WIRELESS COMMUNICATION

Paper Code: ETEC-405   **L   T/P   C**
Paper: Wireless Communication   **3   1   4**

INSTRUCTIONS TO PAPER SETTER: **MAXIMUM MARKS: 75**
1**.** Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question. No. 1 rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The objective of the course is to introduce various wireless networks, mobile networks and their basic architecture starting from 2G through to 3G and 4G.

UNIT – I
Introduction To Wireless Communication Systems: Evolution of mobile radio communications; examples of wireless comm. systems; paging systems; Cordless telephone systems; overview of generations of cellular systems, comparison of various wireless systems.
Introduction to Personal Communication Services (PCS): PCS architecture, Mobility management, Networks signaling. A basic cellular system, multiple access techniques: FDMA, TDMA, CDMA.
Introduction to Wireless Channels and Diversity: Fast Fading Wireless Channel Modeling, Rayleigh/Ricean Fading Channels, BER Performance in Fading Channels, Introduction to Diversity modeling for Wireless Communications
                                                                                    [T1,T2][No. of Hrs. 11]

UNIT - II
2G Networks: Second generation, digital, wireless systems: GSM, IS_136 (D-AMPS), IS-95 CDMA. Global system for Mobile Communication (GSM) system overview: GSM Architecture, Mobility Management, Network signaling, mobile management, voice signal processing and coding. **Spread Spectrum Systems-** Cellular code Division Access Systems-Principle, Power Control, effects of multipath propagation on code division multiple access.
                                                                                    [T1,T2][No. of Hrs. 11]

UNIT - III
2.5G Mobile Data Networks: Introduction to Mobile Data Networks, General Packet Radio Services (GPRS): GPRS architecture, GPRS Network nodes, EDGE, Wireless LANs, (IEEE 802.11), Mobile IP.
Third Generation (3G) Mobile Services: Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G, Introduction to 4G.
                                                                                    [T1,T2][No. of Hrs. 11]

UNIT – IV
Wireless Local Loop (WLL): Introduction to WLL architecture, WLL technologies. Wireless personal area networks (WPAN): Blue tooth, IEEE 802.15, architecture, protocol stack. Wi-Max, introduction to Mobile Adhoc Networks.
Global Mobile Satellite Systems, Case studies of IRIDIUM and GLOBALSTAR systems.
                                                                                    [T1,T2][No. of Hrs. 11]

Text Books:
[T1]   Raj Pandya, "Mobile & Personnel communication Systems and Services", Prentice Hall India, 2001.
[T2]   Theodore S. Rappaport, "Wireless Communication- Principles and practices," 2nd Ed., Pearson Education Pvt. Ltd, 5th Edition, 2008.

Reference Books:
[R1]   T.L.Singhal "Wireless Communication", Tata McGraw Hill Publication.
[R2]   Jochen Schiller, "Mobile communications," Pearson Education Pvt. Ltd., 2002.
[R3]   Yi –Bing Lin & Imrich Chlamatac, "Wireless and Mobile Networks Architecture," John Wiley & Sons, 2001.

[R4]   Lee, W.C.Y., "Mobile Cellular Telecommunication", 2nd Edition, McGraw Hill,1998.
[R5]   Smith & Collins, "3G Wireless Networks," TMH, 2007
[R6]   Schiller, Jochen, "Mobile Communications", 2nd Edition, Addison Wesley