

No.A9/DR/Cl.I&II/ 2024-S



Dated :- 04.06.2025

NOTICE TO THE CANDIDATES REGARDING RECRUITMENT TO THE POST OF ASSISTANT ENGINEER (ELECTRICAL)

Reference : Advertisement No.A9/DR/Cl.I&II/ 2024-S Dated: 23.01.2025

Candidates who have successfully applied for the post of Assistant Engineer (Electrical) in Cochin Port is informed as under :-

- The date of examination is scheduled on 13.07.2025.
- The Centre of examination shall be at Ernakulum District.
- The Syllabus and pattern of examination is attached herewith.
- The candidates can download the Hall Tickets from the Online Application Portal, about one week before the examination by logging in with the user id and password provided to the individual candidates on registration. The online application portal link is as under :- <a href="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://career.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidate_reg_form.php?id=Mg=="https://careers.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.in/careers_cochin_port/candidates.itiltd.

Important Notes:-

1. Website Updates: Candidates are advised to regularly visit the career page of the official website of Cochin Port Authority www.cochinport.gov.in for further updates.

2. Documentation: This notice shall be treated as an integral part of the original advertisement.



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Pattern & Syllabus for examination for the post of Assistant Engineer (Elelctrical) (Class II) in Cochin Port Authority

I. Syllabus for both Objective type (Subject knowledge) & Descriptive type question paper

Electric Circuits

Network graph, KCL, KVL, Node and Mesh analysis, Transient response of dc and ac networks, Sinusoidal steady-state analysis, Resonance, Passive filters, Ideal current and voltage sources, The venin's theorem, Norton's theorem, Superposition theorem, Maximum power transfer theorem, Two-port networks, Three phase circuits, Power and power factor in ac circuits.

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.

Signals and Systems

Representation of continuous and discrete-time signals, Shifting and scaling operations, Linear Time Invariant and Causal systems, Fourier series representation of continuous periodic signals, Sampling theorem, Applications of Fourier Transform, Laplace Transform and z-Transform.

Electrical Machines

Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency; Three phase transformers: connections, parallel operation; Auto transformer, Electromechanical energy conversion principles, DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, starting and speed control of dc motors; Three phase induction motors: 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, regulation and parallel operation of generators, starting of synchronous motor, characteristics; Types of losses and efficiency calculations of electric machines.

Power Systems

Power generation concepts, ac and dc transmission concepts, Models and performance of transmission lines and cables, 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 overcurrent, differential and distance protection; Circuit breakers, System stability concepts, Equal area criterion.

Control Systems

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

Electrical and Electronic Measurements

Bridges and Potentiometers, Measurement of voltage, current, power, energy and power factor; Instrument transformers, Digital voltmeters and multimeters, Phase, Time and Frequency measurement; Oscilloscopes, Error analysis.

Analog and Digital Electronics

Characteristics of diodes, BJT, MOSFET; Simple diode circuits: clipping, clamping, rectifiers; Amplifiers: Biasing, Equivalent circuit and Frequency response; Oscillators and Feedback amplifiers; Operational amplifiers: Characteristics and applications; Simple active filters, VCOs and Timers, Combinational and Sequential logic circuits, Multiplexer, Demultiplexer, Schmitt trigger, Sample and hold circuits, A/D and D/A converters, 8085Microprocessor: Architecture, Programming and Interfacing..

Power Electronics

Characteristics of semiconductor power devices: Diode, Thyristor, Triac, GTO, MOSFET, IGBT; DC to DC conversion: Buck, Boost and Buck-Boost converters; Single and three phase configuration of uncontrolled rectifiers, Line commutated thyristor based converters, Bidirectional ac to dc voltage source converters, Issues of line current harmonics, Power factor, Distortion factor of ac to dc converters, Single phase and three phase inverters, Sinusoidal pulse width modulation.

Communication Techniques

Signal characterization: deterministic/random properties; Analog modulation: amplitude/angle techniques; Spectral analysis and noise performance; Digital transmission: pulse code modulation fundamentals; Digital modulation schemes and performance metrics; Multiple access techniques: time/frequency/code division; Error detection/correction strategies; Network protocols and layered architectures

II. EXAMINATION STRCUTURE

PART A. Descriptive Examination Structure (30 Marks)

Mark Distribution

- 7 Questions × 2 marks: Conceptual understanding (14 marks total)
- 2 Questions × 3 marks: Analytical reasoning (6 marks total)
- 2 Questions × 5 marks: Comprehensive problem-solving (10 marks total)

PART B. Objective Examination Structure (70 Marks)

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| 1. | Subject Knowledge (Electrical & Electronics Engineering) | - | 50 Qns |
| 2. | Numerical and Reasoning Ability | - | 10 Qns |
| 3. | General English & General Knowledge | - | 10 Qns |

Pattern of Exam

1. Time allocation: 3 hours [For PART A and PART B]

2. Objective Examination Protocols

- Uniform marking: 1 mark per correct answer
- Negative Marking: 1/4 mark deduction for incorrect answers
- No deduction for unattempted questions