

**Unit-I****Chapter 1 : Digital Communication System 1-1 to 1-12**

**Syllabus :** Elements of digital communication system with its block diagram : Source, Channel, Transmitter, Receiver, Advantages and disadvantages of digital communication, Communication channel characteristics : Bit rate, Baud rate, Bandwidth, Repeater distance, Applications.

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**Unit-I****Chapter 2 : Coding Methods and Error****Control****2-1 to 2-41**

**Syllabus :** Concept of entropy and information rate, Channel capacity : Hartley's law, Shannon Hartley's theorem, Source coding : Huffman coding, Channel / line coding : Error, Causes of error and its effect, Error detection and correction using parity, Checksum, Vertical Redundancy Check (VRC), Longitudinal Redundancy Check (LRC), Cyclic Redundancy Check (CRC), Linear block code, Hamming code, Line coding formats : Classification of line codes, Unipolar-RZ, RZ, NRZ-I, NRZ-L, Polar, NRZ and RZ Bipolar NRZ/AMI, RZ, Manchester split phase and differential Manchester, Polar quaternary and their waveforms.

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**Unit-II****Chapter 3 : Pulse Code Modulation  
Techniques****3-1 to 3-28**

**Syllabus :** Sampling and quantization process : Types of sampling, Nyquist sampling theorem (only statement), Aliasing effect, Quantization process, Quantization error / noise, Companding, Pulse Code Modulation (PCM), Differential pulse code modulation (DPCM) : Transmitter and receiver block diagram and its working, Advantages and disadvantages, Delta modulation (D.M.), Block diagram of transmitter and receiver, Slope overload and granular noise, Advantages and disadvantages of DM. Adaptive delta modulation (ADM) : Transmitter and receiver block diagram, Advantages and disadvantages of ADM.

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### Unit-III

#### **Chapter 4 : Digital Modulation Techniques 4-1 to 4-29**

**Syllabus :** Types of digital modulation techniques and their advantages, Concept of coherent and non-coherent detection, Shift keying techniques : Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), Differential Phase Shift Keying (DPSK), Quadrature Phase Shift Keying (QPSK), Constellation diagram, Transmitter and receiver block diagram and their working with waveforms, M-ary encoding : Need, M-ary FSK and M-ary PSK, Quadrature Amplitude Modulation (QAM) : Need, Transmitter and receiver block diagram and their working with waveforms, Constellation diagram.

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### Unit-V

## Chapter 6 : Spread Spectrum Modulation 6-1 to 6-16

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