Name of the Post: Technical Assistant Gr.II (Jr. Electronics Technician)

PHASE II
SYLLABUS FOR WRITTEN TEST (Objective Type)

 # Practical knowledge in the Electronics Engineering area related to different areas listed below.

- Basic principles of electricity, components, circuits, and safety,
- Soldering and rework: Hands-on training in soldering and reworking components on circuit boards and cables.
- Electronic troubleshooting and repair: Techniques for diagnosing and repairing electronic equipment, including using multimeters, oscilloscopes, and other diagnostic tools.
- Soldering and rework: Hands-on training in soldering and reworking components on circuit boards and cables.
- Studio equipment and signal flow: Understanding studio equipment such as mixers, amplifiers, speakers, microphones
- Digital Audio Workstations (DAWs): Introduction to DAWs, including recording, editing, mixing, and mastering techniques.

1. **Fundamentals of Electrical Engineering**

Basics of Electrical Components and circuits – Electrical Quantities - Ohm's law - Kirchoff's laws -Resistance in series and parallel combinations - Current and Voltage division rules - Mesh analysis and Nodal analysis - Elementary concepts of Magnetic circuits – AC circuits fundamentals - Sinusoidal functions - R.M.S and Average values for Sinusoidal waveform - Phasor representation - Sinusoidal excitation applied to purely resistive, inductive and capacitive circuits - RL , RC and RLC series circuits - power and power factor - three phase circuits with balanced load.

2. **Basics of Electronics**

PN Diode – Rectifiers – Clippers – Clampers – Zener Diode – Laser Diode – LED – SCHOTTKY BARRIER Diode – VARACTOR Diode - TUNNEL Diode - Bipolar Junction Transistor – PNP and NPN Transistor - Working of transistor - different operating regions for transistor - CB, CE and CC configuration – Transistor as a switch, Transistor as an amplifier - Crystal Oscillator - JFET – MOSFET - TRIAC – DIAC – UJT - SCR – LCD – CCD – LDR –

Photo Transistor – Solar Cell – PLASMA – Basics of analog and digital ICs.

3. Basics of Computers

Digital Electronics - Number systems – Binary arithmetic - Boolean algebra, laws & theorems – Boolean Functions - Simplification of Boolean functions - Logic gates - Implementation of Boolean expressions using logic gate - Standard forms of Boolean expression. Concept of Microcontroller and Microprocessor – Basic Computer organization – CPU – Computer Arithmetic – Memory – I/O Devices and interfacing – Operating Systems.

4. Analog and Digital Communication

Communication Systems – Transmitters – Noise – Receivers – AM, FM and Pulse Modulation -Demodulation - Sampling and Quantization - Digital Modulation Techniques – Error detection and control – Basics of Antennas, Transmission lines and Waveguides – Basics of Satellite Communication – Basics of Wireless communication.

5. Audio and Video Engineering

Microphones and Loudspeakers - Digital Audio Fundamentals - Television fundamentals - Basic Television System – Scanning principles – Composite Video signal – Television standards – Pick-up devices – Cameras – Microphones - Color Television Signals and Systems – Digital Video, Compression Techniques and Standards - Studio Equipment, Organization and Control – Television Transmission and Relay Systems – Television Antenna systems – Broadcast Television Receivers – VSAT - CCTV, CATV and Satellite Television - Digital Television – Advanced Television Systems – Audio and Video Recording Systems – Testing, Alignment and Servicing of Studio equipment - Transmission and Reception, Multimedia - Projection Display Systems and Television. Home Theatre, Smart TV – Bluetooth - OTT (over-the-top) Platform.

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DIRECTOR