HARYANA PUBLIC SERVICE COMMISSION

BAYS NO 1-10, BLOCK-B, SECTOR - 4, PANCHKULA

Announcement

It is hereby announced for the information of candidates who have applied for the posts of **Sub Divisional Engineer (Electrical) (Group-B) in Development & Panchayats Department, Haryana** in response to Advertisement No. 2/2026, that the Commission has decided as under:-

The Scheme/Pattern of Exam:-

1. Subject Knowledge Test

a) Time duration of exam: 03 hours.
b) Syllabus is enclosed.
c) The question paper will be in English language.
d) Total Marks: 150
e) Paper will be subjective type.
f) No candidate will be called for the interview /viva-voce test unless he/she secures a minimum of 35% marks in the test.
g) The number of the candidates called for interview will be three times, including bracketed candidates if any, of the number of advertised posts provided that they have secured the minimum cut-off marks of 35%
h) The weightage of the Subject Knowledge Test will be 87.5 percent.

2. Interview

a) The weightage of the interview will be 12.5%
b) Attendance at every Stage of Exam is Mandatory.

3. The final merit list will be prepared by adding the marks of the Subject Knowledge Test and interview.

Syllabus for Subject Knowledge Test:-

Section 1 : Electrical circuits

Network elements: ideal voltage and current sources, dependent sources, R, L, C, M elements; Network solution methods: KCL, KVL, Node and Mesh analysis; Network Theorems: Thevenin's, Norton's, Superposition and Maximum Power Transfer theorem: Transient response of dc and ac networks, sinusoidal steady- state analysis, resonance, two port networks, balanced three phase circuits, star- delta transformation. complex power and power factor in ac circuits.

Section 2 : Electromagnetic Fields

Coulomb's Law, Electric Field Intensity, Electric Flux Density, Gauss's Law, Divergence. Electric field and potential due to point, line, plane and spherical charge distributions, Effect of dielectric medium, Capacitance of simple configurations, Biot-Savart's law, Ampere's law, Curl, Faraday's law, Lorentz force, Inductance, Magnetomotive force, Reluctance, Magnetic circuits, Self and Mutual inductance of simple configurations.

Section 3 : Signals and Systems

Representation of continuous and discrete time signals, shifting and scaling properties, linear time invariant and causal systems. Fourier series representation of continuous and discrete time periodic signals, sampling theorem, Applications of Fourier Transform for continuous and discrete time signals, Laplace Transform and Z transform. R.M.S. value, average value calculation for any general periodic waveform

Section 4: Electrical Machines

Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency; Three-phase transformers: connections, vector groups, parallel operation; Auto-transformer, Electromechanical energy conversion principles; DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, speed control of dc motors; Three-phase induction machines: principle of operation, types, performance, torque-speed characteristics, no-load and blocked-rotor tests, equivalent circuit, starting and speed control; Operating principle of single-phase induction motors; Synchronous machines: cylindrical and salient pole machines, performance and characteristics, regulation and parallel operation of generators, starting of synchronous motors; Types of losses and efficiency calculations of electric machines

Section 5: Power Systems

Basic concepts of electrical power generation, ac and dc transmission concepts, Models and performance of transmission lines and cables, Economic Load Dispatch (with and without considering transmission losses), Series and shunt compensation. Electric field distribution and insulators, Distribution systems, Per- unit quantities. Bus admittance matrix, Gauss--Seidel and Newton-Raphson load flow methods, Voltage and Frequency control, Power factor correction, Symmetrical components. Symmetrical and unsymmetrical fault analysis, Principles of over-current, differential, directional and distance protection; Circuit breakers. System stability concepts. Equal area criterion.

Section 6: Control System

Mathematical modelling and representation of systems, Feedback principle, transfer function, Block diagrams and Signal flow graphs, Transient and Steady- state analysis of linear time invariant systems. Stability analysis using Routh- Hurwitz and Nyquist criteria, Bode plots. Root loci. Lag. Lead and Lead-Lag compensators; P, PI and PID controllers; State space model, Solution of state equations of LTI systems

Section 7: Electrical and Electronic Measurements

Bridges and Potentimeters, Measurement of voltage, current, power, energy and power factor, Instrument transformers. Digital voltmeters and multi-meters, Phase. Time and Frequency measurement: Oscilloscopes, Error analysis.

Section 8: Analog and Digital Electronics

Simple diode circuits: clipping, clamping, rectifiers; Amplifiers: biasing, equivalent circuit and frequency response; oscillators and feedback amplifiers; operational amplifiers: characteristics and applications; single stage active filters, Active Filters: Sallen Key, Butterwoth, VCOs and timers, combinatorial and sequential logic circuits, multiplexers, demultiplexers, Schmitt triggers, sample and hold circuits. A/D and D/A converters.

Section 9: Power Electronics

Static V-I characteristics and firing/gating circuits for Thyristor, MOSFET, IGBT; DC to DC conversion: Buck, Boost and Buck-Boost Converters; Single and three phase configuration of uncontrolled rectifiers: Voltage and Current commutated **Thyristor** based converters: Bidirectional ac to dc voltage source converters: Magnitude and Phase of line current harmonics for uncontrolled and thyristor based converters; Power factor and Distortion Factor of ac to dc converters: Single-phase and three-phase voltage and current source inverters, sinusoidal pulse width modulation.

Dated: 15/06/2026

Deputy Secretary
Haryana Public Service Commission
Panchkula