Chapter # 1

Chapter 1 – Preventive Maintenance

✅ Part I: Short Questions

Q1. What are preventive maintenance?

- **Preventive maintenance** is the practice of performing regular system checks and cleaning to reduce failures and extend hardware life.
- Example: Cleaning dust from CPU fans regularly.

Q2. List the contributors to failures of system.

1. Dust and dirt.
2. Heat and poor ventilation.
3. Power surges/fluctuations.
4. Moisture and humidity.
5. Viruses and malware.
6. User negligence.

Q3. Handle correctly peripherals.

- Handle with care to avoid damage:
    1. Do not drop or expose to liquids.
    2. Keep cables untangled and properly connected.
    3. Follow manufacturer's guidelines.

Q4. Schedule maintenance.

- Define a **regular maintenance schedule**:
    - Daily: Backup important data.
    - Weekly: Run antivirus scans.
    - Monthly: Clean dust, check updates.
    - Quarterly: Test hardware performance.

Q5. List tools used for system maintenance.

- Screwdrivers set.
- Multimeter (testing voltage).
- Compressed air blower.
- Thermal paste.
- Antistatic wrist strap.
- Diagnostic software.

Q6. Use correctly testing and measuring instruments.

- **Multimeter:** Measure voltage, resistance, continuity.
- **POST card tester:** Check motherboard status codes.
- Must follow safety precautions to avoid electrical shocks.

Q7. Perform system maintenance by replacement.

- Replace faulty parts to restore system:
  - RAM modules.
  - Hard drives.
  - Power supply units.
  - Cooling fans.

Q8. Describe second level maintenance.

- Maintenance performed by **technicians with more expertise**.
- Includes: Component-level repair, firmware updates, chip replacement.

Q9. Describe hardware diagnostic routines.

- Steps or procedures used to detect faults in hardware.
- Examples:
  - BIOS POST test.
  - Running built-in diagnostic tools (Dell/HP diagnostics).

Q10. Use diagnostic software.

- Software used to identify hardware and software problems.
- Examples:
  - MemTest86 (RAM).
  - CrystalDiskInfo (HDD/SSD).
  - HWMonitor (temperature & voltage).

✅ **Part II: Long Questions**

Q1. Describe the effects of corrosion and magnetism to system performance.

- **Corrosion:**
  - Caused by moisture/dust.
  - Damages connectors, reduces signal quality, causes short circuits.
- **Magnetism:**
  - Strong magnetic fields can erase or corrupt data on hard drives and tapes.
- **Prevention:**

- Store devices in dry, dust-free environments.
- Keep away from magnets and electromagnetic fields.

Q2. Describe Virus and prescribe measures to prevent virus attacks.

- **Virus:** A malicious program that damages data and disrupts system operations.
- **Effects:** Slow performance, data loss, unauthorized access.
- **Prevention Measures:**
  1. Install and update antivirus software.
  2. Avoid suspicious email attachments.
  3. Use firewalls.
  4. Keep operating system updated.
  5. Backup data regularly.

Q3. Make error or fault records.

- Recording all system errors helps in future troubleshooting.
- Record should include:
  1. Date/time of error.
  2. Error code/message.
  3. Action taken.
  4. Result (solved/pending).
- Example: Log book or maintenance sheet.

Q4. Describe fault-finding flowchart.

- A step-by-step troubleshooting method to identify and fix system issues.
- **Steps:**
  1. Identify symptoms (PC not booting).
  2. Check power supply.
  3. Test RAM/HDD.
  4. Run diagnostics.
  5. Replace faulty part.
- Used to minimize time and errors in repair.

Q5. Describe the limitation of diagnostic software.

- Cannot always detect intermittent faults.
- May not identify physical damage.
- Limited to the scope of its programmed tests.

- Some tools may require paid versions for full functionality.

Extra Important Questions

Q1. Difference between Preventive Maintenance and Corrective Maintenance.

- **Preventive:** Regular scheduled maintenance to avoid problems.
- **Corrective:** Fixing a problem after it occurs.

Q2. What is POST (Power-On Self-Test)?

- A diagnostic test run by BIOS to check hardware before OS loads.

Q3. Why is proper ventilation important in PCs?

- Prevents overheating, which can cause system crashes and hardware damage.

Q4. What are common symptoms of failing hard drives?

- Clicking noises, frequent crashes, slow boot times, corrupted files.

Q5. Define ESD (Electrostatic Discharge). How to prevent it?

- Sudden discharge of static electricity that can damage PC components.
- **Prevention:** Use antistatic wrist strap, work on grounded surface.