

(a) Five common BIOS/UEFI settings and their purposes (5 marks)

1. Boot Order / Boot Priority

Purpose: Determines which device (SSD, HDD, USB, DVD) the computer attempts to boot from first during startup.

2. Secure Boot

Purpose: Ensures that only trusted, digitally signed operating systems and bootloaders can start, protecting against rootkits and unauthorized OS loading.

3. Virtualization Support (Intel VT-x / AMD-V)

Purpose: Enables hardware-level virtualization needed for virtual machines, emulators, and some security applications.

4. SATA/Storage Mode (AHCI, IDE, RAID)

Purpose: Defines how the system interacts with storage devices; AHCI enables advanced features like hot swapping and SSD TRIM support.

5. CPU Configuration (Hyper-Threading, C-States, Turbo Boost)

Purpose: Allows configuration of processor performance features for power saving, thermal management, or performance optimization.

(b) Procedure for updating BIOS/UEFI firmware + precautions (2 marks)

Procedure:

- 1. Identify the exact motherboard model** -check the manufacturer's website for the correct BIOS/UEFI update file.
- 2. Download the BIOS update** along with any accompanying flashing tool (if required).
- 3. Prepare a USB drive** or use the built-in UEFI update tool (e.g., ASUS EZ Flash, MSI M-Flash, Gigabyte Q-Flash).
- 4. Enter BIOS/UEFI**, navigate to the update/flash utility, and select the update file.
- 5. Run the update** and allow the system to complete the flashing process automatically.
- 6. Restart the PC**, then load optimized defaults or reconfigure settings as needed.

Precautions:

- **Do NOT interrupt power** (use UPS if possible) to avoid corrupting firmware.
 - **Ensure the correct firmware version** is used to prevent compatibility issues.
 - **Back up important BIOS settings** because updating may reset them.
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(c) Three BIOS/UEFI-related boot problems, causes, and troubleshooting steps (3 marks)

1. “No Boot Device Found” / Boot Loop

- **Possible Causes:** Wrong boot order, drive not detected, corrupted bootloader.
- **Troubleshooting:**

Check boot priority.

Ensure the SSD/HDD is detected in BIOS.

Reseat or replace the drive; repair OS bootloader.

2. BIOS/UEFI Freezes or Fails to Load

- **Possible Causes:** Corrupted BIOS settings or failed previous update.
- **Troubleshooting:**

Reset BIOS using **CMOS jumper** or by removing CMOS battery.

Reflash BIOS using USB recovery method.

3. System Time/Date Incorrect

- **Possible Causes:** Dead CMOS battery.
- **Troubleshooting:**

Replace the CMOS battery (usually CR2032).

Reconfigure date/time in BIOS and save settings.