TELECOMMUNICATION

EX 703

Lecture : 3 **Year : IV**
Tutorial : 1 **Part : I**
Practical : 3/2

Course Objectives:

To continue the study of modern communication systems, their characteristics and design.

1. Telecommunication Networks: **(4 hours)**

1.1 Evolution of telecommunications
1.2 Classification of switching system

2. Transmission Media: **(4 hours)**

2.1 Transmission media characteristics
2.2 Transmission lines
2.3 Hybrid Transformer and circuits
2.4 Signal and noise measurement

3. Signal Multiplexing: **(4 hours)**

3.1 Frequency division multiplex, Wavelength division multiplex
3.2 Space division multiplex
3.3 Time division multiplex; North American TDM system, The European E1

4. Digital Switching: **(8 hours)**

4.1 Digital Telephone Exchange
4.2 Space(S) Switch
4.3 Time(T) Switch
4.4 ST, TS, STS and TST switch
4.5 Comparison between TST and STS switch

5. Signaling System: **(4 hours)**

5.1 Classification of Signaling Systems: Channel Associated Signaling and Common Channel Signaling
5.2 ITU Common Channel Signaling System # 7 (SS7)

6. Telephone Traffic: **(9 hours)**

6.1 Network Traffic load and parameters
6.2 Loss System: Grade of service (GOS) and Blocking probability
6.3 Delay System: Queuing theory
6.4 Routing
6.5 Numbering Plans, Charging Plans

7. Telecommunication Regulation: **(2 hours)**

7.1. Purpose of ITU(International Telecommunications Union),
7.2. NTA(Nepal Telecommunications Authority)

8. Data Communication: **(10 hours)**

8.1 Switching Techniques in data Communication
8.2 IP Switching
8.3 Soft Switching
8.4 Routing and Flow control
8.5 ISDN
8.6 DSL

Practical: Six laboratory to illustrate course principles

References:

1. John C. Bellamy "Digital Telephony" John Wiley & Sons, Inc.
2. Roger L. Freeman "Telecommunication System Engg. " John Wiley & Sons, Inc.
3. A. S. Tanenbaum "Computer Networks" Prentice Hall.
4. Thiagarajan Vishwanathan, "Telecommunication Switching Systems and Networks",