



क्रमांक /No. IITBhilai/ESTT/Staff-Rec./2025/1650

दिनांक/Date: 30.10.2025

सूचना /NOTICE

Syllabus for the Post of Junior Superintendent (Technical) (Electrical) Against Lien Vacancy
– Advt. No. IITBhilai/Staff Rec./2025/03 Date:19.02.2025

All the candidates are expected to study the following syllabus for the post of Junior Superintendent (Technical) (Electrical) and prepare accordingly. No separate email intimating the syllabus will be sent to individual candidates by the institute. The institute will not be responsible for non checking/ delay in checking the syllabus by the candidate and claiming for any relaxation in this regard in the future.

Syllabus for written test and/or hands-on skill test

खंड/ Section	विवरण/Details
Hands-on skill test	Electric 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. 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

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	synchronous motors; Types of losses and efficiency calculations of electric machines. 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. Electrical and Electronic Measurements Bridges and Potentiometers, Measurement of voltage, current, power, energy and power factor; Instrument transformers, Digital voltmeters and multi-meters, Phase, Time and Frequency measurement; Oscilloscopes, Error analysis. 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 and Distortion Factor of AC to DC converters; Single-phase and three-phase voltage and current source inverters, sinusoidal pulse width modulation.
Knowledge of Work Procedures	CPWD procedures including approvals, estimation, tendering, execution, inspection, testing, billing, audit, and operation & maintenance. Practical understanding of manuals, quality control, and best practices in project execution.

The institute would intimate the schedule of the written test and Interview shortly on the website to the candidates who have been provisionally shortlisted.

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Recruitment Section

भारतीय प्रौद्योगिकी संस्थान भिलाई

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संक्षिप्त चयनित अभ्यर्थियों हेतु दस्तावेज सत्यापन की आवश्यकताएं/Document Verification Requirement for Shortlisted Candidates

The shortlisted candidates must produce all the documents in original for document verification to prove their claim about their eligibility, including Date of Birth, Education Qualification, PWD certificate, Service/Experience Certificate relevant to the post from their employer (past and current), Professional certification (if applicable), etc. IIT Bhilai reserves the right to determine the relevance of any professional experience to the post applied.

If the candidate is not able to produce all the relevant documents in the original form for document verification, and/or if the information provided by the candidate is found to be incorrect, the candidature will stand automatically cancelled without any further notice.

All concerned are hereby advised to keep visiting the institute website regularly for any further updates.



कुलसचिव/Registrar

भारतीय प्रौद्योगिकी संस्थान भिलाई (सेवानिवृत्त)

Wing Cdr. Dr. Jayesh Chandra S. Pai (Retd.)

कुलसचिव/Registrar

भारतीय प्रौद्योगिकी संस्थान भिलाई

Indian Institute of Technology Bhilai