**C 504 - DIGITAL COMMUNICATION**

**DETAILED CONTENTS**

1. Introduction: (03 Periods)

Basic block diagram of digital and data communication systems. Their comparison with analog communication systems.

2. Sampling theorem and its basic concept. (10 Periods)

 - Use of Sampling Theorem

 - Introduction to PAM, PPM, PWM

 - Quantization and error of Quantization

 - PCM, DPCM, their advantage and disadvantage

 - DELTA and ADAPTIVE DELTA Modulation

 - concept of COMPANDING

 - Frequency hopping spread spectrum technique

3. Digital Modulation Techniques: (10 Periods)

 - Basic block diagram and principle of working of the following:

 - Amplitude shift keying (ASK): Interrupted continuous wave (ICW), two tone modulation

 - Frequency Shift keying (FSK)

 - Phase shift keying (PSK), Quadrature Phase Shift Keying (QPSK)

4. Characteristics/working of data transmission circuits: bandwidth requirements, data transmission speeds, noise, cross talk, echo suppressors, distortion, equalizers

 (10 Periods)

5. Modems: (10 Periods)

Need and function of modems, Mode of modems operation (low speed, medium speed and high speed modems). Modem interconnection, Modem data transmission speed, Modem modulation method.

6. Space and time switching: Working principle of STS and TST switches. (05 Periods)

**LIST OF PRACTICALS**

1. Observe wave forms at input and output of pulse code modulator with CRO.

2. Transmission of data using MODEM.

3. Observe wave forms at input and output of QPSK modulators

4. Observe wave forms at input and output of PSK modulators

5. Observe the working of space and time switching circuit.

RECOMMENDED BOOKS

1. Electronic Communication Systems by George Kennedy Tata McGraw Hill Education Pvt. Ltd, New Delhi

2. Communication system by A.K. Gautam S.K. Kataria Sons, Delhi

3. Electronics communication by K.S. Jamwal, Dhanpat Rai and Sons, Delhi

4. Digital Communication, Preeti Shirvastva, Ishan Publication

e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference: http://swayam.gov.in