SYLLABUS FOR BCS (WRITTEN) EXAMINATION

INFORMATION AND COMMUNICATION TECHNOLOGY (POST RELATED)

Subject Code: 281
Total Marks-200

PART-I
Marks: 100

Basic Physics

Basic elements: charge, Coulomb's law, electric field, Gauss's law, electric potential, magnetic field; Faraday's law, Maxwell's equations, Waves and oscillations, Theory of special relativity, Electromagnetic waves, Photoelectric effect, Quantum theory of light, X-ray and X-ray diffraction, Compton effect; De Broglie waves, Phase and group velocity, Wave function and wave equation.

Introduction to Computer Systems

Introduction to computations; Early history of computing devices; Computers; Major components of a computer; Hardware: processor, memory, I/O devices; Software: Operating system, application software; Basic architecture of a computer; Basic Information Technology; The Internet; Number system: binary, octal, hexadecimal, binary arithmetic.

Electrical Circuits

Circuit variables and elements: voltage, current, power, energy, independent and dependent sources, resistance; Basic laws of electrical circuits: Ohm's law, Kirchoff's current law (KCL) and Kirchoff's voltage law (KVL); Simple resistive circuits: series and parallel circuits, voltage and current division, source transformation; Methods of analysis: nodal and mesh analysis; Circuit theorems: Thevenin's, Norton's and superposition theorems, maximum power transfer and reciprocity theorem; Capacitors and inductors: inductors and capacitors, their characteristics, series-parallel combination of inductors and capacitors; RLC Transients.

Series and parallel AC circuits: impedance and phasor diagram, series and parallel networks, voltage divider rule, admittance and susceptance; mesh and nodal analysis, wye-delta and delta-wye conversions; superposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem.

Digital Logic Design

Digital logic: Boolean algebra, De Morgan's Theorems, logic gates and their truth tables, canonical forms, combinational logic circuits, minimization techniques; Arithmetic and data handling logic circuits, decoders and encoders, multiplexers and demultiplexers; Combinational circuit design; Flip-flops, race around problems; Counters: asynchronous counters, synchronous counters and their applications; PLA design; Synchronous and asynchronous logic design; State diagram, Mealy and Moore machines; State minimizations and assignments; Pulse mode logic; Fundamental mode design.