

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: **DATA AND COMPUTER COMMUNICATION**

Sr. No.	Subject Content	Hrs.
1	1.0 INTRODUCTION 1.1 Communication model 1.2 Data Communication Model 1.3 Data Communication network	3
2	2.0 DATA TRANSMISSION AND ITS MEDIA 2.1 Concept and terminology 2.1.1 Transmission terminology 2.1.2 Time domain concept 2.1.3 Frequency domain concept. 2.1.4 Relationship between data rate and bandwidth 2.2 Analog and Digital data transmission 2.2.1 Data and Signals 2.2.2 Transmission 2.2.3 Comparison of analog and digital transmission 2.3 Transmission media 2.3.1 Guided Transmission media 2.3.1.1 Twisted pair-shielded and unshielded 2.3.1.2 Coaxial cable 2.3.1.3 Optical fiber 2.3.2 Wireless transmission media 2.3.2.1 Terrestrial microwave 2.3.2.2 Satellite microwave	6
3	3.0 DATA ENCODING 3.1 Digital data, Digital signal 3.2 Digital data, Analog signal 3.2.1 Encoding Technique as ASK, FSK, PSK 3.3 Analog data, Digital signal 3.3.1 Pulse code modulation & Delta modulation 3.4 Analog data, Analog signal 3.4.1 AM, FM, PM (basic concept)	7

4	<p>4.0 DATA COMMUNICATION INTERFACE</p> <p>4.1 Asynchronous and Synchronous transmission</p> <p>4.2 Line Configuration</p> <p> 4.2.1 Topology</p> <p> 4.2.2 Simplex, half duplex and full duplex</p> <p>4.3 Interfacing</p> <p> 4.3.1 Important interfacing characteristic</p> <p> 4.3.2 Interfacing standards-RS 232 and ISDN</p>	5
5	<p>5.0 MULTIPLEXING</p> <p>5.1 Frequency Division Multiplexing</p> <p> 5.1.1 Characteristic</p> <p> 5.1.2 Analog carrier system</p> <p>5.2 Synchronous time division multiplexing</p> <p> 5.2.1 Characteristic</p> <p> 5.2.2 TDM link control, framing pulse stuffing, digital carrier system</p>	5
6	<p>6.0 SWITCHING AND FRAME RELAY</p> <p>6.1 Switching network</p> <p>6.2 Switching concept</p> <p>6.3 Circuit switching network</p> <p>6.4 Packet switching principles</p> <p>6.5 Comparison of circuit switching and packet switching</p> <p>6.6 Frame relay and its background.</p>	5
7	<p>7.0 INCLUDING IMAGES</p> <p>7.1 Protocol architecture</p> <p>7.2 Logical connection</p> <p>7.3 Cells</p> <p> 7.3.1 Format</p> <p> 7.3.2 Transmission</p> <p>7.4 ATM LAN configurations</p>	5
8	<p>8.0 PROTOCOL AND ARCHITECTURE</p> <p>8.1 Product characteristic and function</p> <p>8.2 OSI</p> <p> 8.2.1 Model, Principle and justification</p> <p> 8.2.2 OSI layer</p> <p>8.3 TCP/IP Protocol suite</p> <p> 8.3.1 Approach</p> <p> 8.3.2 Architecture and operation</p>	6
	Total	42

NOTE:- Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:	Hrs.
1. Study of different transmission media	2
2. Study of TCP/IP protocol	2
3. Study of ATM	2
4. Study of RS 232 and ISDN standard	2
5. Observe and measure important parameters of AM	2
6. Observe and measure important parameters of FM	2
7. Observe and measure important parameters of FSK	2
8. Observe and measure important parameters of TDM	2
9. Observe and measure important parameters of FDM	2
10. Observe and measure important parameters of PCM	2
11. Set Up and study NULL modem connection between two computers	4
12. Set UP and study Modem connection between two computers	2
13. A technical visit to one or more of the following ISP/ATM Banking center/telephone exchange/ TV station/Radio Station /VISA etc.	2
Total	----- 28

Reference Books:

1. Data & Computer Communication Williams Stallings PHI Pub.
2. Data Communication and networking S.Jaiswal Galgotia Pub.
3. Data Communication & Networking Forouzan TMH