

## WIRELESS COMMUNICATION

**Paper Code: ETEC-405**

**Paper: Wireless Communication**

<b>L</b>	<b>T/P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>3</b>

### **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," 2<sup>nd</sup> 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", 2<sup>nd</sup> Edition, Addison Wesley