# ✅ SECTION A

### ****Question 1 – DNS Server Setup****

* **Steps to install DNS role in Server Manager (Windows Server 2019)**
* Open **Server Manager** → click **Manage** → **Add Roles and Features**.
* Choose **Role-based installation** → select the server.
* Under **Server Roles**, tick **DNS Server**.
* Confirm features → click **Install**.

****Create a Forward Lookup Zone (logistics.local)****

* Open **DNS Manager**.
* Expand server → right-click **Forward Lookup Zones** → **New Zone**.
* Choose **Primary Zone** → store in AD (if domain joined).
* Enter **zone name = logistics.local** → Finish.

**Create an A (Host) record**

* In **logistics.local zone**, right-click → **New Host (A or AAAA)**.
* Enter Name = server01.
* Enter IP Address = 192.168.5.10.
* Tick "Create associated PTR record" (optional).

****Purpose of Reverse Lookup Zone****

* Maps **IP addresses → Hostnames** (opposite of forward lookup).
* Useful for troubleshooting and security logs.
* To configure: In DNS Manager → Right-click **Reverse Lookup**
* **Zones** → New Zone → Network ID = 192.168.5 → create PTR records.

**Verify DNS Resolution**

* Open CMD → ping server01.logistics.local → should resolve hostname.
* Use nslookup server01.logistics.local → should return 192.168.5.10.

### ****Question 2 – Windows Server 2019 Installation****

a. **Hardware & software requirements** (basic)

* CPU: 1.4 GHz 64-bit processor (min).
* RAM: 2 GB (min), 4 GB (recommended).
* Disk space: 32 GB (min).

**software**

* Network adapter + bootable installation media (DVD/USB/ISO).
* Drivers
* Licensing

b. **Desktop Experience vs Server Core**

**Desktop Experience** = full GUI, easier for beginners/admins.

**Server Core** = command-line only, fewer resources, more secure. (DNS, DHCP)

Choose based on admin skill and environment needs.

**c. **Steps for clean installation****

* Boot from **Windows Server 2019 media**.
* Select **language & keyboard** → click **Install Now**.
* Enter license key → select edition (Core/Desktop).
* Choose **Custom: Install Windows only**.
* Create/format partition → select → Install.

d. **Post-installation network configuration**

**Assign static IP**: Open **Network settings → Properties → IPv4** → enter IP, subnet mask, gateway, preffered DNS, alternate DNS.

**Rename computer**: Right-click **This PC → Properties → Rename this PC** → restart.

### ****Question 3 – DHCP Server Setup****

**a.Prerequisites**

* Installed **Windows Server 2019**
* Static IP Configured.
* Logged in as **Administrator**.
* IP addressing.
* Server is domain-joined (recommended).

**b.Steps to install DHCP Server**

* Open **Server Manager → Add Roles and Features**.
* Select **DHCP Server** role → install.
* After installation, open **DHCP Console** → authorize server in AD.

**c. Create DHCP Scope** (example given)

* Open **DHCP Manager** → IPv4 → New Scope.
* Enter Name: e.g. "OfficeScope".
* Start IP: 192.168.10.50 | End IP: 192.168.10.100.
* Exclusion Range: 192.168.10.1 – 192.168.10.20.
* Subnet Mask: /24 = 255.255.255.0.
* Lease Duration: **8 Days**.
* Configure Options: DNS Server = 192.168.10.2.
* Finish → Activate Scope.

# ✅ SECTION B

### ****Question 5****

a. **Network Hardening is the process of securing a network by reducing its attack surface.**

* Disable unused services/ports.
* Use firewalls, strong passwords, patching.
* Enable encryption (SSL/TLS).
* Apply least privilege

b. **Patch Management Importance**

* Fixes security vulnerabilities.
* Improves stability and performance.
* Prevents malware exploits.

c. **Troubleshooting Commands**

* **ping:** Tests connectivity to host/IP.
* **ipconfig/ifconfig:** Shows IP config (IP, DNS, gateway).
* **nslookup:** Tests DNS resolution.

d. **Causes of IP Conflicts**

* Two devices manually assigned same IP.
* DHCP server issues.
* Misconfigured static IPs.

**Detection/Resolution:** Use arp -a, network scanning tools, DHCP reservations, assign unique static IPs.