Advanced Data Communication & Coding
IT705E
Contracts: 3L
Credits- 3

1. Prerequisites: Data and signals, Classification of signals, Communications systems, analog and digital communication systems, Applications of communication systems. [2L]

2. Digital Communication: Nyquist Sampling theorem, Inter-symbol interference and its removal, line codes (polar, unipolar, bipolar, Manchester), Detection error probability (polar, unipolar, bipolar), Digital Modulation techniques (ASK, FSK, BPSK, QPSK, QAM, PCM, DPCM, Delta Modulation, Adaptive Delta Modulation), Digital Transmission and Transmission Impairments. [10L]

3. Optical Networks: WDM, Telecommunication Infrastructure, Switching, SONET, PDH and SDH, bit interleaving, Architecture of Optical Transport Network, Link Management Protocols, Solutions. [8L]

4. Satellite Communication: Basic Transmission Theory, System Noise Temperature and G/T Ratio, Design Of Down Links, Domestic Satellite Systems Using Small Earth Stations, Uplink Design, Design Of Satellite Link For Specified (C/N). Multiple Access Techniques, Frequency Division Multiple Access (FDMA), TDMA, CDMA, Estimating Channel Requirements, Practical Demand Access Systems, Random Access, Multiple Access With On Board Processing, VSAT. [10L]

5. Mobile Communications: Mobile telephone service, Transmission protocols, Introduction to GSM, GPRS, CDMA, Switching techniques, Fading, Quality of service (QOS). [8L]

Books Recommended:
[1] Advanced Communication Systems by Wayne Tomasi; Pearson.
[2] Digital Communication by Proakis; PHI
[3] Optical Networks by Uyless Black; Pearson
[4] Satellite Communication by Timothy Pratt; Addison Wesley.