

જાહેરાત ક્રમાંક: ૪૮ /૨૦૧૭-૧૮, અન્ન, નાગરિક, પૂરવઠા અને ગ્રાહક બાબતો વિભાગ હસ્તકની મદદનીશ નિયંત્રક, કાનૂની માપ વિજ્ઞાન અને ગ્રાહક સુરક્ષા અધિકારી, વર્ગ-૨ની ભરતી માટેની પ્રાથમિક કસોટીમાં ભાગ-૧ અને ભાગ-૨ ના ૧૮૦ મિનિટના સંયુક્ત પ્રશ્નપત્રનો અભ્યાસક્રમ

પ્રાથમિક કસોટીનો અભ્યાસક્રમ

ભાગ-૧

માધ્યમ: ગુજરાતી

પ્રશ્નો -૧૦૦

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 સ્થાપત્યો- 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 વૈધનિક સંસ્થાઓ- ભારતનું ચૂંટણી પંચ, સંઘ લોક સેવા આયોગ, રાજ્ય લોક સેવા આયોગ, કોમ્પ્ટ્રોલર એન્ડ ઓડિટર જનરલ; કેન્દ્રીય સતર્કતા 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

Syllabus of Preliminary Test

Part-1

Medium: Gujarati

100 Questions

Total Marks- 100

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> (1) Preamble (2) Fundamental Rights and Fundamental Duties (3) Directive Principles of State Policy (4) Composition of Parliament (5) Powers of the President of India (6) Powers of Governor (7) Judiciary (8) Provisions for Scheduled Castes, Scheduled Tribes and backward classes of the society (9) Attorney General (10) NITIAayog (11) Panchayati Raj Institutions (12) Finance Commission (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
6	General Mental Ability
7	General Science, Environment and Information & Communication Technology
8	Daily events of Regional, National and International Importance including Sports

Syllabus for the post of Assistant Controller of Legal Metrology and Assistant Consumer

Affairs Officer, Class-II (Advt. 48/2017-18)

Syllabus of Preliminary Test

Part-2

Medium: English

200 Questions

Total Marks- 200

- 1. Thermal Physics:** Laws of thermodynamics, Carnot's cycle. Isothermal and adiabatic processes. Thermodynamic potentials, Maxwell's relations. Clausius – Clapeyron's equation, Joule – Thomson effect. Kinetic theory of gases. Maxwell's velocity distribution, equipartition theorem, specific heat of gases. Mean free path. Brownian motion, specific heat of solids – Einstein and Debye's theories. Black body radiation Wien's, Rayleigh-Jeans and Planck's laws. Solar constant, Saha's theory of thermal ionization – stellar spectra, production of low temperature – adiabatic demagnetization– negative temperature. Van der Waals equation, critical constants.
- 2. Fundamental Principles of Measurement:** mass, length, volume, torque, flow and density, units of measurement, the principles of S.I units, national and international standards and the relevant regulations, the processes of calibration and traceability of standards, the construction, maintenance, the concepts of accuracy and uncertainty in measurement and the ability to perform uncertainty calculations and the process of preparing an uncertainty budget. Uncertainty in Measurement (precision & Accuracy): Types of errors, combination of errors, Fitting data to curves, Least-square fit. Properties of Matter and their Measurement, States of Matter, Measurement of Mass, Volume, Pressure and Temperature of Gases, Gas Laws.
- 3. Fundamental of Metrology:** Vernier & Micrometer Screw gauge, Working, Least Count, Levers-Types & applications, Scales & Tapes for measuring length (Flexible & nonflexible). Effect of Temperature variation on measurements - Linear & volumetric coefficients of expansion of common metals.
Physical quantities-fundamental and derived types, Dimensions of physical quantities, Dimensional analysis, Order of magnitude, Significant figures.

4. **Weighing Machines (Mechanical, Electronic & Digital):** Spring balances, Scale balances effect of unequal arms, Weigh Bridges & Platform machines, Crane type machines, Automatic conveyor Belt-type weighing, Nucleonic Weight machine, Load cells-Resistance Strain gauge type etc. Calibration, testing and validity of instruments.
5. **Volume measurement:** Ordinary Measuring flasks, Cups, etc. their calibration, Liquor measuring, Petroleum products, Measurements on pumps, Automatic Volumetric filling machines e.g. Bottling of soft drinks, Storage tanks Calibration & operation.
6. **Other Instruments:-** Thermometers, Monometers, Measurement of Blood Pressure, Flow meters for water & oil, Distance meter, Speedometers on Automobiles, Electrical power & energy meters.
7. **Basic chemistry: Metals and alloys:** Introduction, Physical properties of metals, cast iron, wrought iron, steel, Heat treatment of steel. Alloys of steel and its applications. Non-Ferrous alloys and its industrial applications. Corrosion and its inhibition: Types of corrosion, Protection of metals from corrosion. Lubricants: Types, classification, properties and functions. Protective Coatings: Types. Paints and varnishes, Refractories, Abrasives and Insulators. **Analytical Techniques:** Introduction, Types of analysis – Physical, Chemical and instrumentation.
8. **Electricity and Magnetism:** Coulomb's law, Field, Gauss's theorem and applications, Potential, distribution of charges, Poisson and Laplace's equation. Polarization, capacitors, Steady current-Ohm's law, Resistance and Resistivity. Magnetism-magnetic field, Electromagnetic induction, Alternating current-Peak, average and RMS values, impedance, inductive, capacitive and series LCR circuits. Galvanometer, Motion in 1, 2 and 3-dimensions, displacement, velocity, speed uniform and non-uniform motion, acceleration, Equations of motion for uniformly accelerated bodies, projectile motion, circular motion.
9. **Elementary Physics:** Newton's Laws of motion, mass, force, work, energy, power. Gravitation law, gravitational and inertial mass, Kepler's law, acceleration due to gravity,

orbital velocity, escape velocity, time period, Archimedes' Principle, Pascal's Law, Hook's Law, Light Emission.

- 10. Electrostatics & Capacitance:** Definitions of Electrostatic, types of capacitors, series, parallel combinations & related circuit calculations in brief charging & discharging of capacitor. Energy stored in capacitor, Electromagnetics: - Magnetic Circuit, Comparison between Electric and Magnetic Circuits, Series/Parallel Magnetic Circuit, Safety & protection. Circuit protection devices, fuses, MCB, ELCB & relays.
- 11. Modern Physics:** Bohr's model, sommerfeld extension. Explanation of atomic spectra. Stern-Gerlach experiment, space quantization, electron spin, vector atom model, spectral terms, fine structure of spectral lines. J-J and L-S coupling schemes. Pauli's exclusion principle, spectral terms of two equivalent and non-equivalent electrons, Zeeman, Paschenback effects, Stark effect. Characteristics of X-rays, Moseley's Law. Gross and fine structure of Band spectra, Raman effect. Black body radiation, Wien, Rayleigh Jeans and Planck's Laws of radiation. Photo electric effect and Einstein's Explanation, Compton effect, de Broglie hypothesis. Wave-particle duality, uncertainty principle, Schrodinger equation, eigen functions and eigen values. Radioactivity: Gammow's theory of alpha decay. Laws of radioactivity. Radioactive equilibrium. Artificial radioactivity. Mass spectrometers. Nuclear binding energy, semi-empirical mass formula. Nuclear fission, nuclear reactors. Nuclear fusion, fusion cycles. Elementary particles and their classification. Particle accelerators. Basic experimental ideas of superconductivity, Ultrasonic waves and their application.
- 12. Electronics:**
Band theory of solids – Conductors, insulators and semiconductors. Intrinsic and extrinsic semiconductors; p-n junction diode, forward and reverse bias. Diode as a rectifier. Transistor – different configurations of transistor, Transistor parameter amplifier. Transistor oscillator. Modulation and detection. Transistor receiver. Digital principles – Logic gates – AND, OR NOT, XOR gates – truth tables, various types of sensors and transducers.
- 13. Fundamentals of Statistics-** Mean, Standard deviation, Precision & Accuracy of Instruments, Error analysis, Tolerances. Statistics in Engineering.
- 14. Various Acts and Rules:** Legal Metrology Act, 2009. The Legal Metrology (Enforcement)

Rules, 2011. The Legal Metrology (Packaged Commodities) Rules, 2011. The Consumer Protection Act, 19+86. The Consumer Protection Rules, 1987. Consumer Protection Regulations, 2005 and Essential commodities act -1955.

15. Current Trends and Recent Advancements in Legal Metrology and Consumer Affairs.