ELECTRONICS

1 POWER SUPPLIES AND VOLTAGE STABILIZERS

1.1 Need for regulated power supply
1.2 Block diagram of a regulated power supply
1.3 Definitions and expressions of load regulation and line regulation
1.4 Block diagrams and examples of series and shunt regulators
1.5 Circuit diagram and working of Zener regulator
1.6 Limitations of zener regulator
1.7 Names and output voltages of positive and negative voltage regulators
1.8 Connection diagram of 78XX series
1.9 Connection diagram and output expression of LM 317 regulator
1.10 Designing a typical power supply

2 WAVE SHAPING CIRCUITS

2.1 Circuit diagram and output waveforms of positive clipper
2.2 Circuit diagram and output waveforms of negative clipper
2.3 Circuit diagrams and output waveforms of positive clamper
2.4 Circuit diagrams and output waveforms of negative clamper
2.5 Circuit diagrams, output expressions and waveforms of basic differentiating circuit
2.6 Circuit diagrams, output expressions and waveforms of basic integrating circuits
2.7 Circuit diagrams and working of summing amplifier, subtractor, comparator using op-amp only
2.8 LPF, HPF and BPF Circuits only

3 DIGITAL ELECTRONICS

3.1 Basic differences between combinational and sequential logic circuits
3.2 Definition and explanation of multiplexers
3.3 Logic symbol, truth table and circuit implementation of a basic multiplexer
3.4 Basic concepts of encoders and decoders
3.5 Logic symbol and truth table of a basic encoder circuit
3.6 Circuit diagram of a basic comparator
3.7 Symbols and truth tables to show the basics of SR and JK flip flops
3.8 Symbols and truth tables to show the basics of D and T flip flops

4 RADIO BROADCASTING

4.1 Need for modulation
4.2 Basic concept of AM
4.3 Expression for modulation index of AM
4.4 Frequency spectrum and bandwidth of AM
4.5 Relation connecting the total and carrier powers of AM signal
4.6 Basics of AM generation
4.7 Block diagram and working of a TRF receiver
4.8 Block diagram and working of a basic superheterodyne receiver
4.9 Comparison between AM and FM

5 COMMUNICATION SYSTEMS

5.1 Block diagram of a basic communication system
5.2 Designations of different frequency bands used for communication
5.3 Methods of propagation of waves as Ground waves and sky waves
5.4 Definitions of critical frequency and skip distance

6 DATA COMMUNICATION

6.1 Block diagram of PCM
6.2 Definitions of sampling, quantisation and encoding
6.3 Statement and equation of sampling theorem
6.4 Definitions of TDM and FDM
6.5 Waveforms of ASK, FSK and PSK

7 OPTICAL FIBER AND SATELLITE COMMUNICATION

7.1 Block diagram of optical fiber communication
7.2 Examples of light sources and detectors
7.3 Advantages of optical fiber communication system
7.4 Structure of optical fiber
7.5 Method of light propagation through OFC (TIR)
7.6 Definitions of dispersion and inter symbol interference
7.7 Applications of satellites

8 TELEVISION

8.1 Aspect ratio
8.2 Concept of interlaced scanning
8.3 Total channel bandwidth of TV
8.4 Block diagram of monochrome TV receiver

9 FUNDAMENTALS OF COMPUTERS

9.1 Block diagram of a computer
9.2 Definitions and examples of input and output devices
9.3 Definitions and examples of primary memory
9.4 Definitions and examples of secondary memory
9.5 Definition of system software, Language translators-compiler and assembler only
9.6 Concepts of machine, assembly and high level languages

10 INTERNET TECHNOLOGY

10.1 Definition and advantages of computer networking
10.2 Definition and different types of network protocols
10.3 Network topologies - Diagrams of bus, star and ring topologies only
10.4 Data communication devices - hub, switch and repeater
10.5 Definition and functions of MODEM
10.6 Concepts of LAN, MAN and WAN

11 BASICS OF TELEPHONE COMMUNICATION

11.1 Structure of PSTN
11.2 Concept of electronic exchange and its classification
11.3 Definition of cells - basic concept of frequency re-use
11.4 Basic concept of frequency re-use
11.5 Definitions of different types of cells