Syllabus for the posts of Assistant Engineer (Electrical)
in Haryana Police Housing Corporation Ltd.

Electrical Engineering

1. Electrical Circuits: Network theorems, Response of network to step, ramp, impulse and sinusoidal inputs. Frequency domain analysis. Two port networks, elements of network synthesis. Signal-flow graphs.
2. EM Theory: Electrostatics: Magnetostatics using vector methods. Fields in dielectrics in conductors and in magnetic materials. Time varying fields, Maxwell's equations. Planewave propagation in conducting & dielectric media, properties of Transmission lines.
3. Material Science (Electric Materials): Band Theory. Behaviour of dielectrics in static and alternating fields. Piezoelectricity. Conductivity of Metals. Super conductivity, Magnetic Properties of materials. Ferro and ferri-magnetism. Conduction in Semiconductors, Hall effect.
4. Electrical Measurements: Principles of Measurement. Bridge measurement of Circuit parameters Measuring Instruments. VTVM and CRO, Q-Meter, Spectrum analyser. Transducers and measurement of non-electrical quantities, Digital measurements, telemetering data recording and display.
5. Elements of Computation: Digital system, algorithms, flow-charting, Storage: Type statements, array storage, Arithmetic expression, logical expressions. Assignments statements, Programme structure, Scientific and Engineering applications.
6. Power Apparatus and Systems: Electromechanics: Principles of electro-mechanical energy conversion. Analysis of DC, synchronous and Induction Machines. Fractional horse-power motors. Machines in Control Systems. Transformers, Magnetic circuits and Selection of motor for drives. Power System: Power generation; Thermal, Hydro and Nuclear Power Transmissions, Coroma, Bundle conductors, Power System Protection. Economic operations, Load frequency-control, stability analysis.

7. Control Systems: Open-loop and closed loop systems, Response analysis, Root-locus technique, stability, compensation and design techniques. State-variable approach.

8. Electronics and Communications: Electronics: Solid state devices and circuits. Small signal amplifier design. Feedback amplifiers, Oscillators and operational amplifiers, FET circuits and linear ICs. Switching circuits Boolean algebra, Logic circuits, Combinational and sequential digital circuits. Communications: Signal analysis. Transmission of signals. Modulation and Detection. Various types of communication systems. Performance of communication systems.