

Final Syllabus and Scheme for the Post of Junior Laboratory Assistant (Technical)
School of Computing & Electrical Engineering- VLSI Labs
Post Code- 009
Advertisement No. IIT Mandi/Recruit./NTS/2025/05
Dated 17.12.2025

There will be two-stage examination.

Stage I: Written Examination (Objective type- MCQ)

Stage II: Skill/Trade Test

Syllabus:

I. Basic Electronics and Semiconductor Fundamentals

- Basic electronic components: Resistor, Capacitor, Inductor, Diode, BJT, and MOSFET
- Fundamental laws: Ohm's Law, Kirchhoff's Laws (KCL, KVL)
- Basic RLC based circuits
- Diode based circuits and their applications such as rectifier, peak detector, clipper, clamper circuits etc.
- Operational amplifier and its applications using IC741
- Inverting, non-inverting amplifiers, summing amplifier, differentiator, integrator, etc.

II. Digital Electronics

- Logic gates and truth tables
- Basic combinational circuits (MUX, DEMUX, Encoder, Decoder)
- Latches and flip-flops: RS, JK, D and T
- FPGA/embedded boards

III. Laboratory Instruments and Equipment

- Operation and usage of: Oscilloscope (CRO/DSO/MSO), Function Generator, Digital Multimeter (DMM), Regulated Power Supply, Spectrum Analyser, Logic Analyser etc.
- Active and passive probes;
- Basic circuit troubleshooting techniques
- Laboratory safety practices

IV. Fundamentals of VLSI

- Basic understanding of CMOS devices (NMOS and PMOS)
- Basic VLSI design flow (Design → Layout → Fabrication → Testing)
- CMOS inverter: concept and operation

V. PCB Design

- Basics of PCB identification and handling
- Soldering and de-soldering techniques
- Handling connectors, cables, and development boards
- PCB Design using any software-tool: Gerber file generation

VI. Linux and Basic Programming

- Basic Linux commands
- Basic understanding of any programming language (variables, loops etc.)

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.
- 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.