive
○ **B.** Operating system boot files
○ **C.** RAID parity files
○ **D.** BIOS configurations

....

The Answer: A. Document archive
An optical disc such as a DVD-ROM (Digital Versatile Disc - Read Only Memory) has the advantage of a relatively large storage area and the ability to write once and never worry about an accidental deletion. The storage of documents and other files is a common use of optical discs.

The incorrect answers:
B. Operating system boot files
Although it is possible to boot an operating system from an optical disc, it's not a common use of the format. It's much more common to store operating system files on a local storage drive with a higher storage capacity and throughput, such as a hard drive or SSD (Solid-State Drive).

C. RAID parity files
A RAID (Redundant Array of Independent Disks) array requires that all of the data and parity information reside on the local storage drives. Parity information would not be stored on an optical disc.

D. BIOS configurations
BIOS configurations need to be accessible from the motherboard of a computer, and not from other storage devices. BIOS configurations would not be found on an optical disc.

More information:
220-1101, Objective 3.3 - Storage Devices
https://professormesser.link/1101030301

A16. When a user starts their computer, the screen remains blank and the computer beeps twice. Which of these would be the MOST likely cause of this issue?

❍ **A.** The boot device is not connected

❍ **B.** The memory is faulty

❍ **C.** The operating system has become corrupted

❍ **D.** The PC is infected with malware

....

The Answer: B. The memory is faulty

The POST (Power On Self Test) is the initial hardware check during the startup process. If a major hardware component is faulty, the computer will beep and a message will be displayed on the screen. If the issue is related to a critical component, the computer will not be able to display a message on the screen and instead will beep a certain number of times as a code to specify the error.

The incorrect answers:

A. The boot device is not connected

A missing boot device would display the normal BIOS startup and display a message on the screen for "No Boot Device Found."

C. The operating system has become corrupted

A bad operating system would display the normal BIOS startup messages. When the operating system tries to load, the OS will provide error messages on the screen for any issues related to the corrupted files.

D. The PC is infected with malware

A malware infection would not commonly cause a system to boot with a blank screen and a beep code. Malware would be identified once the operating system has started.

More information:
220-1101, Objective 5.2
Troubleshooting Common Hardware Problems
https://professormesser.link/1101050201

A17. A firewall is configured to block email transfers from a remote server. Which of the following ports is the firewall blocking?

❍ **A.** 443
❍ **B.** 22
❍ **C.** 23
❍ **D.** 25

....

The Answer: D. 25
Port 25 is used by SMTP (Simple Mail Transfer Protocol) to send email messages from devices and transfer those messages between SMTP email servers.

The incorrect answers:
A. 443
Port 443 is commonly used by web browsers to transfer information using SSL (Secure Sockets Layer) or TLS (Transport Layer Security) encryption protocols.

B. 22
The SSH (Secure Shell) protocol uses port 22 as encrypted terminal communication. SSH is commonly used to access the command line terminal of remote devices and servers.

C. 23
Port 23 is used by Telnet for non-encrypted terminal communication between devices.

More information:
220-1101, Objective 2.1 - Common Network Ports
https://professormesser.link/1101020102

A18. A technician is connecting a laptop to an LCD projector in a conference room. The display on the laptop works properly, but the projector image is constantly flickering and pixelating. The technician has modified the resolution and refresh rates, but the projector image continues to flicker. Which of the following would be the BEST next troubleshooting step?

○ **A.** Replace the video cable

○ **B.** Disable the laptop display

○ **C.** Replace the projector bulb

○ **D.** Power cycle the projector

....

The Answer: A. Replace the video cable
A display issue associated with flickering and poor video quality would commonly point to the connection between the video adapter and the display device. In the case of an LCD (Liquid Crystal Display) projector, there's sometimes a very long (and very worn) cable that can cause signal issues to show on the projected image.

The incorrect answers:
B. Disable the laptop display
Disabling the laptop display won't help with any signal problems. This would probably also hinder the troubleshooting process because you wouldn't be able to properly see the display information due to all of the flickering and pixelating.

C. Replace the projector bulb
The bulb in an LCD projector either works or doesn't, so it will be very obvious if the bulb is faulty. In this example, the projector bulb is working, but the information displayed on the projector is difficult to see.

D. Power cycle the projector
The projector itself would not commonly cause any display flickering or image problems, so power cycling the projector wouldn't normally resolve this type of problem. If all other troubleshooting tasks fail, then power cycling everything might be an option, but it wouldn't be the first troubleshooting step.

More information:
220-1101, Objective 5.4
Troubleshooting Video and Display Issues
https://professormesser.link/1101050401

A19. The stylus on a Windows tablet will no longer interact with the user interface. Which of these would be the MOST likely cause of this issue?

❍ **A.** Digitizer
❍ **B.** Backlight
❍ **C.** Contrast
❍ **D.** Inverter

....

The Answer: A. Digitizer
The digitizer is the component in a touch screen to convert analog input from a fingerprint or stylus into a digital input. If the digitizer is having an issue, then problems will occur with any direct screen input.

The incorrect answers:
B. Backlight
An LCD (Liquid Crystal Display) screen does not produce any light, so a backlight is used to make the screen bright enough to see. The brightness of the screen does not have any effect on the stylus.

C. Contrast
The contrast and brightness controls do not effect the use of a stylus on an LCD.

D. Inverter
An inverter is used in older LCDs to invert DC (Direct Current) power into AC (Alternating Current) power. This AC power is used by CCFL (Cold Cathode Fluorescent Lamp) backlights. Most of the newer LCDs contain LED (Light Emitting Diode) backlights which use the existing DC power and do not require an inverter.

More information:
220-1101, Objective 1.2 - Laptop Displays
https://professormesser.link/1101010201

A20. A user in the accounting department needs to print a form on the laser printer on both sides of the page. Which of the following options should be configured in the accounting software?

○ **A.** Collate
○ **B.** Orientation
○ **C.** Duplex
○ **D.** Resolution

....

The Answer: C. Duplex
The duplex setting prints the output on both sides of the page, and a printer that supports duplexing will flip the page over without any manual intervention from the user.

The incorrect answers:
A. Collate
When printing multiple copies, the collate option will print all of the pages in a document before printing the next copy.

B. Orientation
The orientation setting will change the output between portrait or landscape. The orientation option will not change which sides of the page are used during the printing process.

D. Resolution
The resolution setting will modify the number of dots per inch used for the output. A larger number of dots per inch will increase the resolution and make the text and images appear sharper on the page.

More information:
220-1101, Objective 3.6 - Multifunction Devices
https://professormesser.link/1101030601

A21. A user needs to connect their laptop to the wired Ethernet network, but the laptop does not have an integrated Ethernet interface. Which of the following would allow the laptop to connect to an Ethernet network? (Pick TWO)

❍ **A.** Docking station
❍ **B.** VGA interface
❍ **C.** USB to Ethernet adapter
❍ **D.** DisplayPort to HDMI cable
❍ **E.** DVI to HDMI adapter
❍ **F.** Bluetooth

....

The Answer: A. Docking station
              C. USB to Ethernet adapter

There are a few options for creating a wired Ethernet connection on a laptop computer. Using a docking station is a common solution to provide many different interfaces, and docking stations often include the option to install a full-size PCI Express (Peripheral Component Interconnect Express) adapter. A USB (Universal Serial Bus) to Ethernet adapter is a simpler solution that only provides an Ethernet interface, but it's much more portable than a docking station.

The incorrect answers:
B. VGA interface
A VGA (Video Graphics Array) interface is an interface for video output and does not provide Ethernet connectivity.

D. DisplayPort to HDMI cable
Both DisplayPort and HDMI (High-Definition Multimedia Interface) provide video output and are not used for Ethernet on a laptop computer.

E. DVI to HDMI adapter
DVI (Digital Visual Interface) and HDMI are video interfaces and do not provide a wired Ethernet link.

F. Bluetooth
Bluetooth is a wireless PAN (Personal Area Network), and it does not provide wired Ethernet connectivity.

More information:
220-1101, Objective 3.1 - Adapters and Converters
https://professormesser.link/1101030109

A22. A server administrator has received an alert showing one drive in a RAID 1 array has failed. Which of the following would be the best way to resolve this alert?

❍ **A.** Replace the bad drive and resync the array
❍ **B.** Replace all drives in the array and resync the array
❍ **C.** Replace the bad drive and restore from backup
❍ **D.** Convert the array to RAID 0 and replace the drive
❍ **E.** Replace all drives in the array and restore from backup

....

The Answer: A. Replace the bad drive and resync the array
A RAID 1 (Redundant Array of Independent Disks, level 1) array is a mirrored array, which means all of the information on one physical drive is also copied and maintained on a separate drive. If one drive fails, the drive with the redundant data continues to be available. To repair the array, the bad drive needs to be replaced and the data from the redundant drive is synchronized to the new drive.

The incorrect answers:
B. Replace all drives in the array and resync the array
A RAID 1 array continues to run after a drive outage, and all data continues to be available. There's no reason to replace all of the drives in the array, and if all drives were replaced there would be nothing to resync.

C. Replace the bad drive and restore from backup
Since no data is lost after a single drive failure in a RAID 1 array, restoring from backup is not necessary.

D. Convert the array to RAID 0 and replace the drive
RAID 0 is striping data across drives, and there is no redundancy in a RAID 0 array. It's unusual to convert arrays between RAID levels, and a conversion is not necessary to restore full functionality to this RAID 1 array.

E. Replace all drives in the array and restore from backup
There's no need to restore from backup when replacing a single drive in a RAID 1 array.

More information:
220-1101, Objective 5.3 - Troubleshooting Storage Devices
https://professormesser.link/1101050301

A23. A system administrator is building a server for a data center in another country. The server will manage a print queue and provide a local storage partition for temporary file transfers. Which of the following power supply specifications will be the MOST important for this server?

❍ **A.** Voltage input options
❍ **B.** Number of PCIe connectors
❍ **C.** Modular cabling
❍ **D.** Fan noise rating

....

The Answer: A. Voltage input options
Connecting to the power source in a different country is an important consideration when selecting a power supply. If the voltage specifications are incorrect, the server may not operate at all or components in the server may be damaged. Servers using auto-switching power supplies are compatible with the power systems in other countries.

The incorrect answers:
B. Number of PCIe connectors
PCIe (Peripheral Component Interconnect Express) is a standard bus type, and some of the adapters on this bus may require additional power. However, none of the requirements of this server would need more PCIe connectors than a standard power supply.

C. Modular cabling
Using a power supply with modular cables can help with airflow, but this modularity isn't a requirement for most systems. Most data centers are climate controlled, so it shouldn't be difficult to maintain a reasonable temperature with a non-modular power supply.

D. Fan noise rating
A data center is usually quite noisy, so the noise rating of a power supply is not going to be a significant concern.

More information:
220-1101, Objective 3.5 - Computer Power
https://professormesser.link/1101030501

A24. Which of the following ports are used for file transfers? (Select TWO)

○ **A.** 21
○ **B.** 110
○ **C.** 25
○ **D.** 23
○ **E.** 20
○ **F.** 53

....

The Answer: A. 21 and **E.** 20
FTP (File Transfer Protocol) is a standard method of transferring files across different operating systems. FTP uses TCP (Transmission Control Protocol) port 21 for control messages and port 20 to transfer data.

The incorrect answers:
B. 110
Port 110 is the default port for POP3 (Post Office Protocol version 3). POP3 is commonly used to retrieve email messages from an email server to a local email client application.

C. 25
Another common email protocol is SMTP (Simple Mail Transfer Protocol), which uses port 25 for sending mail to a mail server and to transfer email messages between mail servers.

D. 23
Non-encrypted (in-the-clear) terminal communication is provided with the Telnet (Telecommunication Network) protocol over port 23.

F. 53
Port 53 is the default port for DNS (Domain Name System). DNS is commonly used to convert fully qualified domain names to IP addresses.

More information:
220-1101, Objective 2.1 - Common Network Ports
https://professormesser.link/1101020102

A25. Which of these technologies do not require a backlight to provide a viewable display?

❍ **A.** LCD

❍ **B.** IPS

❍ **C.** OLED

❍ **D.** LED

....

The Answer: C. OLED

An OLED (Organic Light Emitting Diode) display emits light when a current is provided to an organic compound. A backlight would not be necessary with an OLED display.

The incorrect answers:

A. LCD

An LCD (Liquid Crystal Display) screen does not produce any light, so a backlight is required to see the screen contents. Most LCD displays use LEDs (Light Emitting Diodes) or CCFLs (Cold Cathode Fluorescent Lamps) as a backlight.

B. IPS

IPS (In Plane Switching) LCD monitors provide excellent color representation, but they are still LCDs and require a backlight.

D. LED

LED is a type of backlight commonly used on LCD displays.

More information:

220-1101, Objective 1.2 - Laptop Displays

https://professormesser.link/1101010201

A26. A system administrator has tripped over an Ethernet cable and the cable's RJ45 connector has broken. Which of the following should be used to resolve this issue?

❍ **A.** Punch-down tool

❍ **B.** Tone generator and probe

❍ **C.** Cable tester

❍ **D.** Crimper

....

The Answer: D. Crimper
A crimper is used to attach a modular connector to a cable. In this example, a new connector can be reattached to the cable using an RJ45 (Registered Jack type 45) crimper.

The incorrect answers:
A. Punch-down tool
A punch-down tool is used to connect wires to punch-down blocks, such as a 110 block. A punch-down tool can't be used to attach a new RJ45 connector to a cable.

B. Tone generator and probe
Tone generators and inductive probes are used to find both ends of a cable. Toner probes are not used to connect RJ45 connectors.

C. Cable tester
Cable testers can be used to determine the wire map of a cable. Once the crimper has been used to attach the RJ45 connector, the cable tester can confirm the connector is properly wired. Cable testers are not used to connect modular connectors to a cable.

More information:
220-1101, Objective 2.8 - Network Tools
https://professormesser.link/1101020801

A27. A network administrator is troubleshooting a network outage, and she believes the issue is related to a bad switch. The old switch is then replaced with a newer model and the cabling is moved to the new switch. Which of the following should be the NEXT troubleshooting steps? (Choose TWO)

❍ **A.** Test the theory

❍ **B.** Verify full system functionality

❍ **C.** Establish a plan of action

❍ **D.** Identify the problem

❍ **E.** Document the findings

....

The Answers: B. Verify full system functionality, and
                    E. Document the findings
Once the theory has been tested, a plan of action has been determined, and the plan has been implemented, it's important to verify that full system functionality has been restored. After all of this work, it's useful to document the problem, the proposed solutions, and the ultimate fix. This problem might occur again, and it would be useful to have documentation on the issue.

The incorrect answers:
A. Test the theory
The testing of possible theories should occur before making any changes. In this example, the replacement of the switch is the theory tested in the lab prior to implementation.

C. Establish a plan of action
The plan of action was created prior to the replacement of the switch. The plan design might be relatively simple or may have a complex set of processes. The complexity of the plan generally depends on the organization and the type of problem.

D. Identify the problem
Identifying the problem is the first step in the troubleshooting process. Before you can resolve an issue, it's important to fully understand what might not be working.

More information:
220-1101, Objective 5.1 - How to Troubleshoot
https://professormesser.link/1101050101

A28. A newly installed MFD provides an option to "scan to SMB." Which of the following would BEST describe this feature?

❍ **A.** Print jobs can be sent from mobile devices

❍ **B.** All scans are checked for malware

❍ **C.** Files are stored on a Microsoft share

❍ **D.** Documents are scanned from the cloud

....

The Answer: C. Files are stored on a Microsoft share
SMB (Server Message Block) is the protocol used by Microsoft operating systems to share files, print jobs, and other information between other Microsoft OS devices. Many MFDs (Multifunction Devices) can scan a document and store the scanned file on a central network share using SMB.

The incorrect answers:
A. Print jobs can be sent from mobile devices
Many mobile devices can send jobs to a local printer, but this feature isn't part of the scanning process.

B. All scans are checked for malware
Although it's important to protect against all sources of malware, it would be unusual for a newly scanned document on a local MFD to contain any malicious software.

D. Documents are scanned from the cloud
Many MFDs can support input from different sources, but the scan to SMB feature describes the location of the output file once the original document has been scanned.

More information:
220-1101, Objective 3.6 - Multifunction Devices
https://professormesser.link/1101030601

A29. What type of device connects multiple computers to the network, but becomes less efficient as network traffic increases?

○ **A.** Switch

○ **B.** Hub

○ **C.** Repeater

○ **D.** Router

....

The Answer: B. Hub

A hub operates as a multi-port repeater, where incoming traffic is repeated to every other port in the hub. If more than one device attempts to communicate at the same time, these conflicting signals are called a collision. Each time a collision occurs, the sending devices have to stop transmitting, wait a random amount of time, and try sending the traffic again. If many devices are sending large amounts of data, the overall network efficiency will decrease as the number of collisions increase.

The incorrect answers:
A. Switch
A switch makes forwarding decisions based on destination MAC (Media Access Control) address and can communicate over full-duplex links. This full-duplex communication ensures that no collisions will occur.

C. Repeater
The relatively simple forwarding process of a repeater ensures that slowdowns will not occur as network traffic increases.

D. Router
Routers forward traffic based on the destination IP address, and this process does not create an inefficiency as the network traffic increases.

More information:
220-1101, Objective 2.2 - Network Devices
https://professormesser.link/1101020201

A30. In which of the following would a Lightning cable MOST likely be used?

 ❍ **A.** Connect a server to a display monitor
 ❍ **B.** Increase the available memory of a device
 ❍ **C.** Remotely control a mobile device
 ❍ **D.** Charge a mobile device

....

The Answer: D. Charge a mobile device
The Lightning interface is a proprietary interface used exclusively
on mobile devices from Apple. The Lightning interface is a common
connection for data transfers and power charging for many Apple mobile
devices.

The incorrect answers:
A. Connect a server to a display monitor
Although there are video output adapters available for Lightning
connectors, these options tend to be used exclusively for Apple's phones
and tablets and are not commonly used on standalone computers
or servers.

B. Increase the available memory of a device
Although there are options to provide external storage using a lightning
connection, the memory used in an Apple mobile device is limited to the
installed internal RAM (Random Access Memory).

C. Remotely control a mobile device
Although there are remote control options available for Apple devices,
these solutions use an existing network connection and do not use the
Lightning interface.

More information:
220-1101, Objective 3.1 - Copper Connectors
https://professormesser.link/1101030110

A31. A network administrator would like to enable DHCP on a laptop, but they would like the same IP address to be assigned to the laptop each time it starts. Which of the following would provide this functionality?

❍ **A.** Create an IP reservation on the DHCP server
❍ **B.** Administratively configure the laptop's MAC address
❍ **C.** Use APIPA addressing
❍ **D.** Assign the laptop to a static IP VLAN

....

The Answer: A. Create an IP reservation on the DHCP server
A DHCP (Dynamic Host Configuration Protocol) server will automatically assign IP (Internet Protocol) addresses to devices on the network from an available pool. This means that the IP address for a device may change over time based on the addresses currently available in the pool. To force the same IP address assignment each time, the network administrator can create an IP reservation in the DHCP server to associate a specific IP address to the MAC (Media Access Control) address of the laptop.

The incorrect answers:
B. Administratively configure the laptop's MAC address
The MAC address of a device will rarely need to changed through an administrative configuration, and administratively configuring the MAC address will not permanently assign a particular IP address.

C. Use APIPA addressing
APIPA (Automatic Private IP Addressing) can provide limited networking when a DHCP server is not available, but APIPA addressing does not provide any static or permanent IP addressing on a device.

D. Assign the laptop to a static IP VLAN
VLANs (Virtual Local Area Networks) are commonly used to segment the network into individual broadcast domains. Assigning a device to a particular VLAN does not provide a method of static or permanent IP addressing on a device.

More information:
220-1101, Objective 2.6 - DHCP Configuration
https://professormesser.link/1101020602

A32. A user is complaining about slow network performance from their workstation. A network technician checks the data closet and finds the wires are not properly seated in the 110 block. Which of the following should the technician use to correct this issue?

❍ **A.** Crimper
❍ **B.** Multimeter
❍ **C.** Punch-down tool
❍ **D.** Cable tester

....

The Answer: C. Punch-down tool
A punch-down tool is used to firmly "punch" a wire into a wiring block. These blocks are usually located in a wiring closet or on a patch panel.

The incorrect answers:
A. Crimper
A crimper is used to fasten a modular connector onto the end of a cable. For Ethernet, a crimper attaches the RJ45 connector used by the workstation or laptop.

B. Multimeter
A multimeter can be used to check for voltages or continuity, but it won't connect wires to a 110 block.

D. Cable tester
Cable testers can identify the wire map on a cable to ensure that the punch-down or crimping process has been performed properly. After punching down this connection, the technician could use a cable tester to validate that all of the wires are now properly connected.

More information:
220-1101, Objective 2.8 - Network Tools
https://professormesser.link/1101020801

A33. A user has just connected to a new wireless network, but they cannot view any Internet web sites. Their network configuration shows the IP address as 169.254.228.109, the subnet mask is 255.255.0.0, and they have not been assigned a default gateway. Which of these is the MOST likely cause of this issue?

❍ **A.** The subnet mask is not correct
❍ **B.** The Internet provider is experiencing a temporary outage
❍ **C.** The DHCP server is down
❍ **D.** The wireless adapter is not working properly

....

The Answer: C. The DHCP server is down
If a DHCP (Dynamic Host Configuration Protocol) server is not responding, the local workstation will configure itself with an APIPA (Automatic Private IP Addressing) address. The usable APIPA addresses range between 169.254.1.0 through 169.254.254.255. An APIPA address is a link-local address, so network communication is limited to the local IP subnet.

The incorrect answers:
A. The subnet mask is not correct
The subnet mask has been configured through APIPA, and the mask of 255.255.0.0 is normal for an APIPA configuration. The subnet mask is not the cause of the browsing issues on the workstation.

B. The Internet provider is experiencing a temporary outage
In this example, the issue is related to the APIPA link-local address assigned to the workstation. Although the Internet provider could potentially be experiencing issues, it would not be the most likely cause of the problem.

D. The wireless adapter is not working properly
The wireless adapter has configured itself and assigned a link-local APIPA address, so it appears that the adapter itself is functional.

More information:
220-1101, Objective 5.7 - Troubleshooting Networks
https://professormesser.link/1101050701

A34. A help desk technician needs to use different Windows versions to study for an industry certification exam. The technician currently uses a Windows desktop computer with 4 GB of RAM and a 750 GB free on the hard drive. Which of the following would be the BEST way to perform this task? (Choose TWO)

❍ **A.** Install a second monitor

❍ **B.** Install an additional hard drive

❍ **C.** Create a Windows Recovery Environment boot drive

❍ **D.** Upgrade the system RAM

❍ **E.** Install Windows guest VMs

....

The Answers: D. Upgrade the system RAM, and
E. Install Windows guest VMs
The easiest way to use multiple operating systems on a single machine is to run them as virtual machines. Although 750 GB (Gigabytes) is plenty of storage space for multiple virtual machines, the 4 GB of RAM (Random Access Memory) on the host computer is too small to support multiple Windows operating systems at the same time. Once the memory upgrade is complete, it's a relatively easy process to install the guest virtual machines on the existing hard drive.

The incorrect answers:
A. Install a second monitor
Multiple monitors can certainly improve overall efficiency and can expand the working desktop of a computer, but it doesn't provide any features specific to multiple operating systems or virtual machines.

B. Install an additional hard drive
The available hard drive is large enough to support the installation of multiple virtual machines.

C. Create a Windows Recovery Environment boot drive
A Windows Recovery Environment drive is useful for troubleshooting the existing Windows installation, but it won't help with multiple operating systems.

More information:
220-1101, Objective 4.2 - Client-side Virtualization
https://professormesser.link/1101040201

A35. While configuring a new workstation in the lab, one of the engineers recommends using 255.255.255.0. What part of the configuration is this associated with?

○ **A.** Default gateway

○ **B.** Subnet mask

○ **C.** DNS server

○ **D.** IP address

....

The Answer: B. Subnet mask
Subnet masks are used by a device to determine what subnet it's connected to. Subnet masks are a series of binary ones that are used to "mask" the subnet address from the host address. Instead of representing this mask in binary, it's almost always shown in decimal form. Common decimal representations of subnet mask start with 255, such as 255.255.255.0.

The incorrect answers:
A. Default gateway
A default gateway on an internal lab network will most likely be using private IP (Internet Protocol) addressing starting with 10, 172, or a 192. IP addresses cannot start with an octet of 255. Therefore, a default gateway in this environment would not have an IP address of 255.255.255.0.

C. DNS server
Since an IP address cannot start with the octet of 255, this address would not be associated with a DNS server.

D. IP address
The IP address of a device cannot start with 255. It's most likely that a device in a lab would use an internal IP address that starts with an octet of 10, 172, or 192.

More information:
220-1101, Objective 2.5 - IPv4 and IPv6
https://professormesser.link/1101020501

A36. Which of the following BEST describes a Bluetooth network?

○ **A.** PAN
○ **B.** WAN
○ **C.** LAN
○ **D.** MAN

....

The Answer: A. PAN
A PAN (Personal Area Network) is designed for a small area and usually is associated with an individual. Bluetooth devices such as headsets, speakers, and automobile connections are considered PANs.

The incorrect answers:
B. WAN
A WAN (Wide Area Network) usually connects locations over an extended geographical distance. A network link between cities, states, or countries would be considered a WAN connection.

C. LAN
The network in your building or home is a LAN (Local Area Network). If you're connected to an Ethernet or 802.11 wireless network, then you're connected to a LAN.

D. MAN
A MAN (Metropolitan Area Network) is a bit bigger than a LAN, but smaller than a WAN. Connecting sites in the same city or metropolitan area would commonly use a MAN link.

More information:
220-1101, Objective 2.7 - Network Types
https://professormesser.link/1101020702

A37. Sam, a user in the accounting department, is migrating from Android to iOS. She would like all of her emails, contact lists, and calendar events to be moved to her new phone. Which of the following would be the BEST way to accomplish this task?

❍ **A.** Use a Windows-based migration tool

❍ **B.** Save the Android phone data as a CSV file

❍ **C.** Connect the new phone to the corporate Microsoft 365 service

❍ **D.** Use a USB-to-Lightning cable

....

The Answer: C. Connect the new phone to the corporate
                    Microsoft 365 service

Microsoft 365 manages email, calendar events, and contact information in a single database. Using this central database, Microsoft 365 can be used to synchronize all of this information to both iOS and Android smartphones.

The incorrect answers:
A. Use a Windows-based migration tool
Since most smartphones can synchronize email, calendar, and events to an existing email platform, a third-party migration tool is unnecessary.

B. Save the Android phone data as a CSV file
Most mobile phones do not provide data in CSV (Comma Separated Value) format. Even if the Android data was available, there's no common way to import that data into an iOS device.

D. Use a USB-to-Lightning cable
Connecting the phones to another device or to each other would not migrate any data between the devices.

More information:
220-1101, Objective 1.4 - Mobile Device Configurations
https://professormesser.link/1101010403

A38. A user's smartphone shows a black screen and does not respond to any screen taps or button presses. A check of the SIM card shows a red label but no physical damage. Which of the following is the MOST likely reason for these issues?

❍ **A.** Overheating

❍ **B.** Digitizer failure

❍ **C.** Liquid damage

❍ **D.** Invalid SIM card

....

The Answer: C. Liquid damage
Most smartphones and tablets include a liquid contact indicator (LCI). This indicator is usually white, and it can often be seen without disassembling the device. If the LCI turns pink or red, the device has been in close contact with liquid.

The incorrect answers:
A. Overheating
An overheated device will remain off until the system has cooled. A message will be displayed on the screen describing the overheating condition.

B. Digitizer failure
A digitizer failure may cause the screen to become unresponsive, but the device should still respond to button presses.

D. Invalid SIM card
An invalid SIM card would cause the device to lose connectivity with the mobile provider, but the smartphone would still work normally and respond to user input.

More information:
220-1101, Objective 5.5 - Troubleshooting Mobile Devices
https://professormesser.link/1101050501

A39. A server administrator has been asked to configure the storage requirements for a new database server. The database owner requires the fastest performance and redundancy if a single drive fails. The storage array should support at least 8 TB of available space. Which of the following options would be the BEST choice?

❍ **A.** RAID 10 with 5,400 RPM, 8 TB drives
❍ **B.** RAID 5 with 10,000 RPM, 5 TB drives
❍ **C.** RAID 1 with 7,200 RPM, 8 TB drives
❍ **D.** RAID 0 with 15,000 RPM, 5 TB drives

The Answer: B. RAID 5 with 10,000 RPM, 5 TB drives
The question is focused on three requirements; performance, drive space, and redundancy. This option provides the highest number of RPMs (Revolutions Per Minute), RAID 5 (Redundant Array of Independent Disks) redundancy, and drives with enough combined storage to support more than 8 TB (terabytes) of drive space.

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The incorrect answers:
A. RAID 10 with 5,400 RPM, 8 TB drives
RAID 10 would meet the redundancy requirement and a series of 8 TB drives would more than cover the storage requirement. However, the slow throughput of 5,400 RPM drives would not meet the performance requirement.

C. RAID 1 with 7,200 RPM, 8 TB drives
RAID 1 mirroring provides the redundancy required, and 8 TB drives provide plenty of storage space. However, the 7,200 RPM specification is slower than the 10,000 RPMs available in answer B.

D. RAID 0 with 15,000 RPM, 5 TB drives
15,000 RPM drives provide a very fast performance, and multiple 5 TB drives would provide more than 8 TB of available space. However, RAID 0 striping does not provide any redundancy if a drive was to fail.

More information:
220-1101, Objective 3.3 - Storage Devices
https://professormesser.link/1101030301

A40. A user would like to access email from their Windows 10 laptop using a smartphone's Internet connection. Which of these technologies needs to be enabled on the laptop?

○ **A.** LTE
○ **B.** 802.11
○ **C.** NFC
○ **D.** IR

....

The Answer: B. 802.11
802.11 wireless connections can be used to access a smartphone configured as an Internet hotspot. The laptop will communicate to the smartphone over 802.11, and the smartphone is used to connect to resources on the Internet.

The incorrect answers:
A. LTE
LTE (Long-Term Evolution) may be used by the smartphone for Internet data communication, but the laptop does not communicate using LTE.

C. NFC
NFC (Near Field Communication) is a short-distance wireless technology commonly used for payment systems or in-person information exchange. NFC is not used for connecting to a hotspot on a smartphone.

D. IR
IR (Infrared) is often used to control other IR devices, such as entertainment centers or televisions. IR is not used during the hotspot connection process.

More information:
220-1101, Objective 1.3 - Connecting Mobile Devices
https://professormesser.link/1101010301

A41. A system administrator needs to upgrade a laptop from a hard drive to an SSD. Which of the following would provide the most efficient method of upgrading this system?

❍ **A.** Create an image of the hard drive and restore to the SSD

❍ **B.** Install a new Windows license and application files on the SSD

❍ **C.** Backup all user documents and copy them to another computer

❍ **D.** Compress the home directory and upload it to cloud storage

....

The Answer: A. Create an image of the hard drive and restore to the SSD
A system image contains everything on the storage drive, so the restored system will have the same operating system, configuration options, user documents, and installed applications as the original system.

The incorrect answers:
B. Install a new Windows license and application files on the SSD
The process of installing a new version of Windows and installing every application will take much longer than creating an image and restoring that image to the SSD.

C. Backup all user documents and copy them to another computer
This would provide a copy of all of the user's spreadsheets, pictures, movies, and other important files, but it wouldn't install an operating system or all of the user's applications on the new SSD.

D. Compress the home directory and upload it to cloud storage
Compressing the user's home directory would conserve storage space during the backup process, but it won't install an operating system or the user's applications on the new SSD.

More information:
220-1101, Objective 1.1 - Laptop Hardware
https://professormesser.link/1101010101

A42. A new employee has been assigned a corporate smartphone, but the camera and the installation of third-party apps has been disabled. Which of the following is the MOST likely reason for these issues?

❍ **A.** The smartphone is out of storage space
❍ **B.** The smartphone OS needs to be upgraded
❍ **C.** An MDM has disabled the features
❍ **D.** The smartphone hardware is faulty

....

The Answer: C. An MDM has disabled the features
An MDM (Mobile Device Manager) can enable or disable effectively any feature on the smartphone, including the camera and the app installation process.

The incorrect answers:
A. The smartphone is out of storage space
A lack of storage space could cause issues with the installation of new software, but the phone would provide messages and feedback regarding the lack of space.

B. The smartphone OS needs to be upgraded
An outdated operating system would not prevent the use of the camera or the installation of third-party apps.

D. The smartphone hardware is faulty
This could certainly cause some of the issues with the camera or app installation, but it's unlikely that both of those systems would be faulty on the same device.

More information:
220-1101, Objective 1.4 - Mobile Device Connectivity
https://professormesser.link/1101010402

A43. A system administrator is using a maintenance kit on a network-connected laser printer. Which of the following should be the LAST step when performing this maintenance?

❍ **A.** Examine the feed rollers

❍ **B.** Wait until the fuser unit cools down and replace it

❍ **C.** Reset the page counter

❍ **D.** Replace the power cord

....

The Answer: C. Reset the page counter
The page counter is a helpful metric to determine how much the printer is used, which in turn determines when the next maintenance should be scheduled. After performing the current maintenance cycle and verifying the printer's operation, the page counter should be reset so the next maintenance time-frame can be properly estimated.

The incorrect answers:
A. Examine the feed rollers
Examining or replacing the feed rollers is a normal part of the maintenance process, but it would not often be the last step in the maintenance process.

B. Wait until the fuser unit cools down and replace it
Fusers can sometimes be replaced during maintenance, but this would not be the last step in the process.

D. Replace the power cord
Replacing the power cord is not commonly part of the maintenance process. The only time the power cord would need replacing is if it has been damaged. Power cords do not generally wear out or need replacement.

More information:
220-1101, Objective 3.7 - Laser Printer Maintenance
https://professormesser.link/1101030702

A44. An application developer needs to test an application across all of the operating systems used by the company. Each operating system will be tested individually in a lab environment. The company would like to minimize any additional hardware purchases for this project. Which of the following would be the BEST way to test this application?

○ **A.** Purchase a system that is configured just above the hardware requirements for the highest-end operating system. Create separate VMs for each operating system.

○ **B.** Purchase individual test computers that match the hardware requirements for each OS. Install different operating systems on each test computer.

○ **C.** Designate existing user workstations to be used as testing systems. Run all application tests during non-working hours.

○ **D.** Purchase a system that matches the minimum hardware requirements for the highest-end operating system. Create a system image for each operating system and reimage the computer between tests.

....

The Answer: A. Purchase a system that is configured just above the hardware requirements for the highest-end operating system. Create separate VMs for each operating system.

Creating virtual machines for these tests would be a great way to minimize hardware costs, and the machine used for the testing should be able to properly virtualize the testing OS while the host OS is running. Purchasing a system that is slightly more powerful than the highest-level operating system configuration should cover any technical requirements.

The incorrect answers:
B. Purchase individual test computers that match the hardware requirements for each OS. Install different operating systems on each test computer.

Since one of the project requirements was to minimize the hardware cost, purchasing separate computers for all of these systems would be much more expensive than purchasing a single computer and virtualizing the operating systems.

C. Designate existing user workstations to be used as testing systems. Run all application tests during non-working hours.

This solution would certainly minimize the hardware cost, but the process of using existing user workstations would be difficult to manage. This solution would also require the testing to occur during hours when the application developer would, by definition, not be working.

D. Purchase a system that matches the minimum hardware requirements for the highest-end operating system. Create a system image for each operating system and reimage the computer between tests.

Although this would technically be a valid alternative, it would be time consuming to constantly image and reimage the test system for every operating system. Using virtual machines would allow the application developer to instantly stop and start any operating system at any time.

More information:
220-1101, Objective 4.2 - Client-side Virtualization
https://professormesser.link/1101040201

A45. Which wireless standard can operate in the 5 GHz band and provides
approximately 10 Gbit/sec of throughput?

○ **A.** 802.11ac

○ **B.** 802.11g

○ **C.** 802.11ax

○ **D.** 802.11n

....

The Answer: C. 802.11ax
The 802.11ax standard, or Wi-Fi 6, can operate in either the 2.4 GHz or
the 5 GHz band, and the maximum theoretical throughput is nearly 10
gigabits per second.

The incorrect answers:
A. 802.11ac
802.11ac, or Wi-Fi 5, operates in the 5 GHz band and can provide almost
7 gigabits per second of total throughput.

B. 802.11g
802.11g operates exclusively in the 2.4 GHz band, and can provide a
maximum throughput of 54 megabits per second.

D. 802.11n
Although 802.11n, or Wi-Fi 4, can operate in the 2.4 GHz band and
the 5 GHz band, the maximum theoretical throughput of 802.11n is 600
megabits per second.

More information:
220-1101, Objective 2.3 - Wireless Network Standards
https://professormesser.link/1101020301

A46. A user in the manufacturing department reports that every page printed from the central networked laser printer has a single black line extending from the top of the page to the bottom. Which of the following is the MOST likely cause of this issue?

❍ **A.** The fuser is damaged

❍ **B.** The printer language is not properly configured

❍ **C.** The photosensitive drum is damaged

❍ **D.** The toner is low

....

The Answer: C. The photosensitive drum is damaged
A scratched photosensitive drum would cause a line to appear down the printed page as the toner sticks to the scratched part of the drum. Some printers allow individual drums to be replaced, and others require the entire toner cartridge with drum to be replaced. Once the scratched drum is replaced, the black line will no longer appear on the printer output.

The incorrect answers:
A. The fuser is damaged
The fuser provides the heat and pressure required to permanently affix the toner to the printed page. The fuser would not commonly add additional black lines to the printer output.

B. The printer language is not properly configured
Using an incorrect printer control language will result in garbled or unusual output. An incorrect printer language will not cause a single black line down the output page.

D. The toner is low
If the printer output was very faint or difficult to read, then the toner levels may be low. Most printers will provide a message when it's time to replace the toner cartridge.

More information:
220-1101, Objective 5.6 - Troubleshooting Printers
https://professormesser.link/1101050601

A47. Which mobile device connection is commonly used for making payments at a store checkout?

❍ **A.** NFC

❍ **B.** DB-9

❍ **C.** Cellular

❍ **D.** Bluetooth

....

The Answer: A. NFC
NFC (Near Field Communication) is designed to transfer small amounts of data wirelessly over a limited area. It's common to use a smart phone or smart watch with a credit card terminal to pay for goods or services.

The incorrect answers:
B. DB-9
A DB-9 serial link is a wired connection commonly used for configuration of switches, routers, and other infrastructure devices. A DB-9 connection would not be used during the checkout process.

C. Cellular
Cellular networks are used for voice and data communication, but those cellular networks are not part of the in-store purchase process.

D. Bluetooth
Although Bluetooth supports many different features, it's not used during the checkout process in a store.

More information:
220-1101, Objective 1.3 - Connecting Mobile Devices
https://professormesser.link/1101010301

A48. A company hosts a cloud-based application which includes redundant servers located in different data centers around the world. Which of the following cloud computing characteristics would BEST describe this application design?

❍ **A.** Rapid elasticity

❍ **B.** High availability

❍ **C.** Non-metered

❍ **D.** Desktop as a Service

....

The Answer: B. High availability
If a single server fails, there are other servers available in different data centers for clients to access. This high availability ensures the services are always available to the users.

The incorrect answers:
A. Rapid elasticity
Rapid elasticity provides a way to quickly scale up and down as needed. Although this is a common cloud computing characteristic, this specific example does not describe any scalability features.

C. Non-metered
A cloud service with a flat-fee for access to a resource is defined as non-metered. This example does not describe the billing for the service or the usage costs for any part of the service.

D. Desktop as a Service
Desktop as a Service, or DaaS, is a technology for running a user's desktop in the cloud. In this example, there's no mention of the application type or how a user's desktop would be integrated into this application.

More information:
220-1101, Objective 4.1 - Cloud Characteristics
https://professormesser.link/1101040102

A49. When printing a document on a laser printer, a user finds that all of the text on the page smears when touched. What is the MOST likely cause of this issue?

○ **A.** Fuser is damaged

○ **B.** Toner cartridge is low

○ **C.** Photosensitive drum has been scratched

○ **D.** Incorrect printer driver is installed

○ **E.** Printer cleaning process is not working

....

The Answer: A. Fuser is damaged
The fuser permanently melts the toner to the paper using heat and pressure. If the fuser is not working, the toner will easily smear when touched.

The incorrect answers:
B. Toner cartridge is low
A low toner cartridge will cause the output to appear faded and difficult to read. A low toner cartridge will not cause the output to smear when touched.

C. Photosensitive drum has been scratched
A scratched drum will cause lines and other stray marks to appear on the printed page. The toner sticks to the scratches and is transferred to the final page output.

D. Incorrect printer driver is installed
The printer driver will format the output into a page description language that the printer can understand. An incorrect driver would not cause the printer output to smear.

E. Printer cleaning process is not working
If the cleaning process is not working, then a "ghost" of previous passes around the drum will appear on different parts of the printed page. It's common that poor cleaning will cause multiple faded versions of a page to appear in the printed output. A non-working cleaning process would not cause the printer output to smear, however.

More information:
220-1101, Objective 5.6 - Troubleshooting Printers
https://professormesser.link/1101050601

A50. A manager's computer is able to connect to Internet sites while in conference rooms or in the building courtyard. When the laptop is brought back to the manager's desk and placed into the docking station, the Internet access is unavailable but all other features are working. Which of the following should be the FIRST troubleshooting task for this issue?

❍ **A.** Replace the docking station power supply
❍ **B.** Upgrade the laptop BIOS
❍ **C.** Replace the docking station
❍ **D.** Check the docking station network cable

....

The Answer: D. Check the docking station network cable
The Internet access on the laptop appears to be working properly on the wireless network, but the docking station connection would use a wired Ethernet connection. If everything else is working properly, then the issue would most likely be associated with the Ethernet interface in the docking station.

The incorrect answers:
A. Replace the docking station power supply
If other docking station features were not working, there could be an issue with the power connection on the docking station. In this situation, all of the other features appeared to be working properly when connected to the docking station.

B. Upgrade the laptop BIOS
A BIOS upgrade is a significant change, and it's rarely the first step in the troubleshooting process.

C. Replace the docking station
Although it's certainly possible the docking station could be faulty, there are no obvious issues with other features. Before replacing the entire docking station, it would be useful to check the individual components associated with the problem.

More information:
220-1101, Objective 1.3 - Mobile Device Accessories
https://professormesser.link/1101010302

A51. A company is developing an internal application for smartphones and tablets. Which of the following would improve the security of the application's logon process?

❍ **A.** Data caps

❍ **B.** Two-factor authentication

❍ **C.** Bluetooth pairing

❍ **D.** NFC

....

The Answer: B. Two-factor authentication
Two-factor authentication requires multiple factors to complete the logon process. For example, a password (something you know) might be combined with a fingerprint (something you are) to properly authenticate users to the application.

The incorrect answers:
A. Data caps
A data cap is commonly used to limit the amount of data used by a particular system. Setting limits on data usage does not provide any additional security to the logon process.

C. Bluetooth pairing
Before a Bluetooth device can be used, it must be paired with another device. Bluetooth pairing does not provide any additional security to the application authentication process.

D. NFC
NFC (Near-Field Communication) is a protocol used to transfer data between a mobile device and another system. NFC is commonly used after the authentication process has already occurred.

More information:
220-1101, Objective 1.4 - Mobile Device Connectivity
https://professormesser.link/1101010402

A52. Which of the following would be MOST associated with an IoT device?

○ **A.** Multithreading

○ **B.** ARM

○ **C.** Virtualization support

○ **D.** ECC RAM

....

The Answers: B. ARM
An ARM (Advanced RISC Machine) processor architecture provides efficient processing, less power, and less heat than other processor types. This efficiency makes ARM a common choice for mobile and IoT (Internet of Things) devices.

The incorrect answers:
A. Multithreading
Multithreading is a common feature across most modern processors, so this would not be a feature most associated with IoT devices.

C. Virtualization support
Although virtualization support is common on larger computer systems, virtualization support is not commonly used with IoT devices.

D. ECC RAM
ECC (Error Correction Code) RAM (Random Access Memory) is commonly associated with larger servers and not with low-power IoT devices.

More information:
220-1101, Objective 3.4 - CPU Features
https://professormesser.link/1101030407

A53. What is the minimum category of unshielded copper cable for a 10 gigabit per second Ethernet link with a fifteen meter distance?

❍ **A.** Category 5

❍ **B.** Category 6

❍ **C.** Category 5e

❍ **D.** Category 6A

....

The Answer: B. Category 6
The physical characteristics of networking cables are separated into categories. An unshielded category 6 cable can support a ten gigabit per second 10GBASE-T network to a distance of fifty-five meters.

The incorrect answers:
A. Category 5
Category 5 copper cables can support a one gigabit per second 1000BASE-T network up to one hundred meters. Ten gigabit per second speeds are not supported over category 5 cable.

C. Category 5e
Category 5e (enhanced) is a minor update to category 5, and the Ethernet standards supported for a category 5e cable are identical to those of a category 5 cable. Therefore, category 5e copper cables can support a one gigabit per second 1000BASE-T network up to one hundred meters in length.

D. Category 6A
Category 6A (augmented) cables can support ten gigabit per second 10GBASE-T connections to a distance of one hundred meters. Category 6A cable would not be the minimum category of cable used for these requirements

More information:
220-1101, Objective 3.1 - Network Cables
https://professormesser.link/1101030101

A54. An engineer has manually configured IP addresses for a small office that uses a cable modem for Internet connectivity. However, none of the devices configured with a manual IP address are able to browse Internet websites. All devices are connected to the cable modem with twisted-pair Ethernet cables. This is the configuration of one device:

IP address: 192.168.1.7
Subnet mask: 255.255.255.0
Default gateway: 192.168.1.1
DNS: 192.168.1.7

The engineer can successfully ping the local IP address and the default gateway address. Which of the following should be the NEXT troubleshooting step?

❍ **A.** Check for duplicate IP addresses
❍ **B.** Replace the Ethernet cable
❍ **C.** Check the DNS configuration
❍ **D.** Replace the cable modem

....

The Answer: C. Check the DNS configuration
One of the most noticeable IP (Internet Protocol) configuration settings was the DNS (Domain Name Service) server IP address set to the same IP address the local device. Since DNS servers are commonly separate devices, it would be unusual to see a DNS configured with the same IP address of the local device. The next step should be to confirm the DNS settings with the local network administrator.

The incorrect answers:
A. Check for duplicate IP addresses
No mention was made of an duplicate IP address warning, and the ping tests worked properly to devices on the local subnet.

B. Replace the Ethernet cable
Since the ping tests worked locally, we can conclude that the Ethernet cable is most likely not related to this issue.

D. Replace the cable modem
The cable modem is most likely the default gateway, and a ping of that IP address worked properly. More tests would need to be performed before replacing any hardware.

More information:
220-1101, Objective 2.5 - IPv4 and IPv6
https://professormesser.link/1101020501

A55. A user in a remote office is connecting a device using an F-connector. Which of the following would be MOST likely associated with this connection?

○ **A.** Cable modem

○ **B.** Switch

○ **C.** Punchdown block

○ **D.** DSL modem

....

The Answer: A. Cable modem
A cable modem is commonly associated with a coaxial cable input using an F-connector. The output from the cable modem commonly uses an RJ45 Ethernet connector.

The incorrect answers:
B. Switch
A switch is usually associated with Ethernet connections, and Ethernet commonly uses RJ45 connectors and not F-connectors.

C. Punchdown block
A punchdown block is often used instead of connectors, and individual wires will be physically pressed or "punched" into the block. A punchdown block is not commonly associated with F-connectors.

D. DSL modem
A DSL (Digital Subscriber Line) modem uses POTS (Plain Old Telephone Service) with RJ11 connectors to provide connectivity to the Internet service provider. A DSL modem does not commonly include F-connector interfaces.

More information:
220-1101, Objective 3.1 - Copper Connectors
https://professormesser.link/1101030110

A56. A user in the accounting department has turned on their computer and received the message "Date and Time not set." Which of the following would be the MOST likely reason for this message?

❍ **A.** The motherboard battery has discharged
❍ **B.** Windows update has rebooted the computer
❍ **C.** Daylight Saving Time occurred during the weekend
❍ **D.** The BIOS was just upgraded

....

The Answer: A. The motherboard battery has discharged
The battery on a motherboard is used to maintain the date and time configuration when the computer is not connected to a power source. If the battery has discharged, the computer will not be able to maintain the proper time and an error message will appear during startup.

The incorrect answers:
B. Windows update has rebooted the computer
Rebooting the computer will not cause the date and time to be reset.

C. Daylight Saving Time occurred during the weekend
Daylight Saving Time does not cause the computer's date and time to be reset, and any changes to the clock in Windows will be reflected in the BIOS.

D. The BIOS was just upgraded
A BIOS upgrade does not commonly reset the date and time on the system clock.

More information:
220-1101, Objective 3.4 - BIOS Settings
https://professormesser.link/1101030406

A57. A user in the accounting department is connecting to their monitor using HDMI. The video appears normal, but the user does not hear any audio through the monitor's speakers. Which of the following would be the two MOST likely reasons for this audio issue? (Select TWO)

❍ **A.** Video output does not match the native resolution

❍ **B.** Audio controls are muted

❍ **C.** Not enough bandwidth for audio

❍ **D.** Internet connectivity is unavailable

❍ **E.** OS is not configured for HDMI audio output

❍ **F.** Display has a dead pixel

....

The Answers: B. Audio controls are muted, and
             E. OS is not configured for HDMI audio output
If the audio controls are muted, then no audio will be heard on any output device. The muted controls may be on the monitor or the operating system, so both will need to be checked during the troubleshooting process.

The operating system will also need to be configured with the correct audio output location, and in this example the audio output should be configured for the HDMI (High-Definition Multimedia Interface) link.

The incorrect answers:
A. Video output does not match the native resolution
To get the sharpest image, the output from the computer should match the native resolution of the LCD (Liquid Crystal Display) monitor. However, this configuration setting does not disable or prevent the audio output.

C. Not enough bandwidth for audio
The HDMI connection has dedicated bandwidth for audio, so the audio signal will always be available to the monitor.

D. Internet connectivity is unavailable

The network connectivity from the computer does not have any impact on the monitor's ability to play audio.

F. Display has a dead pixel

A dead pixel on the display will always show as a blank dot, even if the rest of the monitor is showing a white page. However, this visual issue does not cause any problems with the audio output over HDMI.

More information:

220-1101, Objective 5.4

Troubleshooting Video and Display Issues

https://professormesser.link/1101050401

A58. A system administrator has created a cloud configuration which automatically monitors utilization for usage-based billing. Which of the following describes this cloud computing characteristic?

❍ **A.** Metered

❍ **B.** File synchronization

❍ **C.** Rapid elasticity

❍ **D.** High availability

....

The Answer: A. Metered
Metering will measure transaction activity, CPU utilization, storage use, and other important metrics. These are often used for billing purposes, where the customer will pay for CPU or storage by the application instance. However, this metering does not automatically add or remove instances.

The incorrect answers:
B. File synchronization
File synchronization keeps all shared data identical between multiple application instances, but synchronizing the data doesn't add or remove resources from the application instance.

C. Rapid elasticity
Rapid elasticity is the characteristic of scaling up or down cloud resources with demand. More resources will be made available during busy times, and those resources will be seamlessly removed when the demand is low.

D. High availability
Many cloud implementations will have methods for maintaining uptime and availability if an outage occurs. This redundancy doesn't provide a method of dynamically increasing or decreasing the available application instance resources.

More information:
220-1101, Objective 4.1 - Cloud Characteristics
https://professormesser.link/1101040102

A59. A group of wireless laptops in a conference room are reporting intermittent connectivity issues. The wired computers in the room are not experiencing any network problems. A check of the laptops shows that the IP addresses and configurations appear to be correct. Which of the following would be the best NEXT troubleshooting step?

❍ **A.** Verify the wireless signal strength

❍ **B.** Check the ARP table on the default gateway

❍ **C.** Confirm the operation of the DHCP server

❍ **D.** Perform a wire map on the network drops

....

The Answer: A. Verify the wireless signal strength
Since the wired devices are working properly, the troubleshooting process should focus on the wireless network. The connectivity is also intermittent, which means that the network is operating normally during certain periods. This would move the focus from the network configuration to a connectivity or signal strength issue.

The incorrect answers:
B. Check the ARP table on the default gateway
Since the wired devices are working normally and the network is intermittently working, the overall configuration of the network would not be the first place to start the troubleshooting process.

C. Confirm the operation of the DHCP server
An inoperable DHCP (Dynamic Host Configuration Protocol) server would cause the local devices to automatically configure a link-local IP address. Since there are no reports beyond general connectivity issues and DHCP server outages are relatively unusual, checking on the DHCP server would not be the next step in the troubleshooting process.

D. Perform a wire map on the network drops
The issue reported in this scenario is relating to the wireless network only. The wired devices are not experiencing any issues with connectivity, so obtaining a wire map would not be the next troubleshooting step.

More information:
220-1101, Objective 5.7 - Troubleshooting Networks
https://professormesser.link/1101050701

A60. A server administrator has been asked to troubleshoot a system that has been slowing down over time. While examining the computer, the administrator can hear a series of clicks from the inside of the case. Which of the following should be the FIRST step to address this issue?

❍ **A.** Replace the motherboard

❍ **B.** Power the system off and back on

❍ **C.** Replace the hard drive

❍ **D.** Perform a full backup of the server

❍ **E.** Replace the power supply

....

The Answer: D. Perform a full backup of the server
A clicking noise indicates some type of hardware issue with the computer, so the first step would be to confirm that a recent backup is available for all of the data on this system. If the computer fails completely, at least the data will be secure.

The incorrect answers:
A. Replace the motherboard
Motherboards don't tend to have moving parts, so a clicking noise would probably not be related to the motherboard. There's also not enough information to definitively identify the source of the noise, so replacing hardware would not commonly be the first step.

B. Power the system off and back on
Although software can often be corrected with a reset, hardware isn't commonly fixed with a power cycle. Before making any changes, it would be useful to confirm a good backup exists and perform more investigation regarding the noise.

C. Replace the hard drive
If the sound was related to a problem with the hard drive, it would be even more important to have a good backup of the data.

E. Replace the power supply
There's no evidence that the power supply is faulty, but it would be useful to investigate the source of the noise after backing up the data.

More information:
220-1101, Objective 5.2
Troubleshooting Common Hardware Problems
https://professormesser.link/1101050201

A61. When pressing the power button on a desktop computer, the power indicator lights up but the computer does not display any message on the screen. The voltage at the wall outlet has been checked and it appears to be normal. The motherboard power connector voltage was checked, and the 12 volt pin was showing 6 volts. What is the MOST likely cause of this issue?

❍ **A.** The components that use 12 volt power are faulty

❍ **B.** The power supply is faulty

❍ **C.** The wall outlet voltage does not match the power supply

❍ **D.** The motherboard is faulty

....

The Answer: B. The power supply is faulty
If the 12 volt line from the power supply to the motherboard is showing 6 volts, it's likely a problem with the power supply itself. A power supply replacement should be the next troubleshooting step for this system.

The incorrect answers:
A. The components that use 12 volt power are faulty
Even if the components are faulty, the power supply should still be providing 12 volts for those devices.

C. The wall outlet voltage does not match the power supply
Many power supplies can automatically switch to the correct input voltage from the wall outlet. A mismatch would result in a non-working system or damage to the computer's components.

D. The motherboard is faulty
A bad motherboard would not prevent the power supply from operating at the correct voltage.

More information:
220-1101, Objective 3.5 - Computer Power
https://professormesser.link/1101030501

A62. A manager in the marketing department is printing many copies of a twenty page document. The manager would like to print all twenty pages of the document before the next copy begins printing. What setting should the manager configure in the output settings?

❍ **A.** Duplex
❍ **B.** Collate
❍ **C.** Quality
❍ **D.** Orientation

....

The Answer: B. Collate
The printing of multiple copies in their proper order is collating the output. If the output was not collated, all of the page one copies would print, then all of the page two, etc.

The incorrect answers:
A. Duplex
Duplex refers to printing on both sides of the page. Many printers will have an option for duplexing that will print on both sides without manually flipping the pages.

C. Quality
The quality settings on a printer can change the resolution, color settings, or grayscale options. The quality settings will not change the order of the printed pages during the output process.

D. Orientation
The orientation of the paper refers to the portrait or landscape setting. Changing the orientation will not change the order of the pages during the printing process.

More information:
220-1101, Objective 3.6 - Multifunction Devices
https://professormesser.link/1101030601

A63. A remote user is visiting their corporate office. They have connected their laptop to the wireless network, but the corporate Internet access is performing much slower than their remote site network. Which of the following would be the most likely reason for this issue?

❍ **A.** The default gateway is incorrect

❍ **B.** The laptop has been assigned an APIPA address

❍ **C.** The user does not have permission to use the wireless network

❍ **D.** There is interference with the wireless signal

....

The Answer: D. There is interference with the wireless signal
The name of the wireless network, or SSID (Service Set Identifier) is normally broadcast to all nearby devices. If the SSID broadcasts are administratively disabled, the network name will not appear in the drop-down list of available wireless networks.

The incorrect answers:
A. The default gateway is incorrect
An incorrect default gateway configuration would prevent access to remote networks, including all access to the Internet. The reported issue is related to slow performance to the Internet, so the default gateway would therefore be correctly configured.

B. The laptop has been assigned an APIPA address
APIPA (Automatic Private IP Addressing) is an automated method of assigning IP addresses when a DHCP server is not available. An APIPA address would limit all network traffic to the local subnet and Internet access would not be available.

C. The user does not have permission to use the wireless network
The wireless authentication process occurs after a device has attempted to connect to the wireless network. An authentication issue would not cause the network to perform slowly.

More information:
220-1101, Objective 5.7 - Troubleshooting Networks
https://professormesser.link/1101050701

A64. A manager needs to have access to the same files, contacts, and email messages across their MacBook, iPad, and iPhone devices. Which of the following would be the BEST way to provide this synchronization?

❍ **A.** Authenticate to iCloud on all devices

❍ **B.** Connect all devices to the MacBook using a Lightning cable

❍ **C.** Copy all user documents to Google Workspace

❍ **D.** Configure automatic updates in the App Store

....

The Answer: A. Authenticate to iCloud on all devices
iCloud provides backups, synchronization, and app installation across multiple Apple devices. Authenticating each device to the iCloud service provides automatic synchronization over wireless or cellular networks.

The incorrect answers:
B. Connect all devices to the MacBook using a Lightning cable
Although some options are available when connecting an iOS or iPadOS device to a Mac computer, the connectivity does not automatically provide synchronization between devices.

C. Copy all user documents to Google Workspace
Google Workspace is a common method of synchronizing data between Android and other devices, but simply copying files to Google Workspace does not synchronize contacts or email messages.

D. Configure automatic updates in the App Store
The Apple App Store provides automated updates for installed apps and security updates. The App Store does not synchronize user data between devices.

More information:
220-1101, Objective 1.4 - Mobile Device Configurations
https://professormesser.link/1101010403

A65. A user is reporting that a shared laser printer in the marketing department is not printing from one particular application. The front panel of the printer shows that the printer is online and ready to receive print jobs. Other users in the department are able to successfully print to the printer. Which of the following would be the BEST next troubleshooting step?

❍ **A.** Power cycle the printer

❍ **B.** Restart the print spooler

❍ **C.** Perform a test print from the printer console

❍ **D.** Verify the network printer name in the application

....

The Answer: D. Verify the network printer name in the application
We know that the printer is working normally because other people are able to print successfully. This also means that the spooling process is working and the print server is successfully queuing the print jobs. Given the other options, it's most likely that the user is directing the print job to a different printer.

The incorrect answers:
A. Power cycle the printer
We know the printer is working for other users, so power cycling the printer would not resolve this particular issue.

B. Restart the print spooler
Other users are printing to the network printer, so we know the print spooler is working properly. Restarting the spooler would not resolve this issue.

C. Perform a test print from the printer console
A test print from the printer console would verify that the printer itself is working properly, but we already know this because of the print jobs sent by other users on the network.

More information:
220-1101, Objective 5.6 - Troubleshooting Printers
https://professormesser.link/1101050601

A66. A network administrator is connecting four company locations in different countries. Which of the following would BEST describe this configuration?

○ **A.** LAN
○ **B.** PAN
○ **C.** MAN
○ **D.** WAN

....

The Answer: D. WAN
A WAN (Wide Area Network) connects LANs across a long geographical distance. Once the link extends past the local city area, the connection would be considered a WAN link.

The incorrect answers:
A. LAN
LANs (Local Area Networks) are located in the same building or group of buildings located nearby. Ethernet and 802.11 wireless networks are generally considered to be LAN connections.

B. PAN
A private network designed for an individual is a PAN (Personal Area Network). Bluetooth, infrared, and near field communication links are categorized as PAN connections.

C. MAN
A local network provider can sometimes connect sites in the same city. These connections would be MANs (Metropolitan Area Networks).

More information:
220-1101, Objective 2.7 - Network Types
https://professormesser.link/1101020702

A67. A system administrator has received a report of customers receiving email messages from the company, but upon further analysis the administrator finds the messages were not actually sent by the corporation. Which of the following should be implemented to prevent these spoofed email messages?

○ **A.** Add multi-factor authentication to all email logins

○ **B.** Change the passwords on all email accounts

○ **C.** Configure an SPF record in the DNS

○ **D.** Modify the firewall rules to prevent outgoing emails

....

The Answer: C. Configure an SPF record in the DNS
An SPF (Sender Policy Framework) record in the DNS (Domain Name System) server provides a list of all servers authorized to send emails for a domain. Any emails not originating from an authorized source can be dismissed as unauthorized or invalid.

The incorrect answers:
A. Add multi-factor authentication to all email logins
The spoofed email messages did not originate from the corporate network, so modifying the authentication process would not prevent customers from receiving spoofed email messages.

B. Change the passwords on all email accounts
Since the email messages did not originate from a corporate account, changing the passwords would not prevent the spoofed emails.

D. Modify the firewall rules to prevent outgoing emails
The spoofed email messages were sent from a different network, so modifying the corporate firewall would not block any email spoofing.

More information:
220-1101, Objective 2.6 - DNS Configuration
https://professormesser.link/1101020601

A68. A system administrator has configured a VM for dual processors, 16 GB of RAM, and 120 GB of disk space. Which of the following is required to start this VM?

❍ **A.** Shared network address

❍ **B.** Hypervisor

❍ **C.** Virtual switch

❍ **D.** Video display

....

The Answer: B. Hypervisor
A hypervisor, or virtual machine manager, is the software that manages the virtual platform and guest operating systems.

The incorrect answers:
A. Shared network address
There are many options for a virtual machine, including shared, bridged, and private network addresses. A shared network address is not required to start a virtual machine.

C. Virtual switch
Like physical switches, virtual switches can be used to provide connectivity and segmentation for virtual machines. A virtual switch is not a requirement to start or use a virtual machine

D. Video display
Many servers operate without a video display, mouse, or keyboard. These systems are "headless," and a video display is not required to start a virtual machine.

More information:
220-1101, Objective 4.2 - Client-side Virtualization
https://professormesser.link/1101040201

A69. A site manager has noticed her smartphone has a short battery life when used at work, and the battery life is normal when working from home. The work location has limited mobile service reception, but most office services are provided over the local 802.11 Wi-Fi network. The site manager does not enable Bluetooth on her smartphone. Which of the following would be the BEST way to extend the battery life of her mobile device?

○ **A.** Disable 802.11 Wi-Fi

○ **B.** Disable the cellular radio at work

○ **C.** Replace the battery

○ **D.** Enable Bluetooth on the mobile device

....

The Answer: B. Disable the cellular radio at work
When a mobile provider's network isn't available, a phone will constantly try to find and reconnect to a cellular network. This reconnection process constantly uses the radio, and subsequently more of the battery is used in the process. To conserve battery life, it would be useful to disable the cellular network connection when outside of a coverage area.

The incorrect answers:
A. Disable 802.11 Wi-Fi
The Wi-Fi network is used at work for office services, so disabling Wi-Fi is not a good option. Since Wi-Fi does not require a constant connection, it's unlikely that the battery usage is associated with the Wi-Fi radio.

C. Replace the battery
It's possible that the battery in the mobile device could need replacing, but the battery problem doesn't appear to happen while at home. If the battery was the primary issue, the battery would work just as poorly at home as the office.

D. Enable Bluetooth on the mobile device
Enabling a feature like the Bluetooth radio would increase battery usage. If the battery is the biggest concern and no Bluetooth features are in use, it's a better idea to keep Bluetooth disabled.

More information:
220-1101, Objective 5.5 - Troubleshooting Mobile Devices
https://professormesser.link/1101050501

A70. A desktop computer has just abruptly shut off, and pressing the power button doesn't restart the system. There are no fans spinning, no lights are on, and no messages appear on the display. Which of these would be the MOST likely cause of this issue?

❍ **A.** The BIOS is configured with a startup password

❍ **B.** The LCD display backlight has failed

❍ **C.** The power supply is faulty

❍ **D.** The master boot record is corrupted

❍ **E.** The boot sector is missing

....

The Answer: C. The power supply is faulty
A faulty power supply could cause a loss of power across all computer systems, and the lack of fans, lights, and output on the display would be the most likely cause given the available options.

The incorrect answers:
A. The BIOS is configured with a startup password
A startup password would not cause the system to power down, and the password prompt would be presented if the computer was powering on.

B. The LCD display backlight has failed
A failure of the LCD backlight would make it appear the screen is not working, but the fans and lights would still be working normally.

D. The master boot record is corrupted
A corrupted master boot record may prevent a system from booting, but the fans, lights, and screen output would still be working properly.

E. The boot sector is missing
A missing boot sector would not prevent the fans and lights from working properly. The screen would commonly show an error explaining that an operating system was not able to properly start.

More information:
220-1101, Objective 5.2
Troubleshooting Common Hardware Problems
https://professormesser.link/1101050201

A71. What kind of device is commonly used to filter traffic based on a predefined set of rules?

❍ **A.** PoE switch

❍ **B.** Repeater

❍ **C.** DSL modem

❍ **D.** Firewall

....

The Answer: D. Firewall
A firewall is designed to evaluate inbound traffic, compare that traffic to predefined security policies, and allow or block that traffic from passing through the firewall. Firewalls are common security appliances between an organization's internal network and the Internet.

The incorrect answers:
A. PoE Switch
PoE (Power over Ethernet) switches are used to provide power to Ethernet-connected devices. This allows devices such as access points, security cameras, and VoIP phones to connect with a single Ethernet link for both data connectivity and device power.

B. Repeater
Repeaters are relatively simple devices. Repeaters receive a signal, regenerate that signal, and then resend that signal to another network connection. Repeaters do not make any forwarding decisions and they don't filter based on a set of rules.

C. DSL modem
DSL (Digital Subscriber Line) is a common Internet connection technology provided over the same twisted pair copper used by analog telephone services. A DSL modem allows the end-user to connect their existing network to the DSL network, but the DSL modem does not filter traffic based on a set of access rules.

More information:
220-1101, Objective 2.2 - Network Devices
https://professormesser.link/1101020201

Practice Exam A - Answers

A72. Which of these connection types use coax to provide Internet data, voice, and video over the same wire?

❍ **A.** DSL

❍ **B.** Cable broadband

❍ **C.** ONT

❍ **D.** PoE

....

The Answer: B. Cable broadband
Cable television brought video into everyone's home, and now voice and Internet services are included on the same coax cable.

The incorrect answers:
A. DSL
DSL (Digital Subscriber Line) uses a pair of copper wires to provide Internet access over the same connection as a traditional telephone service.

C. ONT
An ONT (Optical Network Terminal) is a demarcation point commonly used for fiber to the premises. Although the ONT may include a coax connection for television, it does not commonly combine voice, video, and Internet over coax.

D. PoE
PoE (Power over Ethernet) is a convenient way to provide a power source for a device without connecting to a power outlet. PoE does not provide any consolidation of services over coax cable, however.

More information:
220-1101, Objective 2.7 - Internet Connection Types
https://professormesser.link/1101020701

A73. A desktop administrator has been asked to troubleshoot a laptop computer that beeps during the power on process while the laptop screen remains dark. Which of the following would be the best NEXT troubleshooting step?

○ **A.** Implement a solution

○ **B.** Document findings

○ **C.** Establish a theory

○ **D.** Evaluate results

....

The Answer: C. Establish a theory
Once an issue has been identified, it's important to consider all of the possible reasons the problem may have occurred. It's useful to list all possible causes, even those that might not be obvious.

The incorrect answers:
A. Implement a solution
The implementation of a solution would occur after possible theories have been determined and tested. Once a plan of action is created, the solution can be implemented.

B. Document findings
Once the problem has been resolved, the last step of the troubleshooting process is to document the issue, the resolution, and any other important steps during the process.

D. Evaluate results
When testing theories for possible fixes, the results of each test should be evaluated to determine if the fix was successful.

More information:
220-1101, Objective 5.1 - How to Troubleshoot
https://professormesser.link/1101050101

A74. A user is pairing a Bluetooth headset to their smartphone. What type of security is used during the pairing process to authorize this connection?

❍ **A.** 802.1X

❍ **B.** Client certificate

❍ **C.** Pre-shared key

❍ **D.** PIN

❍ **E.** Username and password

....

The Answer: D. PIN
A PIN (Personal Identification Number) is used to validate the device connecting during the Bluetooth pairing process. This authorization prevents a third-party from connecting to a smartphone or tablet without permission.

The incorrect answers:
A. 802.1X
802.1X is a standard for port-based network access control (NAC). This is commonly used for network authentication, but it is not part of the Bluetooth pairing process.

B. Client certificate
Adding a client certificate to a device can help with an authentication process, but a client certificate is not used when pairing a Bluetooth accessory.

C. Pre-shared key
A pre-shared key is a passphrase two devices can use to validate the authentication process. These are commonly used with private wireless networks, but they are not part of the Bluetooth pairing process.

E. Username and password
A username and password are some of the most common ways to provide authentication, but the Bluetooth pairing process does not use usernames or passwords.

More information:
220-1101, Objective 1.4 - Mobile Device Connectivity
https://professormesser.link/1101010402

A75. A company is deploying cloud-hosted virtual desktops for training room classes. The VMs have already been configured in the cloud. Which of the following is required to access these VMs using thin clients in the training room?

❍ **A.** High-end video cards

❍ **B.** Separate Internet connection

❍ **C.** Mouse, keyboard, and monitor

❍ **D.** Category 6A cabling

....

The Answer: C. Mouse, keyboard, and monitor
Cloud-hosted virtual desktops are a type of VDI (Virtual Desktop Infrastructure). Access to the desktop is provided over a remote access-style client, and access can be provided from almost any operating system using a low-bandwidth network connection. The client device is usually a thin-client that has a minimum set of resources, a mouse, keyboard, and a monitor.

The incorrect answers:
A. High-end video cards
Cloud-based virtual desktops are being processed on servers in the cloud, so the local thin clients do not require any advanced graphics capabilities.

B. Separate Internet connection
The communication to the virtual desktops is sending video, keyboard, and mouse updates, and all of this can operate with a minimum of network bandwidth. A separate or dedicated Internet connection is not required.

D. Category 6A cabling
Category 6A cabling would commonly be associated with high-speed 10 gigabit per second Ethernet networking. A thin client communicating to a cloud-hosted virtual desktop can operate at relatively low bandwidths.

More information:
220-1101, Objective 4.1 - Cloud Characteristics
https://professormesser.link/1101040102

A76. A technician has connected a laptop to an LCD. The LCD is displaying the correct information, but all of the content appears to be fuzzy and difficult to read. Which of the following is the MOST likely reason for this issue?

❍ **A.** The LCD display is faulty

❍ **B.** The laptop display adapter is incompatible with the LCD display

❍ **C.** The laptop resolution is incorrect

❍ **D.** The LCD display cable is faulty

....

The Answer: C. The laptop resolution is incorrect
An LCD (Liquid Crystal Display) has a native resolution based on the physical dimensions of the display. If the resolution settings in the operating system don't match the native resolution of the physical display, the information on the screen may appear blurry or distorted. Matching the native resolution in the operating system will resolve this issue.

The incorrect answers:
A. The LCD display is faulty
If the LCD display is showing information (however skewed), then it may not be a hardware failure. Adjusting the operating system's video settings to match the LCD display hardware will often resolve any odd visual display quirks.

B. The laptop display adapter is incompatible with the LCD display
Most display adapters will include a video output format that is compatible with most LCD displays. It would be unusual to find an LCD display that would not operate with a specific video adapter.

D. The LCD display cable is faulty
A bad cable will commonly show flashes of information or intermittent periods of a black screen. A bad cable would not commonly display information in a fuzzy or skewed format.

More information:
220-1101, Objective 5.4
Troubleshooting Video and Display Issues
https://professormesser.link/1101050401

A77. An engineering firm is upgrading their storage array to include additional drive space for documents and designs. The primary goal is to provide high performance and uptime, even if two drives were to fail. Which of the following would be the BEST choice for this firm?

❍ **A.** RAID 1

❍ **B.** RAID 5

❍ **C.** RAID 0

❍ **D.** RAID 10

....

The Answer: D. RAID 10
RAID (Redundant Array of Independent Disks) is a method of combining storage drives together to add speed and/or redundancy. A RAID 10 array is a nested RAID configuration that creates a mirrored set of RAID 0 drives. As long as only one drive fails in each RAID 0 mirror, the redundancy will remain valid and the user's data will continue to be available.

The incorrect answers:
A. RAID 1
RAID 1 is also called mirroring, because file blocks are duplicated between two or more physical drives. Losing a single drive in a RAID 1 array will still allow access to the data on the other mirrored drive, but losing two drives would cause the data to be inaccessible.

B. RAID 5
RAID 5 is striping with parity, where file blocks are striped across multiple storage drives and one storage drive maintains parity data. Data would still be available after a single drive failure in RAID 5, but two failed drives would cause data loss.

C. RAID 0
RAID 0 is also called striping, where file blocks are split across multiple physical drives. However, RAID 0 does not include any redundancy features. A single drive failure in RAID 0 results in data loss.

More information:
220-1101, Objective 3.4 - RAID
https://professormesser.link/1101030302

A78. A network administrator is deploying a firewall to the cloud using an API to configure the device. Which of the following would BEST describe this deployment type?

❍ **A.** SDN

❍ **B.** IaaS

❍ **C.** LDAP

❍ **D.** DKIM

❍ **E.** VPN

....

The Answer: A. SDN
SDN (Software Defined Networking) allows the functions of a networking device to be split into logical units and virtualized into a software-based deployment. This allows for easy deployment of switches, routers, firewalls, and other networking devices into a cloud-based infrastructure.

The incorrect answers:
B. IaaS
IaaS (Infrastructure as a Service) is a cloud model that provides the fundamental resources needed to deploy an operating system and application into the cloud. A common IaaS deployment might include storage, CPU, networking, and a base operating system installation. IaaS does not provide API deployment functionality for cloud-based firewalls.

C. LDAP
LDAP (Lightweight Directory Access Protocol) provides a standard method of communicating to a directory service. LDAP does not provide a method of deploying software-based infrastructure devices into the cloud.

D. DKIM
DKIM (Domain Keys Identified Mail) is a technique for digitally signing a domain's outgoing email message. The recipient of the emails can validate the digital signature using a public key included in a DNS (Domain Name System) TXT record.

E. VPN
A VPN (Virtual Private Network) is commonly used to create an encrypted tunnel between two devices or locations. A VPN is not used to deploy cloud-based networking devices or services.

More information:
220-1101, Objective 2.2 - Software Defined Networking
https://professormesser.link/1101020202

A79. A company needs to purchase a new printer for an open work area. The primary requirement of this printer is to be as quiet as possible. Which of these printer types would be the best fit for this requirement?

❍ **A.** Dot-matrix
❍ **B.** Inkjet
❍ **C.** Laser
❍ **D.** Thermal

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The Answer: D. Thermal
Of the available options, thermal printers are the quietest. The only moving parts in a thermal printer are the motors that push the paper through the printer, and those motors are small and run almost silently.

The incorrect answers:
A. Dot-matrix
Dot matrix printers are probably the loudest option in this list. The metal pins in a dot matrix print head are impacting the page, and that printing process makes a significant amount of noise.

B. Inkjet
An inkjet printer's printing process is a bit quieter than a dot matrix printer, but it's not as quiet as thermal printing. The sound of the carriage moving the print heads across the page and the printing process itself would not provide the quietest printing option given the available options.

C. Laser
A laser printer uses many moving parts, high voltages, and a large motor to print a single page. This process makes more noise than a thermal printer, so it wouldn't fit the requirements.

More information:
220-1101, Objective 3.7 - Thermal Printers
https://professormesser.link/1101030705

A80. A user in the marketing department would like to use a stylus to provide input through an external digitizer. Which of the following would be the BEST choice for this requirement?

○ **A.** LCD touchscreen

○ **B.** Port replicator

○ **C.** Wireless mouse

○ **D.** Drawing pad

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The Answer: D. Drawing pad
A drawing pad connects to a desktop or laptop computer to provide very precise input using a digitizer and stylus.

The incorrect answers:
A. LCD touchscreen
An LCD touchscreen is integrated into the display and uses fingers as the input method.

B. Port replicator
A port replicator is used in conjunction with a laptop to provide a quick and easy way to connect and disconnect from external peripherals. A port replicator does not provide any type of input function with a stylus.

C. Wireless mouse
A wireless mouse is a common input device, but it does not provide any input functionality with a stylus.

More information:
220-1101, Objective 1.3 - Mobile Device Accessories
https://professormesser.link/1101010302

A81. A company has designed a platform to scale up when the application use increases during the day, and scale back down at night. Which of the following BEST describes this characteristic of cloud computing?

❍ **A.** Resource pooling

❍ **B.** Measured service

❍ **C.** Hybrid

❍ **D.** Rapid elasticity

....

The Answer: D. Rapid elasticity
Scaling up and down as needed is a significant characteristic of cloud computing. This allows organizations to manage and pay for resources when busy, but save time and money when the resources are no longer needed.

The incorrect answers:
A. Resource pooling
To provide rapid elasticity, there should be plenty of resources available when needed. Resource pooling puts all of the computing power in one place, and portions of the pool can be distributed as-needed.

B. Measured service
Tracking costs and utilization is useful for tracking and billing, and a measured service provides a way to monitor and view the use of cloud-based resources.

C. Hybrid
A hybrid cloud model combines both public and private clouds together. The hybrid cloud does not describe the scalability of these cloud deployment models.

More information:
220-1101, Objective 4.1 - Cloud Models
https://professormesser.link/1101040101

A82. A user's tablet has stopped responding to any type of finger input on the screen. The clock and other tablet functions appear to be working. Which of the following would be the BEST way to correct this issue?

❍ **A.** Replace the screen

❍ **B.** Reset the wireless network

❍ **C.** Connect to a power source

❍ **D.** Restart the tablet

....

The Answer: D. Restart the tablet
Before making any changes to hardware or software, it's useful to restart the tablet to see if a software glitch may have been the underlying issue.

The incorrect answers:
A. Replace the screen
Without running additional tests, it's impossible to know if the screen is actually the issue. Before switching out any hardware, it's useful to restart the system and run some hardware diagnostics.

B. Reset the wireless network
The wireless network would not have any impact on the screen digitizer. If the tablet was experiencing network issues, then resetting the wireless network may resolve any problems.

C. Connect to a power source
A tablet will continue to provide input to the digitizer, even in situations of low battery life. Connecting to a power source would not be a common solution for this issue.

More information:
220-1101, Objective 5.5 - Troubleshooting Mobile Devices
https://professormesser.link/1101050501

A83. A system administrator needs a secure method of storing encryption keys. Which of the following would be the BEST choice for this requirement?

❍ **A.** BIOS

❍ **B.** Secure Boot

❍ **C.** NTFS

❍ **D.** HSM

....

The Answer: D. HSM
An HSM (Hardware Security Module) is commonly used as a secure method of key backup. The HSM can be deployed as a standalone server or in a lightweight form with Smart Cards or USB keys.

The incorrect answers:
A. BIOS
A computer's BIOS (Basic Input-Output System) is the software used during the startup process of a computer. The BIOS does not provide a method of securely storing cryptographic keys.

B. Secure Boot
Secure Boot is a UEFI (Unified Extensible Firmware Interface) BIOS feature used to protect against any unauthorized changes to the BIOS or operating system.

C. NTFS
The NTFS (New Technology File System) file system is the primary storage system used on Windows devices. Although NTFS can encrypt objects in the file system, it does not use that encryption as a secure key backup system.

More information:
220-1101, Objective 3.4 - BIOS Settings
https://professormesser.link/1101030406

A84. A server administrator is upgrading the memory in a web server from 16 GB of non-ECC RAM to 64 GB of ECC RAM. After starting the system with the new memory, the computer beeps and nothing is displayed on the screen. Changing the number and location of new RAM modules results in the same beeping sounds and blank screen. After replacing the original 16 GB modules, the system starts normally. Which of the following is the MOST likely reason for this issue?

❍ **A.** The new memory is not compatible with the motherboard

❍ **B.** The new memory is faulty

❍ **C.** The BIOS needs to be updated

❍ **D.** The system is overheating during the startup process

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The Answer: A. The new memory is not compatible with the motherboard
ECC (Error Correcting Code) memory is designed to detect errors and correct the errors on the fly. Not all systems use ECC memory, and it's important the memory match the motherboard requirements. If non-ECC RAM (Random Access Memory) is replaced with ECC RAM and the system fails to start, then the issue is most likely associated with the change from non-ECC to ECC RAM.

The incorrect answers:
B. The new memory is faulty
Although it's possible that the new RAM is faulty, the more likely and obvious issue is the switch from non-ECC to ECC memory. Before blaming the RAM, it would be useful to know what type of memory the motherboard is expecting.

C. The BIOS needs to be updated
Although a BIOS upgrade may be a rare upgrade requirement, the more obvious issue with this upgrade is related to the memory type.

D. The system is overheating during the startup process
It takes a bit of time to heat up the components inside of a computer, so a failure that occurs at startup is most likely not related to thermal or heat issues inside of the computer.

More information:
220-1101, Objective 3.2 - Memory Technologies
https://professormesser.link/1101030202

A85. A workstation has been assigned an APIPA address. Which of the following would be the MOST likely reason for this assignment?

❍ **A.** The workstation is not connected to the wireless network

❍ **B.** The DNS server is misconfigured

❍ **C.** The network is using public Internet addresses

❍ **D.** The DHCP server is down

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The Answer: D. The DHCP server is down
APIPA (Automatic Private IP Addressing) is an IPv4 (Internet Protocol version 4) link-local addressing scheme. If a device does not have a static IP address and an address is not available from a DHCP server, the local device will assign itself an APIPA address and communication to other APIPA devices on the same subnet will be available.

The incorrect answers:
A. The workstation is not connected to the wireless network
APIPA addresses are used for any IP connected device, regardless of the type of network in use.

B. The DNS server is misconfigured
APIPA addresses are related to the local IP address and the availability of a DHCP server. The DNS server is not involved in the assigning of an APIPA address.

C. The network is using public Internet addresses
Assigned APIPA addresses include the range between 169.254.1.0 and 169.254.254.255. These addresses are considered "link-local" addresses and can only communicate within the same local IP subnet. APIPA addresses are not routable and devices with an APIPA address cannot send or receive traffic to the Internet. APIPA addresses are not public Internet addresses.

More information:
220-1101, Objective 2.5 - Assigning IP addresses
https://professormesser.link/1101020502

A86. Which of the following can be used to forward traffic based on a destination MAC address?

❍ **A.** Unmanaged switch

❍ **B.** Repeater

❍ **C.** Router

❍ **D.** Firewall

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The Answer: A. Unmanaged switch

Switches determine how traffic is forwarded based on the destination MAC (Media Access Control) address in the frame. The qualification of managed or unmanaged is not important in this case, since both types of switches make forwarding decisions the same way. The difference between a managed and unmanaged switch are based on features not associated with the forwarding process.

The incorrect answers:

B. Repeater

A repeater receives a signal, regenerates the signal, and then passes the signal on to the next network link. There are no forwarding decisions occurring inside of a repeater.

C. Router

A router makes forwarding decisions based on the destination IP (Internet Protocol) address of a packet.

D. Firewall

A firewall controls the flow of traffic based on a set of predefined security policies. If the traffic flow matches one of the policies, the firewall can be configured to allow or block that traffic flow.

More information:

220-1101, Objective 2.2 - Network Devices

https://professormesser.link/1101020201

A87. A system administrator made some BIOS changes to a desktop computer running Windows 10, and now this message appears when starting the computer:

"This drive can only boot in UEFI mode."

Which of the following would be the BEST next troubleshooting step?

❍ **A.** Modify the boot drive sequence

❍ **B.** Enable Secure Boot

❍ **C.** Remove the BIOS password

❍ **D.** Boot the system with the Windows setup media

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The Answer: B. Enable Secure Boot
Secure Boot is part of the UEFI (Unified Extensible Firmware Interface) standard for a computer BIOS (Basic Input Output System). Secure Boot ensures that the underlying operating system has not been modified by malware or any other process.

The incorrect answers:
A. Modify the boot drive sequence
Changing the boot drive sequence in the BIOS would not resolve the UEFI or Security Boot process.

C. Remove the BIOS password
UEFI mode and Secure Boot do not require a boot or management password, and removing any of those passwords will not resolve the error message.

D. Boot the system with the Windows setup media
Booting with separate media would not resolve this issue when booting to the primary storage drive. UEFI mode with Secure Boot is required for this system.

More information:
220-1001, Objective 3.4 - BIOS Settings
https://professormesser.link/1101030406

A88. A Windows user would like to temporarily store information from RAM onto their SSD. Which of the following features should be configured?

○ **A.** Multi-channel memory

○ **B.** ECC

○ **C.** System Protection

○ **D.** Virtual Memory

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The Answer: D. Virtual memory
Virtual memory is used to extend the size of available memory by temporarily moving unused data out of RAM and onto a local storage drive.

The incorrect answers:
A. Multi-channel memory
Multi-channel memory uses multiple DIMMs (Dual Inline Memory Modules) to increase the overall throughput of memory reads and writes.

B. ECC
ECC (Error Correction Code) memory is used to identify and correct memory errors on the fly. ECC is not used to swap information from RAM.

C. System Protection
System Protection is a Windows feature to create backup files when a system configuration changes. These backup files allow the user to pick a previous System Protection if the system configuration needs to be restored.

More information:
220-1101, Objective 3.2 - Memory Technologies
https://professormesser.link/1101030202

A89. A technician is installing a DSL modem in a data center. Which of the following connectors would be used to connect the DSL modem to the Internet provider line?

❍ **A.** RS-232

❍ **B.** RJ11

❍ **C.** BNC

❍ **D.** F-connector

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The Answer: B. RJ11

The RJ11 connector (Registered Jack 11) is the modular connector commonly associated with analog POTS (Plain Old Telephone System) lines. Since DSL (Digital Subscriber Line) uses the existing telephone lines, the DSL connection from an Internet Service Provider will also use those same lines with RJ11 connectors. These connectors will be the same for residential, large-scale commercial, and SOHO (Small Office / Home Office) use.

The incorrect answers:
A. RS-232
RS-232 (Recommended Standard 232) is associated with the transmission of serial data across a link. These are slower speed connections that are commonly used today to connect and manage infrastructure devices such as switches, routers, and firewalls. RS-232 is not used for DSL or any high-speed Internet connection.

C. BNC
BNC (Bayonet Neill–Concelman) connectors are commonly used for coaxial connections used in larger enterprise environments. BNC is not used for SOHO DSL connections.

D. F-connector
The F-connector is the screw-on connector commonly used to attach cable television or cable modem coax connections. F-connectors are not used with twisted-pair copper DSL installations.

More information:
220-1101, Objective 3.1 - Copper Connectors
https://professormesser.link/1101030110

A90. Which of the following would be the BEST choice for capturing an image from a printed page and saving it on a computer?

○ **A.** QR code reader

○ **B.** Optical drive

○ **C.** Flatbed scanner

○ **D.** Webcam

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The Answer: C. Flatbed scanner
A flatbed scanner is designed to capture images from paper and convert them into digital form.

The incorrect answers:
A. QR code reader
A Quick Response code is the square image at the end of each detailed answer in this book, and the QR code for this question can be found at the bottom of this page. QR codes are used to abbreviate or summarize information into a code that can be easily converted using a QR code scanner or camera.

B. Optical drive
Optical drives can store digital information onto optical discs. These discs can then be read by laser beams on the appropriate optical drive.

D. Webcam
Webcams are designed to capture moving images and not printed pages.

More information:
220-1101, Objective 3.6 - Multifunction Devices
https://professormesser.link/1101030601