

SYLLABUS FOR THE POST OF TECHNICIAN : ELECTRONICS & COMMUNICATION ENGINEERING

Mental Ability, Reasoning and Mathematical Skills :

Analogy, series completion, coding-decoding, blood relations, logical venn diagrams, alphabetical test, number ranking and time sequence test, *mathematical* operations, arithmetical *reasoning*, data interpretation, data sufficiency, cubes and dice, construction of sequences and triangles.

Mathematics based on tenth standard of CBSE

Computer awareness

Components of a computer system, specifications of a computer system, Input and output devices and installation of printers and other input output devices., Introduction to Internet and Internet Applications, MS windows, MS-Word, MS-Excel, MS Power Point, MS Access, Computer Networking, Computer shortcut keys, Virus and virus protection, Operating System types.

English Language Proficiency

English language based on tenth standard of CBSE

Post Specific

- 1) **Basic Electronics, devices and circuits:**
Semiconductor Physics, Diode, Bipolar-Transistors, Transistor Biasing Circuits, FET. Amplifiers and Oscillators, Wave Shaping Circuits, Multivibrator Circuits and Operational Amplifiers. VCO, PLL and their Applications. Knowledge of hardware used in electronics labs multimeter, CRO, signal generator, LCR meter, single phase, three phase and regulated power supply. Cables, connectors and switches.
- 2) **Electrical circuits:** Familiarisation with active and passive components; Circuit laws and their applications. Fundamentals of DC and AC Circuits, Circuit Theorems, Voltage and Current Sources, EMI, Batteries.
- 3) **ELECTRONIC INSTRUMENTS AND MEASUREMENT:** Basics of Measurements, Sensors & Transducers, CRO, DSO, Voltage, Current and Resistance Measurement Signal Generators and Analytical Instruments, Digital Instruments.
- 4) **PRINCIPLES OF COMMUNICATION ENGINEERING: Analog and Digital**
Need for modulation, Amplitude, frequency and phase modulation and demodulation. AM/FM Transmitters, Radio Receivers, Antennas, Different modes of wave propagation and typical areas of application. Digital communication: Coding, Modulation Techniques, Modems, Characteristics and working of data transmission circuits, Wireless Communication, Mobile Communication Systems, Introduction to 3G, 4G.

- 5) **DIGITAL ELECTRONICS:** Difference between analog and digital signal. Number System , Codes and Parity, Logic Gates and Families , Logic Simplification, Arithmetic circuits, Decoders, Multiplexers and De-Multiplexers, Latches and flip flops, Shift Register, Counters, A/D and D/A converters.
- 6) **NETWORK FILTERS AND TRANSMISSION LINES:** Symmetrical Network, Asymmetrical Network, Attenuators, Filters Prototype Filter, M-Derived Filter, Crystal Filters and active filters .Transmission Lines.
- 7) **POWER ELECTRONICS:** Thyristors and other Power Electronics Devices, SCR, DIAC, TRIAC, UJT, Controlled Rectifiers, Inverters, Choppers, Dual Converters and Cyclo converters. Thyristorised Control of AC &DC Electric drives.UPS
- 8) **MICROPROCESSORS, MICROCONTROLLERS AND EMBEDDED SYSTEM:** Architecture of 8085Microprocessor, Memories and I/O interfacing, Programming, Instruction Timing and Cycles, Interrupts, Peripheral devices, Architecture and instruction set of 8086 Microprocessor. Architecture and instruction set of 8051 Microcontroller. Assembly/C programming (KEIL) for Micro controller, interfacing, PIC, ARDUINO- architecture and programming.
- 9) **ELECTRONICS DESIGN AND SIMULATION TECHNIQUES:** Testing of active and passive components, assembly of components, soldering techniques, PCB Fabrication, PSpice/ ORCAD/EDA based Circuit Simulations.
- 10) **AUDIO VIDEO SYSTEMS:** Microphones and Loudspeakers, Digital Audio Fundamentals , Television fundamentals, colour television, Digital Video, Compression Techniques and Standards, Digital Television-Transmission and Reception, Projection Display Systems and Television. Home Theatre.
- 11) **VLSI DESIGN:** Overview of VLSI, VHDL Programming, Combinational & Sequential circuit design, CPLDs & FPGAs.
- 12) **MICROWAVE:** Introduction to Microwaves, Microwave Devices, Wave Guides, Microwave Components
- 13) **COMPUTER NETWORKS:** Networking Basics, Cables & Connectors, Network Trouble shooting techniques, Wireless Networking.