

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA IN ELECTRONICS & COMMUNICATION ENGINEERING**  
**SEMESTER: V**

Subject Name: **Telecommunication Techniques and Applications**

<b>Sr. No.</b>	<b>Course Content</b>
1.	<b>Introduction:</b> 1.1 Evolution of Telecommunication 1.2 Simple Telephone communication 1.3 Basics of a switching system 1.4 Major telecommunication networks
2.	<b>Electronic Space Division Switching:</b> 2.1 Stored program control 2.2 Centralized SPC 2.3 Distributed SPC and level 1, 2, 3, processing 2.4 Enhanced Services 2.5 Two stage networks and multistage networks
3.	<b>Speech Digitisation and Coding:</b> 3.1 Merits and demerits of digital speech transmission 3.2 PCM system for speech communication 3.3 Characteristics of speech signals 3.4 Differential pulse code modulation 3.5 Vcoders
4.	<b>Time Division Switching:</b> 4.1 Generalised time division space switch 4.2 Basic time division time switching 4.3 Time multiplexed space switching 4.4 Time multiplexed time switching 4.5 Combination switching 4.6 Three stage combination switching
5.	<b>Traffic Engineering:</b> 5.1 Network traffic pattern on a working day 5.2 Network traffic load and parameters 5.3 Grade of service and blocking probability 5.4 Delay systems
6.	<b>Telephone Networks:</b> 6.1 Subscriber loop system 6.2 Switching hierarchy and routing 6.3 Transmission plan 6.4 Numbering plan 6.5 Charging plan 6.6 Signaling techniques

7.	<b>Data Networks:</b> 7.1 Difference between voice traffic and data traffic 7.2 Switching techniques for data transmission: circuit switching, store and forward switching. 7.3 Local area networks: technologies, advantages, applications 7.4 Metropolitan area network 7.5 Fiber optic network 7.6 ISO OSI reference model: a brief introduction 7.7 Internet working
8.	<b>Integrated Services Digital Networks (ISDN):</b> 8.1 Introduction of ISDN 8.2 Motivation for ISDN 8.3 New services: videotex, E-mail, digital facsimile, teletex, database access 8.4 Network and protocol architecture. 8.5 Transmission channels 8.6 Signalling: user level, network level 8.7 Numbering and addressing 8.8 Interworking 8.9 Expert system in ISDN 8.10 Broadband ISDN

## Reference Books:

1. Telecommunication Switching Systems and Networks, T. Viswanathan, PHI.
2. Telecommunications Switching, Traffic and Networks, JE Flood, Pearson.
3. Using ISDN, James Y Bryce, PHI.