

निरीक्षक, वैधमापनशास्त्र, गट-ब (राजपत्रित) (मुख्य) परीक्षा
Inspector of Legal Metrology, Group-B (Gazetted) (Main) Examination

-: परीक्षा योजना :-

प्रश्नपत्रिकांची संख्या - दोन

पेपर क्र. १ - २०० गुण

पेपर क्र. २ - २०० गुण

मुलाखत - ५० गुण

एकूण - ४५० गुण

विषय	सांकेतांक	दर्जा	माध्यम	गुण	कालावधी	प्रश्नपत्रिकेचे स्वरूप
वैधमापनशास्त्र विषयक घटक पेपर-१	१०७४	पदवी	इंग्रजी	२००	तीन तास	पारंपारिक/ वर्णनात्मक
वैधमापनशास्त्र विषयक घटक पेपर-२	१०७५	पदवी	इंग्रजी	२००	तीन तास	पारंपारिक/ वर्णनात्मक

-: अभ्यासक्रम :-

पेपर – I

अनु. क्र.	घटक
A	1 Bridges: Wheatstone, Kelvin, Megohm, Maxwell, Anderson, Schering and Wien for measurement of R, L, C and frequency, Q-meter. Measurement of voltage, current and power in single and three phase circuits; ac and dc current probes; true rms meters, voltage and current scaling, instrument transformers, timer/counter, time, phase and frequency measurements, digital voltmeter, digital multimeter; oscilloscope, shielding and grounding.
	2 Piezoelectric- Hall effect, Sensors and associated signal conditioning circuits; Transducers, Classification of transducers, Resistance Potential Metre, Strain Gauges, Resistance Thermometers, thermistors, inductive transducers, LVDT, RVDT, Capacity Transducers, Piezoelectric, Photoelectric Transducers, Digital Transducers: Encoder, Shaft Encoder, Optical Encoder
	3 Displacement (linear and angular), velocity, acceleration, force, torque, vibration, shock, pressure (including low pressure), flow (variable head, variable area, electromagnetic, ultrasonic, turbine and open channel flow meters) temperature (thermocouple, bolometer, thermistor, pyrometer and semiconductor); liquid level, pH, conductivity and viscosity measurement.
B	1 Basic measurement concepts and errors measurement systems, Static and dynamic characteristics units and Standards of measurements systems, Types of errors, Accuracy and Precision, Reproducibility, Repeatability and Noise. SI units, Standards (R,L,C, voltage, current and frequency), Systematic and random errors in measurement, expression of uncertainty, Accuracy and Precision, Propagation of errors, linear and weighted regression.
	2 Conversation of Energy and Momentum, Mass, Pressure, Forces, Motion, Fundamentals of statistics: Mean, Standard Deviation, Accuracy of Instruments, Error Analysis, Tolerance, Heat, Electricity and Magnetism, Waves (Sound, Vibrating Strings, Wave Diffraction, Doppler Effect, Frequency, Reflection, Refraction, Refractive Index , Hook's Law, Light, Snell's Law, Longitudinal wave)

3	Gravity (Gravitational Potential, Newton's Law of Universal Gravitation, Universal Gravitation Constant, Buoyancy Related Error, Change in weight due to Altitude) Algebra Foundation, Geometry Foundation, Trigonometry
4	Functions and Responsibilities of International Organization of Legal Metrology (OIML), International Bureau of Weights and Measures (BIPM) , International Standards Organization (ISO) Functions and responsibilities of Indian Organizations : National Physical Laboratories of India (NPL), Bureau of Indian Standards (BIS), National Test House (NTH), Fluid Control Research Institute (FCRI)

पेपर – II

अनु. क्र.	घटक
A	1 Basic Concepts and Definitions:- Weight, Force, Length, Density, Work, Energy, Temperature
	2 Mensuration:- Dimension, Area, Volume of Rectangular, Conical and Cylindrical, Spherical Bodies
	3 System of Measurements and Interconversion:- SI units of length, Volume, Mass, Weight, Energy, Large and Small units of length, Weight, Length and Volume; Bullion and Carot.
B	1 Fundamental of Metrology: Vernier and Micrometer Screw Gauge, Working, Least count, Levers:- Type and Applications, Scales and Tapes for measuring length (Flexible and Non Flexible)
	2 Volume Measurement: Measuring Flasks, Cups etc. their calibration, Liquid measuring Instruments, Petroleum Products Measurements, Automatic filling machines, example: Bottling of soft drinks. Storage Tanks Calibration and operation.
	3 Weighing Machines (Mechanical):- Spring balances, Scale balances:- effect of unequal arms, Weighbridge and platform machines, Crane type machines.
	4 Weighing Machines (Electronic and Digital):- Automatic Conveyor Belt type weighing (Belt weigher), Weigh Feeders, Nucleonic weighing machine. Load cell-Resistance strain gauge based instruments.
	5 Other instruments:- Thermometers, Manometers, Measurement of blood pressure, Flow Metre for water and other liquids; Distance metres, Speedometers; Electrical power and Energy Meters, PNG meters, Noise Metres, Breath Analyser, Lactometer and Moisture Meters.
	6 Laboratory Accreditation, Salient features and Procedures of ISO 17025, Functions and responsibilities of National Accreditation Board for Testing and Calibration Laboratories (NABL) and International Laboratory Accreditation Cooperation (ILAC) and the concept of MRA (Mutual Recognition Agreement) for Laboratories.

दिनांक – १४ डिसेंबर, २०२२

सचिव
महाराष्ट्र लोकसेवा आयोग