राष्ट्रीय प्रौद्योगिकी संस्थान गोवा
NATIONAL INSTITUTE OF TECHNOLOGY GOA
कुनकोलिम, जिला दक्षिण गोवा, गोवा, पिन-403703
Cuncolim, South Goa District, Goa, Pin–403703

Non-Teaching Staff Recruitment

(Advertisement No. NITGOA/Rect./2025/OW-07 dated 28.03.2025)

****

Exam Pattern for Level I (MCQs)

Scheme of Written Test	
Written test for the posts of Junior Engineer (Civil/Electrical Engineering) consists of Part-A and Part-B, a total of 45 MCQs carrying total marks of 45, which is as per details given below	
Level I: Part A (General)	15 Objective type multiple choice questions, carrying 01 mark each, with a total of 15 marks, based on the Syllabus. (15 marks)
Level I: Part B (Domain Specific)	30 Objective type multiple choice questions, carrying 01 mark each, with a total of 30 marks, based on the Syllabus. (30 marks)
Total	45 Objective type multiple choice questions (MCQs), carrying 01 mark each, with a total of 45 marks.
A negative marking of ¼ (0.25) mark will be applied for every wrong answer across all categories of posts No marks shall be awarded for any question that remains unattempted or left unanswered.	

Exam Pattern for Level II: (Skill Test)-Qualifying in nature

Assessment of technical proficiency using hands-on/ practical applications based examination tailored to Civil Engineering and Electrical Engineering

Instructions

1. The above tests (MCQ and Skill Test) will be based on the below-mentioned syllabus. The syllabus provided is indicative and not exhaustive.

2. The written examination for Level-I will be of 90 minutes duration.

3. The question paper will be in English language only.

4. For every wrong answer, there will be a negative marking of ¼ mark.

5. Level-I is an objective-type test consisting of multiple-choice questions with four options.

6. The ratio of shortlisting candidates for Level-II will be 1:10 in the respective category from Level-I.

7. Level-II is a Skill/Trade Test of qualifying nature, for which a minimum score of 50% is required to pass.

8. The Level-I marks shall be considered for preparation of the merit list, only for those candidates who qualify the Skill Test (Level-II).

9. The candidature is PROVISIONAL. If at any stage it is found that any applicant does not fulfill any of the conditions of eligibility, his / her candidature will be cancelled and no appeal against such cancellation will be entertained. The fact that he / she has been called for the test does not confer any right on him / her to be treated as eligible in all aspects for appointment or to be considered for the test. No TA / DA for attending the test will be provided.

10. The Written Test for the eligible candidates for the above posts is scheduled to be held on **12/04/2026 at NIT Goa.** The detailed schedule is enclosed as ANNEXURE-I.

11. The e-Admit cards will be sent to the candidates in the registered email id for appearing in the Written Test by 02/04/2026 or in case the eligible candidates have not received the admit card may email at recruitment@nitgoa.ac.in .

12. No candidates shall be allowed to enter the institute without a Hard copy of e-Admit Card supported by valid ID Proof.

13. It is to be noted that Mobile Phones or any electronic gadgets will not be allowed inside the exam hall. The institute will not be responsible for keeping any mobile or any electronic gadgets or any associated loss of mobile / electronic gadgets.

14. All the eligible candidates have to produce following documents at the time of document verification.
    a) The original certificates for their educational qualification and relevant experience mentioned in their application form.

b) Proof of Identity issued by the Govt. (in Original) such Aadhar Card / Passport / Driving License / PAN Card / Voter Card.
c) The person working in a Government, Semi Government, Autonomous organization including Public Sector Undertakings etc. and whose application has not been forwarded through proper channel by the employer will be required to bring a 'No Objection Certificate' along with 'Vigilance Clearance Certificate' from the present employer. In the absence of No Objection Certificate and other certificates their candidature will not be considered.

15. The Number of posts shown in Advt. may change and may vary at the time of selection/recruitment. The Institute reserves the right not to fill any/ all posts advertised and to reject any/all application without assigning any reason.

16. Mere appearance in the Written Test / Skill Test OR qualifying in the test doesn't entitle a candidate to be considered for selection unless candidates fulfill the eligibility conditions. APPLICANTS MUST FULLY SATISFY ABOUT THEIR ELIGIBILITY AS PRESCRIBED IN OUR WEBSITE, BEFORE APPEARING IN THE TEST. If a candidate is inadvertently allowed to appear at the test who otherwise doesn't fulfill the minimum eligibility requirements, the candidate cannot, at a later date, use that as a right to claim that candidate meets the eligibility requirements. The Institute reserves the right not to allow a candidate for selection if it is found that

a) Minimum eligibility requirements are not fulfilled.
b) Inadequate proof / false documentation has been done.
c) Non-submission of valid NOC
d) Any other similar valid reasons.

17. The candidates are also advised to visit the Institute website https://nitgoa.ac.in regularly for any further updates.

18. The Answer key for Level-I exam will be displayed on the Institute website by the end of the day of the written test**.**

19. Receipt of objections/ clarifications on question paper/answer key for Level-I can be submitted by the candidates within 2 days from the date of displaying of answer keys on the Institute website. The candidates are advised to submit the representations on recruitment@nitgoa.ac.in

20. The candidate must ensure to attach the transaction details payment of Rs. 1000/-per question towards the fee for consideration of objection/representation/clarification.

21. For PwD candidates 30 minutes extra time will be given in the Written Test for shortlisting purpose. Further, if they require a scribe, they need to communicate the requirement to recruitment@nitgoa.ac.in before the date of respective examination. Reservation to PwD will be as per GoI norms.

22. Result for the LEVEL-I written test will be made available on the Institute website by 19.04.2026 tentatively.

23. Shortlisted candidates in LEVEL-I Written Examination will be called for the Skill Test which will be scheduled on April 26, 2026 from 09.00 AM onwards. All the candidates are requested to visit the institute website regularly.

Account details are as under:

Bank Name: Union Bank of India
Branch: Farmagudi Branch, North Goa
Name of Account: Director NIT Goa Miscellaneous Account
Account Number: 520101026774476
IFSC Code: UBIN0913286

-SD-

REGISTRAR I/C

SYLLABUS FOR JUNIOR ENGINEER (CIVIL ENGINEERING) for LEVEL-I

Level I (Part A-General)

General English Language, Grammar and Usage	Includes questions on Antonyms, Synonyms, Spelling Check, Active/Passive Voice, Spotting Errors, Sentence Improvement, One Word Substitutes, Selecting Words, Sentence Corrections, Idioms and Phrases, Common Error Detection, Ordering of Words, Verbal Analogies, Sentence Formation, Completing Statements, Change of Speech.
General Awareness and Current Affairs	Includes questions relating to History, Indian Polity & Constitution, Art & Culture, Geography, Economics, General Policy, Science & Scientific Research, National/International Organizations /Institutions, current events, environment etc.
Quantitative Aptitude	Includes questions relating to Simplification, Decimals, Fractions, L.C.M., H.C.F., Ratio & Proportion, Percentage, Average, Profit & Loss, Discount, Simple & Compound Interest, Mensuration, Time & Work, Time & Distance, Tables & Graphs, etc.
Mental Ability and Reasoning	Includes questions relating to number series (missing/wrong term), alphabet series, alpha-numeric series, analogies (number, alphabet, words), classification (odd one out), coding and decoding, blood relations, order and ranking, mathematical operations, logical sequence of words, data sufficiency, decision making, arithmetical reasoning, verbal reasoning, non-verbal reasoning etc.
Computer Fundamentals	Includes questions relating to Proficient use of MS Word (for report writing/documentation) and MS Excel (for data entry, basic formulas, and generating graphs, Efficient use of Search Engines, Email etiquette, and Cloud storage/sharing (Google Drive/OneDrive), Basic security practices (creating strong passwords, Antivirus use, and identifying Phishing/Scam emails) etc.

Level I (Part B- Domain Specific)

1. **Building Materials**: Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), timber and wood based products, laminates, bituminous materials, paints, varnishes, admixtures, water proofing materials.
2. **Estimating, Costing and Valuation**: Estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Items of work – earthwork, Brick work (Modular & Traditional bricks), RCC work, Shuttering, Painting, Flooring, Plastering. Boundary wall, Brick building, Water Tank, Septic tank, Bar bending schedule, Centre line method, Mid-section formula, Trapezoidal formula, Simpson's rule. Cost estimate of Septic tank, flexible pavements, Tube well, isolates and combined footings, Valuation – Value and cost, scrap value, salvage value, assessed value, depreciation, methods of valuation, Standard Schedules of Rates, Building Cost Index.
3. **Surveying** : Principles of surveying, measurement of distance, Levelling, Definition of terms used in levelling, contouring, curvature methods of contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment, modern surveying methods
4. **Soil Mechanics** : Origin of soil, phase diagram, Definitions-void ratio, porosity, degree of saturation, water content, specific gravity of soil grains, unit weights, density index and interrelationship of different parameters, Grain size distribution curves and their uses. Index properties of soils, ISI soil classification and plasticity chart., consolidation of soils, Principles of consolidation, degree of consolidation, . Soil compaction, Laboratory compaction test, Maximum dry density and optimum moisture content, Bearing capacity of soils, plate load test, standard penetration test.
5. **Hydraulics** : Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, ,.
6. **Transportation Engineering**: Highway Engineering – cross sectional elements, geometric design, types of pavements, pavement materials – aggregates and bitumen, different tests,– Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction, Rigid pavement joint, pavement maintenance, Highway drainage, traffic signs and markings, Stopping Sight Distance.
7. **Environmental Engineering**: Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewer, , sewer appurtenances, sewage treatments. Surface water drainage. Solid waste management – types, effects, engineered management system, Rainwater Harvesting, Groundwater Recharging.
8. **Theory of structures**: Elasticity constants, types of beams –bending moment and shear force diagrams of simply supported, cantilever and over hanging beams.

Moment of area and moment of inertia for rectangular & circular sections, bending moment and shear stress for tee, channel and compound sections, retaining walls, slope deflection of simply supported and cantilever beams, critical load and columns,

9. **Concrete Technology**: Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting, repair and maintenance of concrete structures. Indian Codal provisions .
10. **RCC Design**: RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams. T-beams, lintels. One way and two-way slabs, isolated footings. Reinforced brick works, columns, staircases, retaining wall, water tanks (RCC design questions may be based on both Limit State and Working Stress methods). Indian Codal provisions.
11. **Steel Design**: Steel design and construction of steel columns, beams roof trusses plate girders. Indian Codal provisions.
12. **Contract Management:** Fundamental principles of contract, financial control, tender drafting; general and special conditions of contract.

SYLLABUS FOR JUNIOR ENGINEER (CIVIL ENGINEERING) for LEVEL-II SKILL TEST

(Qualifying Nature)

1. Evaluation of practical skill in identifying maintenance and construction related issues and resolution thereof.
2. Preparation of a detailed estimate for a small structure and/or drafting a bill of quantities (BOQ)
3. Test of proficiency in AutoCAD and MS Office Applications
4. Observations on site order book, hindrance registers, compliance reports, intimation of defects in DLP.
5. Setting layout at site - sequence, Maintaining site records
6. Engineering Drawing & Drafting - Reading and interpreting civil engineering drawings, Scale, dimensioning, symbols, and conventions
7. Recording measurements vis-à-vis execution of the item

SYLLABUS FOR JUNIOR ENGINEER (ELECTRICAL ENGINEERING) for LEVEL-I

Level I (Part A-General)

General English Language, Grammar and Usage	Includes questions on Antonyms, Synonyms, Spelling Check, Active/Passive Voice, Spotting Errors, Sentence Improvement, One Word Substitutes, Selecting Words, Sentence Corrections, Idioms and Phrases, Common Error Detection, Ordering of Words, Verbal Analogies, Sentence Formation, Completing Statements, Change of Speech.
General Awareness and Current Affairs	Includes questions relating to History, Indian Polity & Constitution, Art & Culture, Geography, Economics, General Policy, Science & Scientific Research, National/International Organizations /Institutions, current events, environment etc.
Quantitative Aptitude	Includes questions relating to Simplification, Decimals, Fractions, L.C.M., H.C.F., Ratio & Proportion, Percentage, Average, Profit & Loss, Discount, Simple & Compound Interest, Mensuration, Time & Work, Time & Distance, Tables & Graphs, etc.
Mental Ability and Reasoning	Includes questions relating to number series (missing/wrong term), alphabet series, alpha-numeric series, analogies (number, alphabet, words), classification (odd one out), coding and decoding, blood relations, order and ranking, mathematical operations, logical sequence of words, data sufficiency, decision making, arithmetical reasoning, verbal reasoning, non-verbal reasoning etc.
Computer Fundamentals	Includes questions relating to Proficient use of MS Word (for report writing/documentation) and MS Excel (for data entry, basic formulas, and generating graphs, Efficient use of Search Engines, Email etiquette, and Cloud storage/sharing (Google Drive/OneDrive), Basic security practices (creating strong passwords, Antivirus use, and identifying Phishing/Scam emails) etc.

Level I (Part B- Domain Specific)

1. **Circuit Theory:** Concepts of resistance, inductance, capacitance, and various factors affecting them. Concepts of current, voltage, power, energy and their units. Circuit law: Kirchhoff's law, Simple Circuit solution using network theorems. Magnetic Circuit: Concepts of flux, MMF reluctance, Different kinds of magnetic materials, Magnetic calculations for conductors of different configuration e.g. straight, circular, solenoidal, etc. Electromagnetic induction, self and mutual induction. AC Fundamentals: Instantaneous, peak, R.M.S. and average values of alternating waves, Representation of sinusoidal wave form, simple series and parallel AC Circuits consisting of R.L. and C, Resonance, Tank Circuit. Poly Phase system – star and delta connection, 3 phase power, DC and sinusoidal response of R-Land R-C circuit.

2. **Measurement and measuring instruments:** Measurement of power (1 phase and 3 phases, both active and re-active) and energy, 2-wattmeter method of 3 phase power measurement. Measurement of frequency and phase angle. Ammeter and voltmeter (both moving oil and moving iron type), extension of range wattmeter, Mustimeters, Megger, Energy meter AC Bridges. Use of CRO, Signal Generator, CT, PT and their uses. Earth Fault detection.

3. **Electrical Machines:** (a) D.C. Machine – Construction, Basic Principles of D.C. motors and generators, their characteristics, speed control and starting of D.C. Motors. Method of braking motor, Losses and efficiency of D.C. Machines. (b) 1 phase and 3 phase transformers – Construction, Principles of operation, equivalent circuit, voltage regulation, O.C. and S.C. Tests, Losses and efficiency. Effect of voltage, frequency and waveform on losses. Parallel operation of 1 phase /3 phase transformers. Autotransformers. (c) 3 phase induction motors, rotating magnetic field, principle of operation, equivalent circuit, torque speed characteristics, starting and speed control of 3 phase induction motors. Methods of braking, effect of voltage and frequency variation on torque speed characteristics. Fractional Kilowatt Motors and Single-Phase Induction Motors: Characteristics and applications. Synchronous Machines: Generation of 3-phase e.m.f. armature reaction, voltage regulation, parallel operation of two alternators, synchronizing, control of active and reactive power. Starting and applications of synchronous motors.

4. **Power Systems:** Different types of power stations, Load factor, diversity factor, demand factor, cost of generation, inter-connection of power stations. Power factor improvement, various types of tariffs, types of faults, short circuit current for symmetrical faults. Switchgears – rating of circuit breakers, Principles of arc extinction by oil and air, H.R.C. Fuses, Protection against earth leakage / over

current, etc. Buchholtz relay, Merz-Price system of protection of generators & transformers, protection of feeders and bus bars. Lightning arresters, various transmission and distribution system, comparison of conductor materials, efficiency of different system. Cable – Different type of cables, cable rating and derating factor, faults detection in cables. Various types of insulators for overhead lines and switchgear. Switchgear & Protection: Different types of Relays for Line, Generator and transformer protection, different types of switchgears for power system, Line faults, transformer faults.

5. **Control Systems:** Transfer function, block diagrams & signal flow graphs; Transient & Steady-state analysis of LTI systems;

6. **Basic Electronics:** Working of various electronic devices e.g. P N Junction diodes, Transistors (NPN and PNP type), BJT and JFET. Simple circuits using these devices.

7. **Electrical Engineering material:** Different types of electrical materials – Conductor, insulators, dielectric materials, properties of the electrical engineering materials.

8. **Estimation and costing:** Estimation of lighting scheme, electric installation of machines and relevant IE rules. Earthing practices and IE Rules.

9. **Utilization of Electrical Energy:** Illumination, Electric heating, Electric welding, Electroplating, Electric drives and motors. Energy-efficient and conservation techniques, Renewable energy.

10. **Maintenance of Appliances:** Maintenance of DG, Underground cables, overhead lines and electrical panels, Fire Fighting System etc

11. **Air-Conditioning:** General principles of Refrigeration and Air-conditioning, terminology, factors affecting A.C. Load, psychrometric chart, comfort air conditioning, general principles window / split air conditioners, VRV/ VRF air conditioners and chiller plants.

SYLLABUS FOR JUNIOR ENGINEER (ELECTRICAL ENGINEERING) for LEVEL-II SKILL TEST

(Qualifying Nature)

1. Basic Electrical Engineering: Ohm's Law, Kirchhoff's Laws, Series and Parallel circuits, Electrical power and energy, AC and DC circuits, Power factor and its improvement

2.Electrical Machines: Construction, working and testing of: Transformers, DC machines, Single phase and three phase induction motors, Alternators, Motor starting methods (DOL, Star-Delta, Auto transformer starter), Motor protection and maintenance

3.Electrical Wiring and Installation: Types of wiring systems (conduit, casing-capping, batten wiring), Lighting circuits and power circuits, Two-way and intermediate switching, Earthing of electrical installations, Cable laying and termination, Selection of cables and protective devices

4.Electrical Measurements and Instruments: Use of electrical measuring instruments: Voltmeter, Ammeter, Wattmeter, Multimeter, Clamp meter, Megger, Measurement of resistance, current, voltage and insulation resistance

5. Power Distribution System: Basics of generation, transmission and distribution, Single line diagram of power distribution, LT panels and distribution boards, Substations and transformers, Load calculation and demand factor

6.Electrical Protection: Fuses, MCB, MCCB, ELCB and relays, Overcurrent, earth fault and short circuit protection, Lightning protection, Earthing systems and testing

7.Electrical Maintenance and Troubleshooting: Preventive and breakdown maintenance of electrical equipment, Fault finding in wiring circuits, Motor troubleshooting, Transformer inspection and maintenance

8.Electrical Safety: Electrical safety rules and precautions, Protection against electric shock, Use of PPE, Fire safety related to electrical installations

9.Electrical Estimation and Drawing: Electrical load calculation, Preparation of basic electrical estimates, Reading and interpretation of electrical drawings and single line diagrams, Symbols used in electrical installations

10.Practical Knowledge of Electrical Systems: Identification of electrical components such as: Switchgear, Contactors, Relays, Starters, Capacitors, Distribution boards, Basic operation and testing of electrical equipment

Note: It may be noted that the syllabus given above for the posts of Junior Engineer (Civil/Electrical) are indicative in nature, questions from other topics related to the job and prescribed for the educational qualification of the post may appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.

****

ANNEXURE-I

Schedule of the LEVEL-I Written Test

Post	Date of Written Test	Examination Time
JUNIOR ENGINEER (CIVIL/ELECTRICAL ENGG)	12.04.2026	11:00 AM to 12:30 PM

Schedule of the LEVEL-II Skill Test

Post	Date of Skill Test	Reporting Time	Examination Time
JUNIOR ENGINEER (CIVIL/ELECTRICAL ENGG)	26.04.2026	09.00 AM to 10.00 AM	01.00 PM to 02.00 PM

- Result for the LEVEL-I written test will be made available on the Institute website by 19.04.2026 tentatively.
- Shortlisted candidates in LEVEL-I Written Examination will be called for the Skill Test which will be scheduled on April 26, 2026 from 09.00 AM onwards. All the candidates are requested to visit the institute website regularly.

****