



क्रमांक/No. IITBhillai/ESTT/Staff-Rec./2026/99

दिनांक/Date: 10.07.2026

सूचना /NOTICE

Syllabus for the Post of Junior Technical Assistant (7A, 7B, 7C & 7D)

Advertisement No. IITBhillai/ESTT/Staff Rec./2026/52 Dated: 06.03.2026

All the candidates are expected to study the following syllabus for the post of Junior Technical Assistant (7A, 7B, 7C & 7D) 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.

**Part – I : General Aptitude & Communication
(Applicable for all of 7A, 7B, 7C & 7D)**

- * **Mathematics:** Arithmetic (percentage, ratio, profit & loss, averages); Algebra and basic equations; Geometry and mensuration; Trigonometry basics; Data interpretation
- * **Logical Reasoning & Aptitude:** Number series; Analogies and classifications; Coding-decoding; Blood relations; Direction sense; Logical reasoning and problem solving
- * **English Language & Comprehension:** Vocabulary and grammar; Synonyms and antonyms; Error detection; Reading comprehension; Official communication basics
- * **General Scientific Awareness:** Basic engineering concepts; Units and measurements; Laboratory and workshop safety; Recent developments in science and technology
- * **Current Affairs**

Part – II : Technical Domain & Details of Trade/Skill Test

7A: Computer Science & Engineering / Information Technology /Software Engineering or equivalent discipline

- * **Fundamentals of Computer Science:** Data Structures and basic algorithms, Basics of Operating Systems, Basics of Computer Organization and Architecture etc.
- * **Programming and Database:** One or more Programming Languages such as Java, PHP, Python etc.; Front End Technologies: HTML, CSS, JavaScript, JQuery, AJAX, Responsive Framework etc.; Knowledge in creating websites, Restful API, Microservices, dynamic web applications etc.; Knowledge of SQL and RDBMS database engines.
- * **System Administration and Shell Script:** Windows and Linux system installation and administration, Computer Hardware and Printer Technical Support etc. - Create and manage virtual machines and Containers - User and group management, process monitoring, file system access control – Shell Scripting includes pipes, filters, redirections, Sed and Awk, File handling from programs, Socket programming etc.
- * **Computer Networks fundamentals:** Basics of computer network and Protocols, OSI Model, Transmission Media, Networking devices Network Topology, LAN Basics, IP Addressing, TCP/IP etc. – Installation and maintenance of Ethernet Advanced, Structured Cabling, Wireless networking, Knowledge of maintenance of networking equipment including Enterprise class, WiFi access points, Fiber Optics Management, Network Switch Configuration and Management etc. - Network security fundamentals.



	The Trade/Skill test will be conducted on one or more of following experimental /hands on facilities : * Programming /System administration and Networking
7B: Chemistry /Physics or any other Science discipline	Physics : * Units, dimensions, and error analysis; screw gauge, spherometer, laws of motion, work–energy–power, rotational motion, gravitation, elasticity, surface tension, viscosity, fluid mechanics; * Temperature scales, calorimetry, laws of thermodynamics, heat transfer; * SHM, sound waves, resonance, Doppler effect; * Ohm's law, Kirchhoff's laws, electrical circuits, capacitors, magnetic effects of current, electromagnetic induction; * Reflection,refraction, lenses, mirrors, optical instruments, interference & diffraction; * Photoelectric effect, semiconductors, diodes, transistors, basic,digital logic; * Multimeters, oscilloscopes, power supplies, sensors and their calibration. Chemistry : * Atomic structure, periodic table and periodicity of properties, * Chemical bonding and molecular structure, gas laws, solutions, concentration units, * Chemical thermodynamics and equilibrium, * Redox reactions, electrochemical cells, conductivity, organic, chemistry, acid–base, redox and complexometric titrations; * Fundamentals of organic and inorganic materials, bonds and properties. * Use of burette, pipette, standard solutions, pH meters, conductivity meters, UV-Visible spectrophotometers, colorimeters, glassware, apparatus etc. The trade tests will be conducted on one or more UG-level Lab experiments relevant to the topics listed above along with the following : * Laboratory equipment handling and safety; * Data recording, report preparation and computer proficiency
7C: Mechanical Engineering/ Material Science & Metallurgy Engineering or equivalent discipline	* Engineering Materials & Metallurgy: Engineering materials and their properties; Iron-carbon diagram and heat treatment; Ferrous and non-ferrous alloys; Material selection and applications * Manufacturing Processes: Casting, welding and forming; Machining operations; CNC and additive manufacturing basics; Workshop practices and safety. * Strength of Materials & Machine Elements: Stress, strain and elastic constants; Beams, shafts and springs; Basic machine elements and mechanisms * Thermal & Fluid Sciences: Fundamentals of thermodynamics; Heat transfer basics; Fluid properties and flow; Pumps and compressors * Metrology & Quality Control: Measurement systems; Vernier caliper, micrometer and gauges; Limits, fits and tolerances; Quality, control fundamentals * Materials Testing & Characterization: Tensile, hardness and impact testing; Metallography and microstructure; non-destructive,testing (UT, RT, PT, MT); Laboratory instruments and safety.



	The trade test will be conducted on one or more of following experimental/hands on facilities : * Use of measuring instruments (Vernier, Micrometer, Dial Gauge, etc.); * Workshop (fitting, machining, welding, etc.); * Materials testing and specimen preparation; * Reading engineering drawings; Basic CAD/CAM and CNC operations; * Laboratory equipment handling and safety; * Data recording, report preparation and computer proficiency
7D: Electrical Engineering /Electronics & Communication Engineering/ Instrumentation or equivalent discipline	* Electronic Devices & Circuits (EDC): PN junctions, Zener diodes, BJT, MOSFET, and their characteristics/biasing. * Analog Electronics: Diode circuits (clippers/clampers), rectifiers, amplifiers (feedback, power), and oscillators. * Digital Electronics: Number systems, logic gates, K-maps, multiplexers, decoders, flip-flops, counters, and ADC/DAC converters. * Signals & Systems: Continuous and discrete-time signals, LTI systems, Laplace transform, and Fourier transform. * Communication Systems: Amplitude Modulation (AM), Frequency Modulation (FM), PCM, and basics of digital communication. * Circuit Theory: Kirchhoff's laws, Network theorems (Thevenin, Norton, Superposition), transient response, and AC circuits. * Electrical Machines: Transformers, DC machines (generators/motors), induction motors, and synchronous machines (principles, testing, and performance). * Measurements & Instrumentation: Bridges, potentiometers, measurement of voltage, current, power, and energy. * Control Systems: Feedback systems, block diagrams, signal flow graphs, and stability criteria. The trade tests will be conducted on one or more UG-level Lab experiments relevant to the topics listed above along with the following: * Laboratory equipment handling and safety. * Data recording, report preparation and computer proficiency

The institute would intimate the provisionally shortlisted candidates list and schedule of the written test and Trade/Skill Test shortly on the website.

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



Jayant

कुलसचिव/Registrar

भा.प्रौ.सं. भिलाई /IIT Bhilai

कुलसचिव

Registrar

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Indian Institute of Technology Bhilai

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