

## **Syllabus for M.E. (Electronics) Entrance Test.**

### **Circuits and Networks:**

Solution methods: Nodal and mesh analysis, Network theorems for ac and dc circuits, Wye-delta transformation. Time domain and Frequency domain analysis of RLC circuits. Two port network parameters: z, y, h parameters.

### **Analog/ Digital devices and circuits:**

Circuits of Zener diode, BJT, and JFET. Simple diode circuits: clipping, clamping, rectifier. Biasing and bias stability of transistor and FET. CE, CC, and CB configurations of BJT. Amplifiers: single and multistage, feed back, and frequency response of the amplifier. OP-AMP circuits: amplifiers, filters, oscillators, wave shaping circuits. Boolean algebra, logic gates, combinational circuits, sequential circuits, digital to analog and analog to digital conversion. Microprocessor (8085): programming, memory and I/O interfacing.

### **Signals and Systems:**

Laplace Transform, continuous time and discrete time Fourier series, continuous time and discrete time Fourier transform, z-transform, Sampling theorem, Linear time invariant systems and their properties.

### **Communications:**

Random signals and noise: probability, random variables, probability density function, autocorrelation, power spectral density. Analog communication systems: amplitude, angle modulation and demodulation systems, spectral analysis of these operations. Superheterodyne receivers. Fundamentals of Broadband: ISDN, BISDN, ATM.

### **Electromagnetics:**

Boundary conditions, Maxwell's equations, Wave equation, Poynting vector. Plane waves: propagation through various media, reflection and refraction; skin depth. Transmission lines: characteristic impedance; impedance transformation; Smith chart; impedance matching. Basics of Antennas: Dipole antennas; radiation pattern; antenna gain.