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Wi-Fi Training Program 2025

Module 5

Question 2:

Explain the role of OFDMA in Wi-Fi 6 and how it improves network efficiency.

Solution:

OFDMA (Orthogonal Frequency Division Multiple Access) is a major contributor to Wi-Fi 6 (also referred to as 802.11ax), with a lot of network efficiency enhancement, particularly in areas with a large number of connected devices.

Role of OFDMA in Wi-Fi 6:

OFDMA supports several users who have different bandwidth requirements to be served at the same time by dividing up a Wi-Fi channel into smaller sub-channels referred to as Resource Units (RUs). One or more RUs can be dedicated to a unique user allowing simultaneous data transmission.

How It Enhances Network Efficiency:

Lower Latency: Devices don't have to wait for the entire channel to become available — they can send data in designated sub-channels immediately.

Improved Spectrum Efficiency: Multiple devices' small packets can be transmitted together, minimizing channel wastage.

Enhanced Throughput: Effective medium sharing results in higher data rates, particularly in high-density environments such as airports or sports stadiums.

Energy Efficiency: Transmission and waiting times for devices are minimized, preserving battery power — just what IoT needs.

Overall, OFDMA increases network capacity, alleviates congestion, and improves performance in today's high-density wireless systems.