



# ગુજરાત જાહેર સેવા આયોગ

ઇ-૩ સર્કલ પાસે, ઇ રોડ, સેક્ટર-૧૦/એ, ગાંધીનગર-૩૮૨૦૧૦

ખ.ક.૮૨/૨૦૧૯-૨૦

જાગ્યાનું નામ: મદદનીશ ઇજનેર (વિદ્યુત), વર્ગ-૨  
(માર્ગ અને મકાન વિભાગ)

ભાગ-૧ અને ભાગ-૨ ના ૧૮૦ મિનિટના સંયુક્ત પ્રશ્નપત્રની પ્રાથમિક કસોટીનો અભ્યાસક્રમ

પ્રાથમિક કસોટીનો અભ્યાસક્રમ	
ભાગ-૧	
માધ્યમ: ગુજરાતી	કુલ ગુણ : ૧૦૦
૧	ભારતની ભૂગોળ- ભૌગોલિક, આર્થિક, સામાજિક, કુદરતી સંસાધન અને વસ્તી અંગેની બાબતો- ગુજરાતના ખાસ સંદર્ભ સાથે
૨	ભારતનો સાંસ્કૃતિક વારસો- સાહિત્ય, કલા, ધર્મ અને રચાપત્યો- ગુજરાતના ખાસ સંદર્ભ સાથે
૩	ભારતનો ઇતિહાસ- ગુજરાતના ખાસ સંદર્ભ સાથે
૪	ભારતની અર્થવ્યવસ્થા અને આયોજન
૫	ભારતીય રાજનીતિ અને ભારતનું બંધારણ: (૧) આમુખ (૨) મૂળભૂત અધિકારો અને ફરજો (૩) રાજ્યનીતિના માર્ગદર્શક સિદ્ધાંતો (૪) સંસદની રચના (૫) રાષ્ટ્રપતિની સત્તા (૬) રાજ્યપાલની સત્તા (૭) ન્યાયતંત્ર (૮) અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિ અને સમાજના પછાત વર્ગો માટેની જોગવાઈઓ (૯) એટર્ની જનરલ (૧૦) નીતિ આયોગ (૧૧) પંચાયતી રાજ (૧૨) નાણા પંચ (૧૩) બંધારણીય તથા વૈધાનિક સંસ્થાઓ- ભારતનું ચૂંટણી પંચ, સંઘ લોક સેવા આયોગ, રાજ્ય લોક સેવા આયોગ, કોમ્પ્ટ્રોલર એન્ડ ઓડિટર જનરલ; કેન્દ્રીયસતર્કતા આયોગ, લોકપાલ તથા લોકાયુક્ત અને કેન્દ્રીય માહિતી આયોગ

૬	સામાન્ય બૌદ્ધિક ક્ષમતા કસોટી
૭	સામાન્ય વિજ્ઞાન, પર્યાવરણ અને ઈન્ફર્મેશન એન્ડ કોમ્યુનિકેશન ટેકનોલોજી
૮	ખેલ જગત સહિત રોજબરોજના પ્રાદેશિક, રાષ્ટ્રીય અને આંતરરાષ્ટ્રીય મહત્વના બનાવો

<b>Syllabus of Preliminary Test</b>	
<b>Part-1</b>	
<b>Medium: Gujarati</b>	<b>Total Marks-100</b>
1	Geography of India-Physical, Economic, Social, Natural Resources and population related topics- with special reference to Gujarat
2	Cultural heritage of India-Literature, Art, Religion and Architecture- with special reference to Gujarat
3	History of India with special reference to Gujarat
4	Indian Economy and Planning
5	<u>Indian Polity and the Constitution of India:</u> <ol style="list-style-type: none"> <li>1. Preamble</li> <li>2. Fundamental Rights and Fundamental Duties</li> <li>3. Directive Principles of State Policy</li> <li>4. Composition of Parliament</li> <li>5. Powers of the President of India</li> <li>6. Powers of Governor</li> <li>7. Judiciary</li> <li>8. Provisions for Scheduled Castes, Scheduled Tribes and backward classes of the society</li> <li>9. Attorney General</li> <li>10. NITIAayog</li> <li>11. Panchayati Raj Institutions</li> <li>12. Finance Commission</li> <li>13. Constitutional and Statutory Bodies: Election Commission of India, Union Public Service Commission, State Public Service Commission, Comptroller and Auditor General; Central Vigilance Commission, Lokpal and Lokayukta, Central Information Commission</li> </ol>
6	General Mental Ability
7	General Science, Environment and Information & Communication Technology
8	Daily events of Regional, National and International Importance including Sports

## Part-2

### Syllabus for the preliminary test for the recruitment on the post of Assistant Engineer (Electrical), Class-2 Road and Building Department

**Marks – 200**

**Questions – 200**

**Medium - English**

**1. Basic Electrical Engineering**

DC circuits, AC circuits, Transformers, Electrical Machines, Power Converters, Electrical Installations.

**2. Electrical Circuit Analysis**

Network Theorems, Solution of First and second order networks, Sinusoidal steady state analysis, Electrical Circuit Analysis Using Laplace Transforms, Two Port Network and Network Functions, Analog Electronic Circuits

**3. Electrical Machines**

Magnetic fields and magnetic circuits, Electromagnetic force and torque: DC machines, DC machine -motoring and generation, Transformers, Fundamentals of AC machine windings, Pulsating and revolving magnetic fields, Induction Machines, Single-phase induction motors, Synchronous machines.

**4. Electromagnetic Fields**

Review of Vector Calculus, Static Electric Field, Conductors, Dielectrics and Capacitance, Static Magnetic Fields, Magnetic Forces, Materials and Inductance, Time Varying Fields and Maxwell's Equations, Electromagnetic Waves.

**5. Digital Electronic**

Fundamentals of Digital Systems and logic families, Combinational Digital Circuits: Sequential circuits and systems, A/D and D/A Converters, Semiconductor memories and Programmable logic devices.

## **6. Power Electronics**

Power switching devices, Thyristor rectifiers, DC-DC buck converter, DC-DC boost converter, Single-phase voltage source inverter, Three-phase voltage source inverter.

## **7. Signals and Systems**

Introduction to Signals and Systems, Behavior of continuous and discrete-time LTI systems, Fourier, Laplace and z- Transforms, Sampling and Reconstruction.

## **8. Power Systems**

Basic Concepts, Generation, Power System Components, Transformers, Synchronous Machines, Over-voltages and Insulation Requirements, Generation of Over-voltages, Fault Analysis and Protection Systems, Switchgear, Introduction to DC Transmission & Renewable Energy Systems, Power Flow Analysis, Stability Constraints in synchronous grids, Control of Frequency and Voltage, Monitoring and Control, Power System Economics and Management.

Power System Protection: Introduction and Components of a Protection System, Faults and Over-Current Protection, Equipment Protection Schemes, Digital Protection, Modeling and Simulation of Protection Schemes, System Protection

## **9. Control Systems**

Introduction to control problem, Feedback Control, Time Response Analysis, Concept of Stability, Frequency-response analysis, Introduction to Controller Design, State variable Analysis, Introduction to Optimal Control and Nonlinear Control.

## **10. Microprocessors**

Fundamentals of Microprocessors, the 8051 Architecture, Instruction Set and Programming, Addressing modes. Memory and I/O expansion buses, control signals, memory wait states. Interfacing of peripheral devices such as General Purpose I/O, ADC, DAC, timers, counters, and memory devices.

**11. HVdc Transmission Systems**

dc Transmission Technology, Analysis of Line Commutated and Voltage Source Converters, Control of HVdc Converters, Components of HVdc systems, Stability Enhancement using HVdc Control, MTdc Links

**12. Electrical Energy Conservation and Auditing**

Energy Scenario, Basics of Energy and its various forms, Energy Management & Audit, Energy Efficiency in Electrical Systems, Energy Efficiency in Industrial Systems, Energy Efficient Technologies in Electrical Systems, Energy wheeling and Energy Banking.

**13. Non-Conventional Sources of Energy, Bureau of Energy Efficiency, Gujarat Energy Development Agency, Gujarat Solar Power Policy-2015, Waste to Energy Policy-2016, Gujarat Wind Power Policy-2016, Gujarat Wind Solar Hybrid Power Policy 2018-19, Gujarat Small Hydel Policy-2016.**

**14. Electricity Act, 2003, Indian Electricity Rules, 1956, Gujarat Electricity Industry (Reorganization & Regulation) Act, 2003, Tariff and functions of Electricity Regulatory Commission.**

**15. Current Trends and Recent Advancements in the field of Electrical Engineering.**

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