I. Introduction to Wireless Technologies

A. Evolution Of Wireless	Wireless has evolved significantly from 1G to 5G
B. Importance in the Modern Era	Real-Time Data Exchange Technological Evolution Enhanced Productivity Ubiquitous Wi-Fi Enhanced Productivity Global Internet Connectivity
C. Key Challenges	Attenuation or Signal Loss Movement/ Time variance Multipath Fading/Interference Reach

II. Fundamentals of Wireless

A. Wireless Transm-ission Basics	The electromagnetic spectrum enables mobile communication through invisible waves.	
B. Types of wireless	Infrared\Radio Waves\Microwaves	Short-range\Long-distance\Line-of-sight
C. Wireless Network Components	Transmitter and Receiver\Ant-ennas and Signal Propagation-\Modulation Techniques	The transmitter converts information into signals &The receiver captures\Propagate through ground-wave, sky-wave, and line-of-sight modes\Transmitting data wirelessly in an interpretable form for receivers.

III. Wireless Network Architectures

A. Infrastructure Mode vs. Ad-hoc Mode	Between devices \Through an access point	slower \faster Range restricted to individual devices range \Range determined by access points
B. Mesh Networks: Enhancing Connectivity	provide better coverage, faster speeds, and easy setup.	
C. Cellular Networks and their Evolution	1G, 2G ,3G ,4G, 5G	

IV. Wireless Standards and Protocols

A. IEEE 802.11 (Wi-Fi)	Is a standard that governs wireless communication in local area, allowing devices to connect and exchange data .	WEP, WPA, WPA2, and WPA3 are crucial for securing Wi-Fi networks

IV. Wireless Standards and Protocols (cont)

B. Bluetooth and its Applications	Bluetooth is a short-range wireless technology standard that is used for exchanging data between fixed and mobile devices over short distances and building personal area networks (PANs).	Mobile Phone Connectivity, Wireless Speaker , File Transfer
C. 5G Technology	Benefits: Faster data transmission, real-time interactions, improved connectivity.	

V. Security in Wireless Networks

A. Types of Risks	Piggybacking , Wardriving, Evil Twin Attacks, Wireless Sniffing, Unauthorized Computer Access, Shoulder Surfing, Theft of Mobile Devices	

V. Security in Wireless Networks (cont)

B. Types of minimize Risks	Change Default Passwords , Restrict Access , Connect via VPN Check Security Options, Update Access Point Software, Use File Sharing Cautiously, Install Firewall, Change Default Passwords, Encrypt Data, Maintain Antivirus Software, Protect SSID,	

VI. Emerging Trends in Wireless Technology

A. Wireless Connectivity in IoT	The impact of the wireless in IOT on our lives:	Increased Efficiency , Enhanced Convenience , Enhanced Convenience , Personalized Experiences

VI. Emerging Trends in Wireless Technology (cont)

B. Edge Computing	dge computing in wireless networks represents a paradigm shift in how data is processed and services are delivered, bringing efficiency, speed, and new capabilities to various fields.
C. Artificial Intelligence	it helps in addressing issues with Wi-Fi radios, client connectivity, and potential security threats.