Subject Code : P8ELE3

MODERN COMMUNICATION SYSTEMS

Unit I

Modulation: Introduction – Amplitude modulation (Theory and Mathematical Analysis) – Power in an Am Wave – Vector representation – Block diagram of an Am transmitter – Collector modulation – Double side band modulator – single Side Bank suppressed carrier (SSB/SC) – Vestigial Side Band System (VSM)

Frequency modulation (Theory and Mathematical Analysis) – Frequency Spectrum of FM – Vector representation – Narrow Bank FM – Wide Bank FM – Varactor diode FM Modulator – Transistor Reactance FM Modulator

Phase Modulation (Theory and mathematical Analysis) – Vector Representation – Armstrong phase Modulatior – Pulse Width Modulation (PWM) – Theory and Pulse position Modulation

Unit II

Demodulation and Noise: Detectors – Practical Diode Am Detector – VSB Demodulator – Synchronous Detector – Phase – Licked Loop (PLL) – FM Discriminator Foster – Seeky FM Discriminator – Ration Detector Demodulation of PM

Noise in Communication system: Noise in Am System: Noise in FM system – Noise in Phase Modulated system – Noise in Pulse Modulated System.

Unit III - Digital Communication

Introduction to Digital Communication system _ Amplitude shift Keying (ASK) – Bank width and Spectrum frequency of ASK – Binary ASK Modulator – Coherent ASK Detector – Non Coherent ASK Detector – Frequency shift keying (FSK) – Bandwidth of binary FSK – detection of FSK using PLL – Phase shift keying (PSK) Generation of Binary PSK wave – Detection of Differential phase shift keying (DPSK) – DPSK Transmitter Generator – DPSK Demodulator – Advantage and disadvantage of Digital Communication

Unit IV

Broad band and satellite Communication: Time Division Multiplexing (TDM) – Frequency Division Multiplexing (FDM) – Computer communication – Microwave Service Digital Network (ISDN) – Broadband ISDN (BISDN) – Local Area network (LAN) – Bus topology – Star Topology – ring Topology – Hybrid Topology – Private Branch Exchange (PBX) – MODEMS

Communication Satellite Systematic Basic Components of Satellite Communication System – Telemetry, Tracking and Command System (Block Diagram) – Satellite Links – Uplink and Down Link – Commonly Used Frequency in Satellite Communication – Multiple Access – Error Detection

Unit V - MOBILE COMMUNICATION.

Evaluation and fundamentals – cellular structure and planning – frequency allocations – propagation problems – Base station antennas and mobile

antennas – type of mobile system – access methods – TDMA, FDMA and CDMA – DIGITAL Cellular Radio.

Books for Study:

1. SK. Venkatraman – Digital Communication, S. Chand
2. Arokh Singh and A.K. Chhabra – Principles of Communication Engineering – S. chand
3. Subir Kumar Sarkar – Optical Fibres and Fibre Optic Communication system – S. chand.
4. Wireless Communication Principles & Practice – TS. Rapport
5. BL. Theraja – Basic Electronics – S. chand

Books for Reference:

1. George Kennedy – Electronic Communication systems – Mac Graw Hill International 3 ed.
2. Roddy and Coolen – Communication electronics – PHI
3. B.P. Lathi – Communication System – Wiley Eastern
4. K. Samshanmugam, John Wiley – Digital and Analog Communication System
5. Robert M. Gaghardi – Satellite Communication – CBS Publication