

Syllabus for the post of Lecturer

Notification Sl. No. 1

Qualification – 1<sup>st</sup> class Master Degree in Electronics & Communication Engineering

### **Electronic Instrumentation**

- Measurement and error
- Ammeters, voltmeters and multimeters
- Digital voltmeters & digital instruments
- Oscilloscopes
- Signal generators
- Measuring instruments
- Bridges
- Transducers

### **Electromagnetic engineering**

- Coulomb's law, electric field intensity and flux density
- Gauss's law and divergence
- Energy, potential and conductors
- Poisson's and Laplace's equations
- Steady magnetic field
- Magnetic forces
- Magnetic materials
- Time-varying fields and maxwell's equations
- Uniform plane wave

### **Digital VLSI design**

- Mos transistor
- Mos inverters-static characteristics
- Dynamic logic circuits
- Semiconductor memories
- BICMOS logic circuits, chip input and output (i/o) circuits

### **Control engineering**

- Introduction to control systems
- Time response of feedback control systems
- Stability analysis
- Frequency domain analysis and stability
- Digital control system

### **Embedded system**

- Introduction of embedded system
- Models and architectures

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- Specification languages: systemc
- Uml for embedded systems
- Real-time systems
- Real-time operating systems (rtos)
- Networked embedded systems (nes)
- Hw-sw co-design

**Digital signal processing**

- Introduction to digital signal processing
- Multirate digital signal processing
- Linear prediction and optimum linear filters
- Adaptive filters: applications of adaptive filters
- Parametric & non parametric methods for power spectrum estimation

**Communications systems**

- AMPLITUDE MODULATION
- DOUBLE SIDE BAND-SUPPRESSED CARRIER MODULATION
- SINGLE SIDE BAND AND VESTIGIAL SIDEBAND METHODS OF MODULATION
- ANGLE MODULATION
- RANDOM VARIABLES & PROCESS
- NOISE IN ANALOG MODULATION
- DIGITAL REPRESENTATION OF ANALOG SIGNALS

**Simulation, modelling and analysis**

- Basic simulation modeling
- Review of basic probability and statistics
- Building valid, credible and appropriately detailed simulation models
- Selecting input probability distributions
- Generating the random numbers & random variates
- Output data analysis for a single system

**Automotive electronics**

- Automotive fundamentals overview
- Actuators
- Air/ fuel system
- Sensors
- Electronic engine control
- Vehicle motion control

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- Communication
- Automotive instrumentation

**Programmable logic controllers**

- Technical definition of PLC
- Introduction to logic
- PLC counter
- Data movement instructions
- Industrial communication & networking

