

Syllabus for the Post of Junior Laboratory Assistant (Technical)
School of Mechanical & Materials Engineering-Mechanical Engineering
Post Code: 006

Advertisement No. IIT Mandi/Recruit./NTS/2025/05 dated 17.12.2025

There will be two-stage examination.

Stage I: Written Examination (Objective type MCQs)

Stage II: Skill/Trade Test

Syllabus of Stage-I:

Part A- Written Examination

Engineering materials and their mechanical properties and testing methods.

Basic principles and testing methods for fluid flow, pipe flow and losses, hydraulic machines.

Machining operations on lathe, drilling, milling, and grinding machines.

Design of casting patterns, moulds and cores, allowances, moulding sand composition and properties, different types of castings, solidification and cooling, riser & gating design, defects and their remedies.

Welding, Soldering and Brazing, and their applications in the electronics industry.

Forging, rolling, extrusion, drawing, sheet metal operations.

Nonconventional Manufacturing Processes and their applications.

Machining principles and concepts related to computer numerical control (CNC), programming, and tooling requirements for CNC/CAM machines.

3-D printing, Extrusion, Jetting, Design and fabrication processes - data sources, software tools, file formats, model repair and validation, post-processing.

Strength of Materials: Stress–strain relationships, bending and shear stresses, Torsion in shafts, Deflection of beams, Columns and buckling, theories of failures.

Design of Machine Elements: Design of shafts, Keys and couplings, Springs, Bearings, Fasteners (bolts, screws, rivets, welds).

Theory of Machines: Mechanisms and kinematics, Cam and follower mechanisms, Gear and gear trains, balancing of rotating masses, vibration.

Important Instructions for candidates:

General information about the exam:

- The MCQs have negative marking for wrong answers. The unanswered questions will not be considered for evaluation. (*i.e.*, no marks will be awarded for any question not attempted).
- Only one best-suited answer has to be given for any MCQ. More than one answer will be treated as wrong answer.
- Use of only blue or black ballpoint pen is permitted to answer the questions and fill the form in the exam hall. Use of ink pen/gel pen/pencil/whitener is not permitted.
- Use of calculator, cell phones, log book, periodic table, and any type of electronic device etc., are strictly prohibited.
- The medium of instruction/answers will be English only.
- Involvement in any malpractices will lead to disqualification
- Any additional instructions given during the selection process must be adhered/complied.

Final Selection:

- Examinations for Stage-I and Stage-II will be conducted for all the candidates or as decided by the selection committee.
- Final selection will be made on the scores obtained in the Stage-I, as the Stage –II is of qualifying nature. But if a candidate fails to qualify in Stage-II, her/his candidature will not be considered further.
- Please note that for consideration in the merit list, a candidate has to secure minimum marks fixed by the selection committee in both exams at Stage-I and Stage-II – failing which institute will not make an offer of appointment even if vacancies go unfilled.