

✔ **Part I: Short Questions**

Q1. Explain image reading.

- Image reading is the process of **converting a physical image or document into digital format** using a scanner.
 - Uses **light sensors (CCD/CIS)** to capture reflected light and convert it into digital data.
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Q2. List kinds of scanners.

1. **Flatbed scanner** – Most common, for photos & documents.
 2. **Sheet-fed scanner** – Feeds multiple pages automatically.
 3. **Handheld scanner** – Small, portable device for scanning barcodes/docs.
 4. **Drum scanner** – High-quality, used in publishing.
 5. **3D scanner** – Captures 3D objects.
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Q3. Install and operate scanner.

- **Install:** Connect via USB/network → Install drivers/software → Configure settings.
 - **Operate:** Place document on glass → Select scan settings → Save output as image/PDF.
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Q4. Use a scanner.

1. Open scanning software.
 2. Select scan mode (color, grayscale, text).
 3. Place document properly.
 4. Start scan and save the file.
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Q5. Disassemble/Assemble a scanner.

- **Disassemble:** Disconnect power → Remove cover → Take out glass panel → Remove sensors and rollers carefully.
 - **Assemble:** Refit components → Secure with screws → Clean glass → Test scan.
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Q6. Describe common scanner faults.

1. Scanner not detected by PC.
 2. Poor image quality (blurry/faded).
 3. Lines or streaks on scans.
 4. Paper jams (in sheet-fed).
 5. Lamp or sensor failure.
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Q7. Describe preventive maintenance.

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- Keep scanner glass clean.
 - Use dust covers when not in use.
 - Avoid moisture and heat exposure.
 - Regularly update drivers.
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Q8. Describe corrective maintenance.

- Replacing faulty lamps or sensors.
 - Fixing rollers or feed mechanism.
 - Reinstalling drivers.
 - Repairing/cleaning calibration strip.
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✔ Part II: Long Questions

Q1. Explain the physical connection, the loading of software, setting up the configuration (theory only).

- **Physical Connection:**
 - Connect scanner to PC via USB, parallel port, or network cable.
 - **Loading of Software:**
 - Install drivers and scanning software provided by manufacturer.
 - Software enables PC to recognize and control scanner.
 - **Setting Up Configuration:**
 - Select resolution (DPI), color settings, and file format.
 - Calibrate scanner if required.
 - Configure default save location for scanned files.
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Q2. Explain optical character recognition (OCR) mechanism.

- **OCR** is the process of converting scanned text images into **editable digital text**.
 - **Steps:**
 1. Scanner captures image of text.
 2. OCR software analyzes character patterns.
 3. Characters are matched with database fonts.
 4. Output is editable text (e.g., in MS Word).
 - **Uses:** Digitizing books, reading invoices, making PDFs searchable.
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✨ Extra Important Questions

Q1. Difference between scanner and photocopier?

- Scanner: Converts document into a digital file.
- Photocopier: Produces a paper copy directly.

Q2. What is DPI in scanning?

- DPI (Dots Per Inch) measures **resolution quality** of scanned images. Higher DPI = sharper image.

Q3. What is CIS vs CCD scanner technology?

- **CIS (Contact Image Sensor):** Compact, cheaper, used in portable scanners.
- **CCD (Charge-Coupled Device):** High-quality, better depth and resolution, used in flatbed scanners.

Q4. What are the applications of scanners?

- Document archiving, photo scanning, OCR, barcode reading, 3D object scanning.

Q5. Safety precautions while repairing a scanner.

- Disconnect power before repair.
- Avoid touching optical sensors with bare hands.
- Use lint-free cloth for cleaning glass.