



## RECRUITMENT CELL

**NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI – 620 015.**

### **Syllabus for the Skill and Main Tests for the post of Technical Assistant**

#### **Group I - Circuit Branches**

Basics of Circuit analysis - Node and mesh analysis, superposition, Thevenin's theorem, Norton's theorem, reciprocity. Sinusoidal steady state analysis: phasors, complex power, maximum power transfer. Time and frequency domain analysis of linear circuits: RL, RC and RLC circuits, solution of network equations using Laplace transform.

Basics of analog electronic devices - Characteristics of PN Junction diode, Zener diode, BJT, MOSFET, FET, LED, Photo diode and Solar cell

Basics of digital electronics, Number systems, Combinational logic circuits and Sequential logic circuits.

Linear Integrated Circuits – Op-amps, summers, differentiators, integrators, active filters, Schmitt triggers and oscillators

Basics of Microprocessors and microcontrollers, Assembly language Programming, Basics of Programming in C and Data Structures, Basics of Databases, Operating Systems, Computer Networks, UTM / Firewall, Passive & Active Network (Switching & Routing, Wireless, Transmission Media), Web Technologies & Internet

Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, Digital communications: PCM, DPCM, digital modulation schemes (ASK, PSK, FSK, QAM), bandwidth, inter-symbol interference, MAP, ML detection, matched filter receiver, SNR and BER.

Basics of Electrical Machines - DC Machines, Single-Phase & Three Phase AC Machines, Single-phase and Three-phase Transformers, Auto-transformers.

Basics of Instrumentation and Control Systems, Appropriate usage of measuring instruments – MI, MC ammeter & volt meters and watt meter, energy meter, tachometer, digital multimeter, DSO, Analog and Digital IC Tester,

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