

उप अभियंता (विद्युत), महाराष्ट्र विद्युत अभियांत्रिकी सेवा, गट-अ

सार्वजनिक बांधकाम विभाग

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परीक्षेचे टप्पे: १) लेखी परीक्षा - २०० गुण

२) मुलाखत- ५० गुण

-: परीक्षा योजना :-

विषय व सांकेतांक (९९९)	माध्यम	प्रश्नसंख्या	गुण	कालावधी	दर्जा	प्रश्नपत्रिकेचे स्वरूप
मराठी	मराठी	१००	२००	एक तास	पदवी	वस्तुनिष्ठ बहुपर्यायी
सामान्य ज्ञान	इंग्रजी					
विद्युत विषयक घटक	इंग्रजी					

अ) नकारात्मक गुणदान -

१) प्रत्येक चुकीच्या उत्तराकरीता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा/ कमी करण्यात येतील.
२) एखाद्या प्रश्नाची एकापेक्षा अधिक उत्तरे दिली असल्यास अथवा ज्या उमेदवाराने उत्तरपत्रिकेत पूर्ण वर्तुळ चिन्हांकित केले नसेल अशा प्रश्नाचे उत्तर चुकीचे समजण्यात येऊन त्या प्रश्नाच्या उत्तराकरीता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा/कमी करण्यात येतील.
३) वरीलप्रमाणे कार्यपध्दतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
४) एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

ब) अंतिम गुणवत्ता यादी ही वस्तुनिष्ठ परीक्षेतील व मुलाखतीतील एकत्रित गुणांवर आधारीत राहिल.

-: अभ्यासक्रम :-

मराठी, सामान्य ज्ञान व विद्युत विषयक घटक या विषयामध्ये खालील घटक व उपघटकांचा समावेश असेल.

अनु क्रमांक	घटक व उपघटक
1.	मराठी- सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग इ.
2.	Current affairs (National / International) : <ul style="list-style-type: none">Scientific Developments.Education policies feedback and research.Social, Political, Industrial, Economic, Cultural and Sports.
3.	3.1 Right To Information Act-2005. 3.2 Right To Services Act-2015 Maharashtra State: <ul style="list-style-type: none">Services covered under this act and duties of public services officials.Provision of Action and punishments and ladder.
4.	<ul style="list-style-type: none">Energy Scenario:National Electricity Policy 2023.Electricity Act 2003.Energy conservation Act 2001.Statutory obligations like CEA (measures relating to safety and electricity supply) Regulations 2023.Central Electricity Authority CEA (Technical standards for construction of electrical plants and lines) Regulations 2022.Energy conservation building code (ECBC).Indian and global energy scenario.Energy sector reforms.National building code chapter 8.Maharashtra Fire Safety Act 2006.Maharashtra Lifts Act and Maharashtra Lifts Rules.

5.	Electrical networks and theorems: <ul style="list-style-type: none"> • KCL, KVL, Maximum power transfer theorem. • Electrical HT/LT distribution systems and load calculations. • Power system analysis, fault analysis, load flow analysis.
6.	Electrical measuring systems and instrumentation : <ul style="list-style-type: none"> • Power measurements, trivector meters, analog and digital meters and measurements, use of CTs, PTs. • Bridges for measurement of electrical parameters. • Smart meters.
7.	Electrical motors and power utilization: <ul style="list-style-type: none"> • Fundamental operating principles of alternate current, direct current motors, Speed control methods and characteristics. • Energy efficient motors. • Refrigeration system. • Pumping systems. • Motors for lift operations. • EV chargers.
8.	Switchgear Principles : <ul style="list-style-type: none"> • Switchgear installation and criteria for selection. Circuit breaker ratings, principles of alternate current circuit breaking. RRRV and recovery voltage and their control. Current chopping. Switching of capacitive currents. Kilometric faults. Resistance switching. Direct Current current interruption. • Principles of fuse gear. Salient features and characteristics of different arc interrupting media -- air, oil, air-blast, SF6, and vacuum. The electric arc and circuit -breaker. • Theories of arc interruption - restriking voltage and energy balance theories and their applications. • Semiconductor switching and protective devices.
9.	Power System Protection: <ul style="list-style-type: none"> • Principles of power system protection: overcurrent, directional, differential and distance protection. Sequence networks & short circuit analysis. • Power quality and power network stability. • Relay coordination: Overcurrent & distance relay coordination.
10.	Electrical Drives: <ul style="list-style-type: none"> • Methods of Direct Current motor control, non-regenerative controlled rectifiers, fully controlled converters, field control and switching systems for Direct Current motors, chopper regulators, aspects of analysis, performance and stability of variable speed dc drives. • Induction motor control systems, alternate current regulators and static switches, control of effective rotor resistance, recovery of slip energy, variable frequency control of alternate current motors, current source inverter fed Induction motor drive, forced commutated inverter fed drives, self-controlled synchronous motor drives and traction drives.
11.	Modern Industrial Controls: <ul style="list-style-type: none"> • Composite controllers and Tuning of controllers. • SCADA controllers in Power networks. • IOT devices for network safety.
12.	Design and Estimation of Electrical systems: <ul style="list-style-type: none"> • Single line diagrams, electrical drawings, equipment selection criteria's, preparation of rough and detailed estimations, Tender documents and procedures. • Design of Overhead HT/LT distribution systems. • Cable installations, termination and accessories. • Energy auditing Primary , targeted and comprehensive audits, recommendation and financial justification. • Design of HVAC system, Heat Load Calculations, VRF systems. • Design of Fire Alarm, Fire Fighting system, sprinkler system. • Design calculations for Lifts, Travelling time, waiting time. • Design calculations for Solar water heaters, Solar PV system.