

Name: Aswath S

College: Vellore Institute of Technology, Vellore

Reg.No: 21BEC2188

Wi-Fi Training Program 2025

Module 5

Question 1:

What are the key features of Wi-Fi 6, 6E and 7 and how do they differ from previous standards like Wi-Fi 5 (802.11ac)?

| Feature | Wi-Fi5 (802.11ac) | Wi-Fi 6 (802.11ax) | Wi-Fi 6E (802.11ax) | Wi-Fi 7 (802.11be) |
|----------------------------|-----------------------|------------------------|------------------------|-------------------------------------|
| Release Year | 2014 | 2019 | 2020 | 2024 (expected widespread adoption) |
| Frequency Bands | 5 GHz | 2.4 GHz & 5 GHz | 2.4 GHz, 5 GHz & 6 GHz | 2.4 GHz, 5 GHz & 6 GHz |
| Max Channel Width | 80 MHz (160 MHz opt.) | 160 MHz | 160 MHz | 320 MHz |
| Modulation Scheme | 256-QAM | 1024-QAM | 1024-QAM | 4096-QAM |
| MIMO Support | 4×4 Downlink only | 8×8 UL/DL MU-MIMO | 8×8 UL/DL MU-MIMO | Enhanced UL/DL MU-MIMO + MLO |
| OFDMA | No | Yes | Yes | Improved |
| MU-MIMO | Downlink only | Uplink & Downlink | Uplink & Downlink | Enhanced |
| Target Wake Time (TWT) | No | Yes (power efficiency) | Yes | Enhanced |
| Peak Data Rates | 3.5 Gbps | 9.6 Gbps | 9.6 Gbps | Up to 46 Gbps |
| Latency Improvements | Moderate | Lower | Lower | Ultra-low (AR/VR ready) |
| Multi-Link Operation (MLO) | No | No | No | Yes (simultaneous multi-band use) |

| Feature | Wi-Fi5 (802.11ac) | Wi-Fi 6 (802.11ax) | Wi-Fi 6E (802.11ax) | Wi-Fi 7 (802.11be) |
|----------------|----------------------|----------------------------|--|------------------------------------|
| Use Case Focus | Video streaming | Dense environments, IoT | Same + less interference (6 GHz) | 4K/8K video, VR/AR, gaming, IoT |