

SYLLABUS FOR WRITTEN TEST

POST NAME : TECHNICAL ASSISTANT (ELECTRONICS)

Qualification: 3 Year Diploma in Electronics Engineering

BASIC MATHEMATICS

Partial fractions, Matrices and Determinants, Trigonometric functions & their inverse functions, Differential Calculus – Limits, Differentiation, Integration, Applications of derivatives , Vector Algebra – Vectors, Dot product, Cross product , Complex numbers, Permutations and Combinations, Binomial theorem

BASIC ELECTRONICS

Active and Passive parts, AC fundamentals and Waveforms, Network theorems – Superposition, Thevenin's, Norton's, Superposition, Series and Parallel Resistive / Capacitive/ Inductive circuits – Phase angle, power factor, Resonance , Q-factor, Impedance, Basics of Transformers, Semiconductor Basics & Devices – PN Junction/ Zener Diodes, Bipolar / Uni Junction Transistors, Junction / Metal Oxide Field Effect Transistors, and its characteristics

ELECTRONICS CIRCUITS

Wave Shaping circuits - RC differentiator & Integrator, Clipper, Clamper, Voltage doubler circuits, Rectifier circuits, BJT biasing & different configurations – Common Emitter, Common Collector, Common Base , Current & Voltage gains, Load line analysis, Applications of transistors as switches and amplifiers, Multistage amplifier circuits, Tuned and Power amplifiers, Feedback amplifiers, Filter circuits, Oscillator circuits – Principle and Common types

DIGITAL ELECTRONICS

Boolean Algebra, Logic gates – Types & Truth table, Combinational logic circuits – Adders and Subtractors, Comparators, Multiplexers and De multiplexers, Encoders and Decoders, Sequential logic circuits - Flip flops, Registers and Synchronous /Asynchronous counters – Common types & configurations , Different number systems and conversions – Decimal, Binary, Octal, Hexadecimal , Karnaugh Maps, Universal logic gates - NAND and NOR gates, Logic families

LINEAR INTEGRATED CIRCUITS

Scales of integration – Types and technology, Operational Amplifiers – Basics, characteristics, Inverting and Non-inverting configurations, Applications as Amplifiers, Wave shaping, Filters, Oscillators, Comparators , Instrumentation amplifiers, Wienbridge circuits , Schmitt trigger circuits , Timer IC and Phase locked loop concepts , Voltage regulators, Analog to Digital Converters and Digital to Analog Converters – Fundamentals

MICROCONTROLLER

Architecture of Microcontroller 8051 – Block diagram, Instruction set, Assembly language programming, Microprocessor – Basics

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INSTRUMENTATION

Basic measuring instruments and applications – Permanent Magnet Moving Coil Instruments (PMMC), Moving Iron type Instruments (MI) Electro Dynamo Type Instruments, Electronic instruments and applications – Voltmeters, Multimeters, Meggers, Oscilloscopes, Signal generators, LCR meters, Wheatstone Bridge circuits, Working Principles and Application of Transducers- LVDT, Strain gauge, Potentiometer, Thermistor, Thermocouple, RTD, Piezo electric, Load cell.

COMMUNICATION

Propagation of waves, Antenna –Basics, Radio receivers, Communication methods –Amplitude / Frequency Modulation, De-modulation and characteristics, Pulse Modulation –basics, Sampling theorem

COMPUTER AND EMBEDDED SYSTEMS

Computer- Fundamentals, Operating systems, Languages, Networking – Protocols, Topologies, Embedded systems – Basics and Applications, Hardware and Software components