Unit-I

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.

Unit-I

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.

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.

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.

Unit-IV

Chapter 5 : Multiplexing and Multiple Access 5-1 to 5-22

Syllabus : Need and methods of multiplexing : Time division multiplexing (TDM), Frequency Division Multiplexing (FDM), Code division multiplexing (CDM), Definition, Block diagram and their comparison, E and T carrier multiplexing hierarchy, Access techniques : Need and methods, Time division multiple access (TDMA), Frequency division multiple access (FDMA), Code division multiple access (CDMA).

Syllabus : Introduction to Spread Spectrum (SS) modulation, Advantages over fixed frequency, Applications of SS modulation, Block diagram of spread spectrum modulation system. Pseudo Noise (PN) sequence : Definition, Generation and maximum length sequence, Types of SS modulation : Direct sequence spread spectrum signal (DSSS) and frequency hopped spread spectrum (FHSS).

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