SYLLABUS FOR WRITTEN TEST & TRADE TEST FOR THE POST OF JUNIOR TECHNICAL ASSISTANT (ELECTRICAL ENGINEERING) (Post Code – 5211)

(A) WRITTEN TEST ***(60 Marks)***

Devices and Circuits: Circuit Theorems; Semiconductor Devices and their biasing Circuits: Rectifiers, filters, amplifiers, Operational amplifier and its circuits; interfacing with Arduino **DC/AC Circuit Analysis**: Single and Three Phase circuits, Power electronic devices and circuits: SCR controlled rectifier;

DC/AC Electrical Machines: DC Motor and Generator, Single and Three phase transformers, Induction and Synchronous motors.

Digital Electronics: Number systems, Combinatorial and Sequential circuits: Arithmetic circuits, Counters, shift-registers, and finite state machines.

Data converters: sample and hold circuits, ADCs and DACs; Semiconductor memories: ROM, SRAM, DRAM.

Embedded Systems: architecture, programming, memory and I/O interfacing

Signal Processing: Continuous and Discrete time signals, and their Fourier representations, sampling theorem; LTI systems and their properties, digital filter design techniques.

Communications: Analog and Digital communications concepts, Modulation/Demodulation concepts, Transmitter and Receiver, Channel capacity.

Control Systems: Feedback systems and their analysis, Bode plots, root loci, compensation techniques, transient and frequency response, PID controllers.

(B) TRADE TEST ***(40 Marks)***

The candidate will be allowed to choose two of the following four topics:

(i). Electrical/Electronic circuits: Operating electrical/electronic instruments and equipment's, testing and debugging of electrical/electronic circuit and systems, Arduino programming, FPGA programming.

(ii). Communications and Signal Processing: Implementing communication and signal processing related functions

(iii). Electrical machines and power engineering, and

(iv). Embedded Systems – programming of microprocessor/microcontroller

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