भारतीय प्रौद्योगिकी संस्थान गोवा
गोवा अभियांत्रिकी महाविद्यालय परिसर, फार्मागुड़ी, फ़ोंडा – 403401, गोवा

Indian Institute of Technology Goa
Goa College of Engineering Campus, Farmagudi, Ponda – 403401, Goa

IITGoa/RECT/2024/02/JE(E)/ 633 Date: 15-01-2025

NOTICE

Sub: Selection Procedure
Name of the Post: Junior Engineer - Electrical (PL 6; Group B)
Ref: Advt. No. IITGoa/RECT/2024/02 dated 04-10-2024

1. **Selection Will Be Based On Written Test which will be conducted on 15.02.2025.**

2. **Pattern of the Written Test:** The Written Test will be conducted in Two Stages, i.e. Written Test I and Written Test II. Candidates securing minimum qualifying marks as laid down by the selection committee in Written Test I shall be shortlisted for Written Test II. The final selection will be based on aggregate marks obtained from both the Written Tests (I & II) with weightage of 40% in Written Test I and 60% in Written Test II.
   - Written Test I will Consist of 60 Multiple Choice Questions of 1 Marks Each. 0.25 Negative Marks for every wrong answer. Duration of test is 75 minutes.
   - Written Test II will be a Trade Test of 40 marks and duration will be informed before the Test.

3. **Syllabus for Written Test I:**
   - **Electric Circuits:** Network Element; Circuit Law; Magnetic Circuit; Network Theorems; Transient Response of DC and AC Networks and Steady-State Analysis; AC Circuits; Resonance; Complex Power and Power Factor in AC Circuits. R.M.S. Value, Average Value Calculation for Any General Periodic Waveform.
   - **Electromagnetic Fields:** Static Electric Field; Static Magnetic Field; Electric and Magnetic Fields in Materials; Time Varying Electric and Magnetic Fields; Electromagnetic Waves
   - **Electrical Machines:** D.C. Machines; Single Phase and Three Phase Transformers; Autotransformers; Single phase and Three Induction motors; Fractional Kilowatt Motors; Synchronous Machines; Variable Frequency Drives
   - **Power System:** Generation, Transmission and Distribution of Power; Power System Stability; Symmetrical & Unsymmetrical Fault Analysis in Power System; Power System Protection, Switchgears, relays, etc.; Cables & Insulators; Earthing
   - **Electrical Measurement and Instruments:** Concepts of Measurements & Measurement Systems; Analog Electromechanical Instruments; Measurement of Power, Energy, Resistance, Inductance and Capacitance; Potentiometers; Instrument Transformers, Miscellaneous Measuring Instruments - Maximum Demand Indicator, Tri-Vector Meter, Power Factor Meter, Frequency Meters, Digital Voltmeters and Multi-Meters, Oscilloscopes, CRO, Signal Generator; Earth Fault Detection.
   - **Control Systems:** Mathematical Modelling & Representation of Systems, Transfer Function, Block Diagrams & Signal Flow Graphs; Transient & Steady-State Analysis of LTI Systems; Routh-Hurwitz and Nyquist Criteria, Bode Plots, Root Loci; Compensators & Controllers; State Space Model & Analysis.
   - **Basic Electronics:** Analog and Digital Electronics - Working of Various Electronic Devices E.G. P N Junction Diodes, Transistors, BJT and JFET, Rectifiers, Amplifiers, Filters, Timers, Combinatorial & Sequential Logic Circuits, Multiplexers & Demultiplexers, Schmitt Triggers, A/D and D/A Converters; Power Electronics - Static V-I Characteristics and Firing/Gating Circuits for Power Electronics Devices; Converter and Rectifiers; Power & Distortion Factor; Pulse Width Modulation.
   - **Utilization of Electrical Energy:** Illumination, Electric Heating, Electric Welding, Electroplating, Electric Drives and Motors. Energy-Efficient and Conservation Techniques, Renewable Energy.
   - **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.

4. **Syllabus for Written Test II:**
   - Preparation of Estimate and Rate Analysis-Estimation and Costing of Lighting Scheme, Wiring, Cables, Electric Installations Machines; Switchyard and Other Electrical Related Work in Building/Campus;
   - Design/Selection/Sizing of Material /Equipment for Internal and External Electrical Installations;
   - Single line diagram (SLD) drawing Technical Report Writing;
   - Incident Report Writing;
   - Case Study

NOTE: *It may be noted that apart from the topics given above, 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.*

Sd/-
Registrar