Hardware

CompTIA A+ certification, Core 1 (220-1201) and Core 2 (220-1202)

25% of the exam · 8 exam objectives · 220-1201

Domain 3 covers the parts of a computer and its printers: display components and attributes, cable types and connectors, RAM characteristics and storage devices, then how to install motherboards, CPUs, add-on cards and power supplies, how to deploy and secure multifunction printers, and how to maintain laser, inkjet, thermal and impact printers.

You should be able to: A Windows 11 PC needs a new graphics card, and its laser printer has started smudging. Which firmware feature must be enabled for Windows 11 security, which PSU output must have enough capacity for the card, and what fixes the smudging?

Every exam objective: the key point and the trap

3.1 Compare and contrast display components and attributes.

Every LCD filters light from a backlight. Older LCDs used a cold cathode fluorescent lamp (CCFL), which needs an inverter to turn DC into high-voltage AC; LED-backlit LCDs need no inverter.

Trap: Treating Mini-LED as a self-emissive display like OLED. Mini-LED is a backlight behind an LCD; only OLED pixels make their own light.

3.2 Summarize basic cable types and their connectors, features, and purposes.

Twisted pair copper comes in categories (Cat 5e, Cat 6, Cat 6a and higher) with rising bandwidth; Ethernet runs are limited to about 100 meters. Unshielded twisted pair (UTP) is the norm; shielded twisted pair (STP) resists interference, and direct burial cable is made to lie underground.

Trap: Confusing RJ11 and RJ45. RJ11 is the narrower telephone and DSL connector; RJ45 is the wider eight-position Ethernet connector.

3.3 Compare and contrast RAM characteristics.

Form factors: a Dual In-line Memory Module (DIMM) is the full-length module for desktops and servers; a Small Outline DIMM (SODIMM) is the shorter module for laptops and small systems.

Trap: Assuming ECC memory works in any board. ECC, and registered memory especially, must be supported by the motherboard and CPU, or the system may not start.

3.4 Compare and contrast storage devices.

Hard drives store data on spinning platters. Common spindle speeds are 5,400 and 7,200 rpm for consumer drives and 10,000 and 15,000 rpm for enterprise drives; faster spindles mean lower latency. Form factors are 3.5-inch for desktops and servers and 2.5-inch for laptops.

Trap: Thinking M.2 means NVMe. M.2 is only the form factor; an M.2 drive can use SATA or PCIe NVMe, and a slot may support only one of them.

3.5 Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.

Motherboard form factors set size, mounting holes and slot count: ATX is full size, microATX is smaller, and ITX (Mini-ITX, 170 mm square) suits compact cases with one slot. The board must match the case.

Trap: Confusing the two passwords and the two key stores: a boot password is asked at every start while a BIOS password guards the settings, and a TPM protects one computer's keys while an HSM serves many systems.

3.6 Given a scenario, install the appropriate power supply.

Input power is about 110 to 120 VAC in some regions and 220 to 240 VAC in others. Auto-ranging supplies accept both; a supply with a manual switch must be set to the local voltage before it is plugged in.

Trap: Mixing up modular and redundant: modular means detachable cables, redundant means more than one supply so the system survives a failure.

3.7 Given a scenario, deploy and configure multifunction devices/printers and settings.

Unbox properly: follow the vendor's steps, remove all packing material and transport locks, and let a cold device reach room temperature. Choose a level, ventilated location with access to power and the network, away from heat sources.

Trap: Treating secured prints and audit logs as the same: secured prints control when the output appears, audit logs record who printed what afterwards.

3.8 Given a scenario, perform appropriate printer maintenance.

Laser printers: replace the toner cartridge, apply the maintenance kit at the page count the vendor sets (fuser and rollers) and reset the counter, calibrate after changes so colors align and density is right, and clean with the vendor's materials, never a household vacuum for toner.

Trap: Choosing a maintenance task from the wrong printer type, such as cleaning a printhead on a laser printer or replacing a ribbon on a direct thermal receipt printer.

Key terms

ATX: Advanced Technology Extended

PCIe: Peripheral Component Interconnect Express

UEFI: Unified Extensible Firmware Interface

NVMe: Non-volatile Memory Express

TPM: Trusted Platform Module

ECC: Error-correcting Code

HSM: Hardware Security Module

PCL: Printer Command Language

PSU: Power Supply Unit

ADF: Automatic Document Feeder

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