

SYLLABUS FOR THE POST OF SENIOR INSTRUCTOR



Subjects : Electronics and (Tele-) Communication Engineering

1. Basic Electrical Engineering: **DC networks**, Single phase AC circuits, Magnetic circuits, **Three-phase AC circuits**
2. Network Theory: **Overview of Network Theorems**, Two Port Networks and Network **Functions**, Resonance and Coupled Circuits, Laplace Transform for Network Analysis, **Network Synthesis**, Network Topology, Passive Filter
3. Electronic Circuits: **Amplifiers Design and Analysis** - Single Stage and multi stage, **Feed Back Amplifier**, Oscillators.
4. Electronic Devices: **Energy Bands and Charge Carriers in Semiconductors**, PN Junction **Diode**, **Bipolar Junction Transistor**, Field Effect Transistor
5. Analog System Design: **Fundamentals of Operational Amplifier**, Linear Op-amp Circuit, **Non-linear Circuit Applications**, Signal Generators, Limitations of Practical Op-amps, **Voltage Reference**, Voltage Regulators, D/A and A/D converters, Active Filters.
6. Digital Electronic Circuits: **Basics of Digital Electronic Circuits**, Logic gates, Boolean **Algebra**, **Combinational logic circuits**, Sequential logic circuits, Logic Families
7. Digital System Design: **Basics of VHDL**, HDL Modeling of Combinational Logics, HDL **Modeling of Sequential-Circuit Building Blocks**, Memory and Programmable logic
8. Signals and Systems: **Basic of Signals and Systems**, LTI Systems, Fourier Analysis – **continuous time and discrete time**, Sampling and Reconstruction, Laplace Transform.
9. Analog Communication: **Amplitude Modulation**, Angle Modulation, Radio Receivers, **Noise**, **Pulse Modulation**
10. Digital Communication : **Information Theory**, Pulse Modulation, Signal Space Analysis.
11. Wireless Communication: **Basics of Wireless Communication**, Cellular Concept.
12. Antenna and Wave Propagation: **Electromagnetic Theory**, Basic Concepts of Antenna, **Antenna Arrays**, **Practical Antennas**, Matching Network, Wave Propagation
13. Microprocessor: **Architecture of Microprocessor**, Programming of Microprocessor, **Data Transfer**, **Interfacing**, **Advanced microprocessors**
14. Microcontrollers and Embedded System: **Basics of Microcontrollers**, 8051 **Microcontroller**.
15. Instrumentation and Electronic Measurements: Measurement and Error, Bridges, **Electromagnetic Instruments (D – Arsonval, etc.)**, Electronic Instruments (Multimeter, Frequency Meter, Oscilloscopes, Digital Storage Oscilloscopes, etc.).