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**Q1:What is “DHCP, VLAN & DNS”, explain with Example**

### ****1. DHCP (Dynamic Host Configuration Protocol)****

* **What it does**: Automatically assigns IP addresses to devices in the network, saving time and avoiding manual configuration errors.
* **Example**:
  + A DHCP server dynamically assigns IPs (e.g., 192.168.10.2, 192.168.20.3) to PCs in VLAN 10 (IT) and VLAN 20 (HR).
  + Each PC receives a unique IP, default gateway, and DNS settings automatically.

### ****2. VLAN (Virtual Local Area Network)****

* **What it does**: Segments a single physical network into logical sub-networks for better management and security.
* **Example**:
  + VLAN 10 (IT): All IT department devices are grouped together.
  + VLAN 20 (HR): HR department devices are grouped separately.
  + Each VLAN communicates internally and can be routed via the router or Layer 3 switch for inter-VLAN traffic.

### ****3. DNS (Domain Name System)****

* **What it does**: Resolves domain names (e.g., www.example.com) to IP addresses.
* **Example**:
  + A DNS server in the network converts www.example.com to 93.184.216.34 so devices in VLANs can access the internet or internal services.