



Selection Process for the post of Junior Engineer (Postcode 5)

(Staff Recruitment Advt. No: IITDH/ Admin/Staff Recruitment/25/2023-24 dated 1st February 2023)

All the shortlisted candidates are required to appear in person for the Written Test (s). The venue for Written Test (s) is IIT Dharwad, WALMI Campus, Belur Industrial Area, Near High Court Bench, Pune – Bengaluru Road, Dharwad, Karnataka.

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.

Examination Pattern:

Written Test -I (MCQ Type) (40% Weightage)

Section	Topics/Subjects
1	General Ability Test
2	Understanding of Government Rules and Regulations

Note: 0.25 Negative Marks for every wrong answer MCQ test.

Written Test-II (60% Weightage)

Section	Topics/ Subjects
3	Technical
4	Technical Trade/Skill Test (Pen and Paper)

Note: 0.25 Negative Marks for every wrong answer in MCQ questions, If any.

Syllabus:

Section	Broad syllabus
1	General Awareness, Reasoning, Quantitative Aptitude, Communication Skills
2	Understanding of Government Rules and Regulations: Office procedure, General administration, Fundamental Rules, Supplementary Rules, GFR, Manual for Procurement of Work, Finance & Accounts and procurement policy of Government of India and so on.,
3 & 4	<ul style="list-style-type: none">• Measurement and measuring instruments: Different methods for measurement of power (1 phase and three phase, both active and reactive) and energy. Measurement of frequency and phase angle. Ammeter and voltmeter (both moving coil and moving iron type), extension of range wattmeter, Multimeters, Megger, Energy meter AC Bridges. Use of CRO, Signal Generator, CT, PT, and their uses. Earth Fault detection.• Transformers – Dry type and oil cooled transformers – operation, maintenance, and preventive maintenance – relays- protection- OLTC – parallel operations – plc control etc.• HT panel – various types of circuit breakers – operation, maintenance and preventive mtce- relays and controls- protection – plc control etc.• MV panels – circuit breakers – bus bars – protection – operation, maintenance and preventive mtce – plc control etc.• APFC panel for different loads – maintenance of apfc panel – contactors – capacitors

	<p>and reactors – plc control etc.</p> <ul style="list-style-type: none"> • DG sets – operation and mtce – synchronization- protection – fuel system distribution plc control etc. • Pumps – different types of pumps i/c drinking water, fire and STP pumps - different types of valves - operation and maintenance of pumps starters etc. • Fire system - fire detection, fighting and suppression systems– operation and maintenance etc. • HVAC system – chiller/ahus/cooling towers /pumps/ VRS/VRF/split ac and their controls –different type of valves – operation and mtce. • Cables – HT/LT cables and their laying - break down mtce etc. • Access control – o & m of access control system etc. • Earthing – Different types of earthing and their connectivity for equipment and lightning conductor i/c mtce etc. • Solar system – water heating system – heat pumps – power generation – street lighting- operation and mtce – connection to main grid etc. • Building management systems (BMS) – BMS monitoring and control of various MEP equipment. • Generation, Transmission and Distribution: 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 systems, comparison of conductor materials, efficiency of different system. Cable – Different types of cables, cable rating and derating factor. • Estimation and costing: Estimation of lighting scheme, electric installation of machines and relevant IE rules.Earthing practices and IE Rules. • Transformer: Voltage regulation per unit system. • Power flow: Newton Raphson Power flow
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