

**“महाराष्ट्र नगरपरिषदा, नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३  
करीताचा अभ्यासक्रम ”**

**१. नगरपरिषद अभियांत्रिकी सेवा - स्थापत्य**

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधीत घटक	४०	८०	पदवी	इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
एकूण = पेपर १ + पेपर २		१००	२००			मिनिटे	

**नकारात्मक गुणदान -**

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

**-: अभ्यासक्रम :-**

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - स्थापत्य	
पेपर - १	
अ. क्र	विषय
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि <b>Marathi</b> : सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि

संवर्गचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - स्थापत्य		
पेपर - १		
अ. क्र	विषय	
	उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे	उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	<ul style="list-style-type: none"> <li>Indian History with special reference to Maharashtra</li> </ul>
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	<ul style="list-style-type: none"> <li>Indian Geography with special reference to Maharashtra</li> </ul>
३P.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>भारतीय आयात निर्यात</li> <li>राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी किंमती वाढण्याची/चलन वाढ कारणे व उपाय</li> </ul>	Indian Economy with special reference to Maharashtra <ul style="list-style-type: none"> <li>Indian Imports – Exports</li> <li>Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> <li>Inflation – reasons and measures</li> </ul>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>संसद व राज्य विधान मंडळ इ.</li> <li>राज्य व्यवस्थापन (प्रशासन)</li> <li>ग्रामीण व शहरी प्रशासन</li> </ul>	Indian Political System :- <ul style="list-style-type: none"> <li>Indian Polity &amp; Constitution</li> <li>Parliament, state assembly etc.</li> <li>State administration</li> <li>Rural and Urban administration</li> </ul>
३.५	चालू घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>मानवी विकास व पर्यावरण,</li> <li>पर्यावरण पुरक विकास,</li> <li>नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> </ul>	Environment:- <ul style="list-style-type: none"> <li>Human development and environment,</li> <li>Environment friendly / Sustainable development</li> <li>Conservation of natural resources specially forest conservation</li> <li>Types of pollutions and environmental disasters</li> <li>Institutions engaged in environmental conversation at State, National and International Level</li> </ul>

संवर्गचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - स्थापत्य	
पेपर - १	
अ. क्र	विषय
	<ul style="list-style-type: none"> <li>पर्यावरण संवर्धनात कार्यरत असलेल्या राज्य / जागतिक /राष्ट्र / संस्था / पातळीवरील संघटना</li> </ul>
४	<p><b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न</p> <p><b>अंकगणित</b> - बेरीज, वजाबाकी , गुणाकार , भागाकार, दशांश , अपूर्णाक व टक्केवारी, इ.</p> <p><b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think. <b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage, etc.</p>

पेपर २	
विषयाशी संबंधित घटक (अभियांत्रिकी सेवा - स्थापत्य)	
Sr. No.	Topics
1.	<p><b>Building Construction &amp; Materials:</b> Properties of wet and hardened concrete, tests on concrete, factors affecting strength of concrete, water-cement ratio, aggregate-cement ratio, mix design, additives, design of form work, types of formwork. Stones, bricks, cements, lime, mortar, timber, plastic, concrete, steel, paints and varnishes. Principles of building planning and design, integrated approach, building byelaws, building services such as vertical transportation, water supply sanitation, thermal ventilation, lighting, acoustics, fire protection, electrical fittings. Foundations, stones, brick and block masonry, steel and reinforced cement concrete structures, floors, doors and windows, roofs, finishing works, water proofing.</p>
1.1	<p><b>Engineering Mechanics</b></p> <p>System of Coplanar Forces – Resultant of concurrent forces, parallel forces &amp; Non concurrent Non parallel system of forces. Moment of force about a point, Couples, Varignon's theorem, Distributed forces in plane ,Centroid and Centre of Gravity, Moment of Inertia &amp; its theorem.</p> <p>Condition of equilibrium for concurrent forces, Parallel forces and Non concurrent Non parallel general system of forces &amp; couples. Types of supports, loads, beams. Analysis of trusses.</p> <p>Laws of friction, Cone of friction, Equilibrium of bodies on inclined plane. Application of problems involving wedges, ladders, Screw friction.</p> <p>Kinematics of particle: - Velocity and acceleration in terms of rectangular coordinate system, Rectilinear motion, Motion along plane curved path, Tangential and Normal components of acceleration. Motion Curves (a-t,v-t,s-t curves), Projectile motion. Relative motion. Newton's second law of Motion, principle of work &amp; energy,</p>

	D'Alemberts principles, equation of dynamic equilibrium. Moment of Energy principles: Linear momentum, principle of conservation of momentum, Impact of solid bodies, direct and oblique impact, impact of solid bodies, semi elastic impact and plastic impact.
1.2	<b>Construction Planning and Management:</b> Elements of scientific management, elements of material management, safety engineering, network analysis, construction equipment, site layout, quality control.
2.	<b>Strength of materials:</b> Stresses, strains, principal stresses, bending moments, shear forces and torsion theory, bending theory of beam, deflection of beam, theories of buckling of columns.
3.	<b>Theory of structures:</b> Analysis of beams, frames and trusses, slope deflection method, moment distribution method.
4.	<b>Structural analysis:</b> Analysis of arches and suspension cables, influence lines, stiffness and flexibility matrix methods.
5.	<b>Steel structures:</b> Design of bolted and welded connections, columns, footings, trusses, steel beams, plate girders.
6.	<b>Design of reinforced concrete structures (Working stress and limit state):</b> Design of slab, beams, columns, footing. Retaining walls, tanks, building frames, staircases.
7.	<b>Surveying:</b> Classification of surveys, measurement of distances-direct and indirect methods, optical and electronic devices, prismatic compass, local attraction; plane table surveying, levelling, calculations of volumes, contours, theodolite, theodolite traversing, omitted measurements, trigonometric levelling, tacheometry, curves, photogrammetry, geodetic surveying, hydrographic surveying.
8.	Computer-aided analysis and design of structures, application of computer programming to structures. numerical methods
9.	<b>Estimating, Costing and Valuation:</b> Specification, estimation, costing, tenders and contracts, rate analysis, valuation
10.	<b>Fluid Mechanics:</b> Properties of fluids, fluid statics and buoyancy, kinematics and dynamics, flow measurement, flow in open channel, flow in closed conduits, dimensional and model analysis, losses in pipe flow, siphon, water hammer, boundary layer and control, pipe network.
11	<b>Fluid Machines:</b> Hydraulic turbines, centrifugal pumps, reciprocating pumps, <b>power</b> house, classification and layout.
12	<b>Engineering Hydrology:</b> Hydrological cycle, precipitation, evaporation, infiltration, runoff, hydrographs, reservoir planning & sediment control, floods, flood routing, ground water.
13	<b>Geo-technical Engineering:</b> Geotechnical properties, stresses in soil, shear resistance, compaction, consolidation and earth pressure, stability of slopes, bearing capacity, settlements, shallow and deep foundations, cofferdams, ground water control.

14	<b>Highway Engineering:</b> Planning of highway systems, alignment and geometric design, horizontal and vertical curves, grade separation, materials and different surfaces and maintenance, rigid and flexible pavement, traffic engineering.
15	<b>Bridge Engineering:</b> Selection of site, types of bridges, discharge, waterway, spans, afflux, scour, standards, specifications, loads and forces, erection of superstructure, strengthening.
16	<b>Environmental Engineering</b>
a.	<b>Water Supply Engineering:</b> Sources of supply, design of intakes, estimation of demand, water quality standards, primary and secondary treatment, maintenance of treatment units, conveyance and distribution of treated water, rural water supply.
b.	<b>Waste Water Engineering &amp; Pollution control:</b> Quantity, collection and conveyance and quality, disposal, design of sewer and sewerage systems, pumping, characteristics of sewage and its treatment, rural sanitation, sources and effects of air and noise pollution, monitoring, standards, Environment protection Act
c.	<b>Solid Waste Management:</b> Sources, classification, collection and disposal.
17	<b>Applied Mathematics –</b>
a)	<b>Matrices –</b> Types of Matrices (Symmetric, Skew-symmetric, Hermitian, Skew Hermitian, Unitary, Orthogonal Matrices, properties of Matrices) Rank of a Matrix using Echelon forms, reduction to normal form, PAQ in normal form, system of homogeneous and non-homogeneous equations. Linear dependent and independent vectors.
(b)	<b>Partial Differentiation-</b> Partial Differentiation; Partial derivatives of first and higher order. Total differentials, differentiation of composite and implicit functions. Euler's theorem on homogeneous functions with two and three independent variables. Deductions from Euler's Theorem
(c)	Linear Differential Equations with Constant Coefficients and Variable Coefficients of Higher Order – Linear Differential Equation with constant coefficients – complementary function, particular integrals of differential equation, Cauchy's homogeneous linear differential equation and Legendre's differential equation, Method of variation of parameters.
(d)	Differentiation under Integral sign, Numerical Integration - Differentiation under Integral sign with constant limits of integration, Numerical Integration by (a) Trapezoidal (b) Simpson's 1/3 <sup>rd</sup> (c) Simpson's 3/8 <sup>th</sup> rule.
(e)	Double Integration – Change the order of integration, Evaluation of double integrals by changing the order of integration and changing to polar form.
(f)	Triple Integration and Application of Multiple Integrals – Application of double Integrals to compute Area, Mass, Volume. Application of triple integral to compute volume.

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करीताचा अभ्यासक्रम ”**

**२. नगरपरिषद अभियांत्रिकी सेवा - विद्युत**

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधित घटक	४०	८०	पदवी	इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
एकूण = पेपर १ + पेपर २		१००	२००			मिनिटे	

**नकारात्मक गुणदान -**

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

**-: अभ्यासक्रम :-**

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - विद्युत		
पेपर - १		
अ. क्र	विषय	
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उताऱ्यावरील प्रश्नांची उत्तरे	<b>Marathi :</b> सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उताऱ्यावरील प्रश्नांची उत्तरे

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - विद्युत		
पेपर - १		
अ. क्र	विषय	
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	<ul style="list-style-type: none"> <li>Indian History with special reference to Maharashtra</li> </ul>
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	<ul style="list-style-type: none"> <li>Indian Geography with special reference to Maharashtra</li> </ul>
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>भारतीय आयात निर्यात</li> <li>राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी</li> <li>किंमती वाढण्याची/चलन वाढ कारणे व उपाय</li> </ul>	Indian Economy with special reference to Maharashtra <ul style="list-style-type: none"> <li>Indian Imports – Exports</li> <li>Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> <li>Inflation – reasons and measures</li> </ul>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>संसद व राज्य विधान मंडळ इ.</li> <li>राज्य व्यवस्थापन (प्रशासन)</li> <li>ग्रामीण व शहरी प्रशासन</li> </ul>	Indian Political System :- <ul style="list-style-type: none"> <li>Indian Polity &amp; Constitution</li> <li>Parliament, state assembly etc.</li> <li>State administration</li> <li>Rural and Urban administration</li> </ul>
३.५	चालु घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>मानवी विकास व पर्यावरण,</li> <li>पर्यावरण पुरक विकास,</li> <li>नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> </ul>	Environment:- <ul style="list-style-type: none"> <li>Human development and environment,</li> <li>Environment friendly / Sustainable development</li> <li>Conservation of natural resources specially forest conservation</li> <li>Types of pollutions and environmental disasters</li> <li>Institutions engaged in environmental conversation at</li> </ul>

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - विद्युत		
पेपर - १		
अ. क्र	विषय	
	<ul style="list-style-type: none"> <li>पर्यावरण संवर्धनात कार्यरत असलेल्या जागतिक /राष्ट्र / राज्य / संस्था / पातळीवरील संघटना</li> </ul>	State, National and International Level
४	<b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न <b>अंकगणित</b> - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश, अपूर्णांक व टक्केवारी, इ.	<b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think. <b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage, etc.

पेपर २		
विषयाशी संबंधित घटक (विद्युत अभियांत्रिकी)		
अ. क्र	विषय	
5.1	<b>Applied Mathematics –</b>	
(a)	<b>Matrices</b> – Types of Matrices (Symmetric, Skew-symmetric, Hermitian, Skew Hermitian, Unitary, Orthogonal Matrices, properties of Matrices) Rank of a Matrix using Echelon forms, reduction to normal form, PAQ in normal form, system of homogeneous and non-homogeneous equations. Linear dependent and independent vectors.	
(b)	<b>Partial Differentiation-</b> Partial Differentiation; Partial derivatives of first and higher order. Total differentials, differentiation of composite and implicit functions. Euler's theorem on homogeneous functions with two and three independent variables. Deductions from Euler's Theorem	
(c)	Applications of Partial Differentiation, Expansion of Functions, Maxima and Minima of function of two independent variables, Jacobian, Taylor's Theorem and Taylor's series, Maclaurin's series.	
(d)	Linear Differential Equations with Constant Coefficients and Variable Coefficients of Higher Order – Linear Differential Equation with constant coefficients – complementary function, particular integrals of differential equation, Cauchy's homogeneous linear differential equation and Legendre's differential equation, Method of variation of parameters.	
(e)	Differentiation under Integral sign, Numerical Integration - Differentiation under Integral sign with constant limits of integration, Numerical Integration by (a) Trapezoidal (b) Simpson's 1/3 <sup>rd</sup> (c) Simpson's 3/8 <sup>th</sup> rule.	
(h)	Transforms: Laplace Transform, Z-Transform, Fourier transform, properties, and numericals Elements of Mechanical Engineering	
5.2	<b>Elements of Mechanical Engineering</b>	
(a)	Thermodynamics - Thermodynamic work, p-dv work in various process, p-v representation of various thermodynamic processes and cycles. Ideal gas equation, properties of pure substance, Statements of Ist and IInd law of thermodynamics and their applications in mechanical engineering. Carnot cycle for Heat engine, refrigerator and heat pump.	
(b)	Heat transfer – Statement and explanation of Fourier's Law of heat conduction, Newton's law of	



<b>पेपर २</b>	
<b>विषयाशी संबंधीत घटक (विद्युत अभियांत्रिकी)</b>	
<b>अ. क्र</b>	<b>विषय</b>
	cooling, and Stefan Boltzmann's law. Conducting and insulation materials and their properties. Selection of heat sink and heat source.
(c)	Power plants – Thermal, Hydro-electric, nuclear and solar wind hybrid power plants
(d)	Machine elements: Power transmission shafts, axles, keys, bush and ball bearings, Flywheel and Governors.
(e)	Power Transmission Devices – Types of belts and belt drives, Chain drives, type of gears, Types of couplings, friction clutch (cone and single plate), brakes (types and application only). Application of these devices.
(f)	Machine Tools (Basic elements, Working principle and types of operations) Lathe Machine – Centre Lathe Drilling Machine – Study of pillar drilling machine. Introduction to NC and CNC machine, grinding machine, Power saw, Milling Machine.
<b>5.3</b>	<b>Elements of Electrical Engineering</b>
(a)	D.C. circuits: Kirchhoff's laws, ideal and practical voltage and current source, Mesh and nodal analysis (super node and super mesh excluded), Source transformation, Star-delta transformation, Super position theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem.
(b)	A.C. Circuits : Generation of alternating voltage and current, RMS and average value, form factor, crestfactor, AC through resistance, inductance and capacitance, R-L, R-C, and R-L-C series and parallel circuits, phasor diagrams, power and power factor, series and parallel resonance, Q-factor and bandwidth
(c)	Three phase circuits : Three phase voltage and current generation, star and delta connections (balanced load only), relationship between phase and line currents and voltages, Phasor diagrams, Basic principle of wattmeter, measurement of power by two wattmeter method.
(d)	Single phase transformer : Construction, working principle, Emf equation, ideal and practical transformer, transformer on no load and on load, phasor diagrams, equivalent circuit, O.C. and S.C. test, Efficiency.
(e)	Electrostatics and Electromagnetism, laws of electromagnetic induction, lenz law, Fleming left and right hand rules, etc.
<b>5.4</b>	<b>Basic Computer Engineering</b>
(a)	Principles of Object-Oriented Programming Elements of computer systems, DOS Commands & Linux environment, Language Processors, Object-Oriented Programming Paradigm and benefits, Applications of OOP
(b)	Object-Oriented Systems Development Object-Oriented Analysis: static and dynamic modeling, and Design: class design and algorithm design, case studies.
(c)	Beginning with C++ Tokens, Expressions, Control Structures, Array, Functions, Structures and Unions
(d)	Class and Objects Specifying a Class, Defining Member Functions, Private Member Functions, Static Data and Member Functions, Arrays of Objects, Friend Functions.
(e)	Working with Files

पेपर २

विषयाशी संबंधीत घटक (विद्युत अभियांत्रिकी)

अ. क्र	विषय
	Classes for File Stream Operations and I/O stream operation, Opening and Closing a File, Detecting end-of-file, more about Open(): File Modes, Sequential Input and Output operations.
<b>6</b>	<b>Electrical engineering test</b>
६.१	Work, Power and Energy, Resistance, capacitance and inductance, DC circuits, KCL, KVL, Network theorems, fundamentals, RL, RC and RLC circuits, Steady state and transient responses. Series and parallel AC circuits, Three phase circuits, Power calculation in balanced and unbalanced circuits, Linear and non linear loads.
६.२	Basics of electromagnetic and electro static, series and parallel magnetic circuits, energy stored in fields, types, construction, operation of single and three phase transformers, equivalent circuit and phasor, diagrams, OC and SC tests, regulation and efficiency calculation, parallel operation, field tests before commissioning.
६.३	Fundamentals of energy conversion, Construction and theory of DC machine, DC generator characteristics, Starting, braking and speed control of DC motors, Application of DC machines.
६.४	Principle, types, performance characteristics, starting and speed control of single phase and three phase induction motors, Equivalent circuits, phasor diagrams, applications. VFD for induction motors. Energy saving opportunities in using VFD.
६.५.	Principle, types of synchronous motors, performance characteristics, starting and speed control of single phase and three phase synchronous motors, Equivalent circuits, phasor diagrams, applications. VFD for synchronous motors.
६.६.	Analog and Digital electronics fundamentals, devices and characteristics, amplifier and oscillator circuits, Operational amplifier, Gates, flip-flops, Combinational and sequential circuits, ADC and DACs.
६.७.	Sensors and transducers, Performance characteristics of measuring instruments, instrument transformers, measurement of physical parameters such as pressure, force, temperature, flow, vibration, torque, etc. Principles of feedback, transfer function, block diagram, steady state error, Steady state and transient specifications, Bode plot, Nyquist plot and Root locus, Relative and absolute Stability considerations.
६.८.	Power Devices- Types, Characteristics of various power electronic devices, Triggering and protection circuits, Controlled and uncontrolled rectification, DC to

<b>पेपर २</b>	
<b>विषयाशी संबंधीत घटक (विद्युत अभियांत्रिकी)</b>	
<b>अ. क्र</b>	<b>विषय</b>
	DC converters, DC to AC conversion, modulation techniques, SPWM. Fundamentals of electric drives, ४ quadrant operation, theory and analysis of DC drives, converter and chopper fed DC drives, Voltage, frequency and V/F controlled drives, slip power recovery schemes, fundamentals of wind power generation and grid interface.
६.९.	Power generation in India and Maharashtra, Renewable Generation, Various types of power plant, major equipment in power plants, Major issues with wind and solar power generation and grid interface. Steady state performance of overhead transmission lines and cables, per unit quantities, Bus admittance and impedance matrices, symmetrical components.
६.१०.	Calculation of sag and tension in transmission of lines, Analysis symmetrical and unsymmetrical faults, principle of active and reactive power transfer and distribution. Load flow studies, steady state and transient stability, voltage stability, voltage control, economic load dispatch, load frequency control in power systems.
६.११.	Principle of circuit breaking, arc extinction and arc interruption for AC and DC breaker, Various types of circuit breakers and their applications, Ratings of breakers, isolators and major HV switchgear.
६.१२.	Principle of over current, earth fault, differential, and distance protection. Concepts of solid state and numeric relays. Protection of generator, transformer, transmission lines, substation, busbar, induction motors. Various LT switchgear devices such as MCCB, ELCB.
६.१३.	Specification of impulse wave, multistage impulse generator, insulation coordination, Routine and type tests for cables and transformers, Lightning protection, Early emission arrestors. Power quality issues, Reactive and harmonic compensation, FT devices and their applications, Passive and Active filters, HVDC transmission.
६.१४	Energy scenario in India, Energy policies, pricing and reforms, Energy conservation Act, २००१, Electricity Act, २००३. Energy management objectives, Electricity billing, electrical load management and MD control, Tariffs, PF improvements and benefits.
६.१५	Basic terms in lighting systems and features, lamp types and their features, Recommended illumination levels for various tasks, methodology of lighting system energy efficiency study, Illumination system design for residential, commercial,

<b>पेपर २</b>	
<b>विषयाशी संबंधीत घटक (विद्युत अभियांत्रिकी)</b>	
<b>अ. क्र</b>	<b>विषय</b>
	industrial categories. Solar powered illumination and economics associated.
<b>६.१६</b>	DG set selection and installation factors, Operational features, Energy performance assessment of DG sets, Energy saving majors for DG sets, Synchronization of DGs with utility supply. Parallel operation. UPS technology, types and specifications, Performance assessment.
<b>६.१७</b>	Pump types and characteristics, Pump curves, Factors affecting pump performance, Efficient pumping system operation, and Energy conservation in pumping systems. Fan and compressor types, Fan and compressor performance evaluation and efficient system operation, Compressor capacity assessment, Energy saving opportunities in fans and compressors.
<b>६.१८</b>	HVAC and refrigeration system, Types of refrigeration system, Common refrigerants and properties, Compressor type and applications, Selection of suitable refrigeration system, Factors affecting performance and energy efficiency of refrigeration plants, Energy saving opportunities.
<b>६.१९</b>	Underground cable and cable accessories, cable in underground structure, cable installation in conduit, cable joints, cable fault detection, over-current protection and lightning protection of underground systems, operation and maintenance of underground system. Grounding systems, Equipment, Ground fault protection, Isolated neutral grounding, Grounding for hazardous locations, substation, and tower grounding.
<b>६.२०</b>	Substation design, bus designs, substation layout, grounding and ground grid design, substation structures, major substation equipment, auxiliary equipment, substation automation, Commissioning and start up. Industrial, residential and commercial wiring, electrical system design, design and audio and video systems, Lifts and Elevator systems, safety norms and codes. Fire fighting apparatus and systems.

**“महाराष्ट्र नगरपरिषदा , नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३  
करीताचा अभ्यासक्रम ”**

**३. नगरपरिषद अभियांत्रिकी सेवा - संगणक**

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधित घटक	४०	८०	पदवी	इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
पेपर - १ + पेपर २ = एकूण		१००	२००			मिनिटे	

**नकारात्मक गुणदान -**

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

**-: अभ्यासक्रम :-**

महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - संगणक	
पेपर - १	
अ. क्र	विषय
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि <b>Marathi</b> : सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि

महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - संगणक		
पेपर - १		
अ. क्र	विषय	
	उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे	उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	<ul style="list-style-type: none"> <li>Indian History with special reference to Maharashtra</li> </ul>
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	<ul style="list-style-type: none"> <li>Indian Geography with special reference to Maharashtra</li> </ul>
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>भारतीय आयात निर्यात</li> <li>राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी किंमती वाढण्याची/चलन वाढ कारणे व उपाय</li> </ul>	<ul style="list-style-type: none"> <li>Indian Economy with special reference to Maharashtra</li> <li>Indian Imports – Exports</li> <li>Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> <li>Inflation – reasons and measures</li> </ul>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>संसद व राज्य विधान मंडळ इ.</li> <li>राज्य व्यवस्थापन (प्रशासन)</li> <li>ग्रामीण व शहरी प्रशासन</li> </ul>	<ul style="list-style-type: none"> <li>Indian Political System :-</li> <li>Indian Polity &amp; Constitution</li> <li>Parliament, state assembly etc.</li> <li>State administration</li> <li>Rural and Urban administration</li> </ul>
३.५	चालू घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>मानवी विकास व पर्यावरण,</li> <li>पर्यावरण पुरक विकास,</li> <li>नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> </ul>	<ul style="list-style-type: none"> <li>Environment:-</li> <li>Human development and environment,</li> <li>Environment friendly / Sustainable development</li> <li>Conservation of natural resources specially forest conservation</li> <li>Types of pollutions and environmental disasters</li> <li>Institutions engaged in environmental conseversation at State, National and</li> </ul>

महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - संगणक		
पेपर - १		
अ. क्र	विषय	
	<ul style="list-style-type: none"> <li>पर्यावरण संवर्धनात कार्यरत असलेल्या राज्य / जागतिक / राष्ट्र / संस्था / पातळीवरील संघटना</li> </ul>	International Level
४	<p><b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न</p> <p><b>अंकगणित</b> - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश, अपूर्णाक व टक्केवारी, इ.</p>	<p><b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think.</p> <p><b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage etc.</p>

पेपर २		
विषयांशी संबंधित घटक (अभियांत्रिकी सेवा - संगणक)		
अ. क्र	विषय	
१	<b>Discrete Mathematics</b>	
a)	Set Theory, Logic, Permutation, Combination	
2	<b>Statistics</b>	
a)	Central tendency - Mean, Mode, median, 5-number summary, box plots, standard deviation, variance, correlation, co-variance	
2.2	<b>Uses of maps and field surveys</b>	
a)	Various types of maps and their uses. Principles of surveys. Modern survey method using levels, Theodolite, EDM, lasers, total stations and GPS. Introduction to digital mapping. Measuring areas from maps using digital planimeter.	
b)	Conducting simple and differential levelling for seeking out various benchmarks, determining the elevation of different points and preparation of contour maps. Introduction to GIS Software and other surveying software's with respect to their capabilities and application areas.	
2.3	<b>Basic Computer Engineering</b>	
a)	Elements of computer systems, Linux Commands & environment, System Programs - Editors, Compilers, loaders and linkers,	
b)	Office Automation, Spreadsheets, Presentation tools, Google Docs, Emails, Google Groups, Chat, Online meeting tools,	
(c)	<p><b>Programming with C, C++ and Java</b></p> <p>Tokens, operators, Expressions, Control Structures, Arrays, Functions, Structures and Unions, enumerated types</p> <p>Principles of Object-Oriented Programming - Abstraction, Encapsulation, Inheritance Polymorphism</p>	
(d)	<p>Classes and Objects</p> <p>Specifying a Class, Data Members and Functions, Private Member Functions, Static Data, Arrays</p>	

<b>पेपर २</b>	
<b>विषयांशी संबंधीत घटक (अभियांत्रिकी सेवा - संगणक)</b>	
अ. क्र	विषय
	of Objects, Friend Functions, overloading, single and multiple inheritance, polymorphism, abstract Class, virtual functions, Template classes and functions.
3.1	<b>Digital Logic, Computer Organization and Architecture and IOT</b>
	Boolean algebra, Combinational and sequential circuits, Minimization, Number representations and computer arithmetic (fixed and floating point). Microprocessor. Microcontroller
3.2	<b>Data Structures and Algorithms</b>
	Data Objects, data types, ADT, data structures, time and space complexity Arrays, stacks, queues, linked lists, trees, and binary search trees, heaps, graphs, minimum spanning trees, shortest path algorithms, Searching and sorting techniques. Algorithm design techniques: greedy, Backtracking, dynamic programming and divide-and-conquer.
3.3	<b>Operating Systems</b>
	Processes, threads, inter-process communication, concurrency and synchronization. Deadlock, CPU Scheduling. Memory Management, virtual memory, Device management
3.4	<b>Databases Management Systems</b>
	ER & EER-models. Relational model, SQL: DDL and DML, PLSQL, Views, Triggers, Assertions, ODBC, JDBC, Integrity constraints, normal forms. File organization, indexing and hashing, Transaction management: concurrency control, and recovery, Database system architectures, Introduction of Parallel and distributed databases, Reports.
3.5	<b>Computer Networks and Security</b>
	LAN, MAN, WAN, Internet, OSI & TCP/IP Models, TCP/UDP, switching techniques, routers and routing algorithms, sockets, DNS, SMTP, POP, FTP, HTTP. Basics of Wi-Fi. <b>Application security:</b> authentication, basics of public key and private key cryptography. digital signatures and certificates, firewalls, Cyber Laws and Information Security, Hash Functions, online threats/attacks and system security. Cloud Computing:
3.6	<b>Software Engineering and Project Management</b>
	SDLC, Software engineering models, Scrum and Agile, Software Modeling, UML. Software Architecture and design, Software testing and quality assurance, Design Patterns, Project Estimation, scheduling, version control
3.7	<b>Web Technology, E-commerce and mobility</b>
	HTML, CSS, PHP, Node JS, Angular JS, React JS, Web Servers, Database driven websites, Management information System (MIS), ERP, Digital Marketing, E-commerce, M-Commerce, Digital Payments, Mobile application development
3.8	<b>Emerging Technologies</b>
	Introduction to Artificial Intelligence, Machine learning, Block Chains, Virtual Reality(VR), Augmented Reality(AR), GIS, GPS, Satellite image processing. Chatbots, ChatGPT, ICT, Smart Applications, Internet of Things.
4.0	Information Technology Act, 2000 & Information Technology Rules (Amended up to 2022)
5.0	IT initiatives of Government : e-Governance policies of Government, Smart Cities, Ease of Doing Business/Ease of Living, Aaple Sarkar portal, Gatishakti Sanchar portal, Telecom Infrastructures policy & right of way rules, E-Office, National Urban Digital Mission and other IT initiatives of Government.



पेपर २	
विषयांशी संबंधीत घटक (अभियांत्रिकी सेवा - संगणक)	
अ. क्र	विषय
5.1	Social Media: Various social media tools and their use for IEC. Innovative ideas for social campaigning.
5.2	Telecom Policy - Government of Maharashtra

" महाराष्ट्र नगरपरिषदा , नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३

करीताचा अभ्यासक्रम

४. नगरपरिषद अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता  
अभियांत्रिकी

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधीत घटक	४०	८०	पदवी	इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
एकूण = पेपर १ + पेपर २		१००	२००			मिनिटे	

नकारात्मक गुणदान -

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

-: अभ्यासक्रम :-

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता अभियांत्रिकी सेवा	
पेपर - १	
अ. क्र	विषय
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि Marathi : सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता अभियांत्रिकी सेवा		
पेपर - १		
अ. क्र	विषय	
	उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे	उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	<ul style="list-style-type: none"> <li>Indian History with special reference to Maharashtra</li> </ul>
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	<ul style="list-style-type: none"> <li>Indian Geography with special reference to Maharashtra</li> </ul>
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>भारतीय आयात निर्यात</li> <li>राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी किंमती वाढण्याची/चलन वाढ कारणे व उपाय</li> </ul>	<ul style="list-style-type: none"> <li>Indian Economy with special reference to Maharashtra</li> <li>Indian Imports – Exports</li> <li>Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> <li>Inflation – reasons and measures</li> </ul>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>संसद व राज्य विधान मंडळ इ.</li> <li>राज्य व्यवस्थापन (प्रशासन)</li> <li>ग्रामीण व शहरी प्रशासन</li> </ul>	<ul style="list-style-type: none"> <li>Indian Political System :-</li> <li>Indian Polity &amp; Constitution</li> <li>Parliament, state assembly etc.</li> <li>State administration</li> <li>Rural and Urban administration</li> </ul>
३.५	चालू घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>मानवी विकास व पर्यावरण,</li> <li>पर्यावरण पुरक विकास,</li> <li>नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> <li>पर्यावरण संवर्धनात कार्यरत असलेल्या</li> </ul>	<ul style="list-style-type: none"> <li>Environment:-</li> <li>Human development and environment,</li> <li>Environment friendly / Sustainable development</li> <li>Conservation of natural resources specially forest conservation</li> <li>Types of pollutions and environmental disasters</li> <li>Institutions engaged in environmental conseversation at State, National and International Level</li> </ul>

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता अभियांत्रिकी सेवा	
पेपर - १	
अ. क्र	विषय
	राज्य / जागतिक / राष्ट्र / संस्था / पातळीवरील संघटना
४	<p><b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न</p> <p><b>अंकगणित</b> - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश, अपूर्णांक व टक्केवारी, इ.</p>
	<p><b>General Mental Ability :</b></p> <p>Questions will check how fast and accurate a candidate can think.</p> <p><b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage, etc.</p>

पेपर २	
विषयाशी संबंधित घटक (अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता)	
4.1	<b>Applied Mathematics –</b>
a)	<b>Matrices</b> – Types of Matrices (Symmetric, Skew-symmetric, Hermitian, Skew Hermitian, Unitary, Orthogonal Matrices, properties of Matrices) Rank of a Matrix using Echelon forms, reduction to normal form, PAQ in normal form, system of homogeneous and non-homogeneous equations. Linear dependent and independent vectors.
(b)	<b>Partial Differentiation-</b> Partial Differentiation; Partial derivatives of first and higher order. Total differentials, differentiation of composite and implicit functions. Euler's theorem on homogeneous functions with two and three independent variables. Deductions from Euler's Theorem
(c)	Linear Differential Equations with Constant Coefficients and Variable Coefficients of Higher Order – Linear Differential Equation with constant coefficients – complementary function, particular integrals of differential equation, Cauchy's homogeneous linear differential equation and Legendre's differential equation, Method of variation of parameters.
(d)	Differentiation under Integral sign, Numerical Integration - Differentiation under Integral sign with constant limits of integration, Numerical Integration by (a) Trapezoidal (b) Simpson's 1/3 <sup>rd</sup> (c) Simpson's 3/8 <sup>th</sup> rule.
(e)	Double Integration – Change the order of integration, Evaluation of double integrals by changing the order of integration and changing to polar form.
(f)	Triple Integration and Application of Multiple Integrals – Application of double Integrals to compute Area, Mass, Volume. Application of triple integral to compute volume.
4.2	<b>Engineering Mechanics -</b>
(a)	System of Coplanar Forces – Resultant of concurrent forces, parallel forces & Non concurrent Non parallel system of forces. Moment of force about a point, Couples, Varignon's theorem, Distributed forces in plane, Centroid and Centre of Gravity, Moment of Inertia & its theorem.
(b)	Condition of equilibrium for concurrent forces, Parallel forces and Non concurrent Non parallel general system of forces & couples. Types of supports, loads, beams. Analysis of trusses.
(c)	Laws of friction, Cone of friction, Equilibrium of bodies on inclined plane. Application of problems involving wedges, ladders, Screw friction.
(d)	Kinematics of particle: - Velocity and acceleration in terms of rectangular coordinate system, Rectilinear motion, Motion along plane curved path, Tangential and Normal components of acceleration. Motion Curves (a-t, v-t, s-t curves), Projectile motion. Relative motion. Newton's

पेपर २

विषयाशी संबंधीत घटक (अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता)

	second law of Motion, principle of work & energy, D'Alemberts principles, equation of dynamic equilibrium. Moment of Energy principles: Linear momentum, principle of conservation of momentum, Impact of solid bodies, direct and oblique impact, impact of solid bodies, semi elastic impact and plastic impact.
5	<b>Applied Thermodynamics –</b> Zeroth law of Thermodynamics, First law of Thermodynamics, Second law of Thermodynamics, calculation of work and heat in various processes; Second law of Thermodynamics; Thermodynamics property charts and tables, availability and irreversibility, Thermodynamic relations.
6	<b>Fluid Mechanics and Turbomachinery –</b> Fluid definition and properties, Newton's Law of viscosity concept of continuum, Classification of fluid, Fluid statics, manometry, buoyancy, force of submerged bodies, stability of floating bodies, viscous flow of incompressible fluid, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes. velocity diagrams,
7	<b>Refrigeration and Air Conditioning.</b> Vapour and gas refrigeration and heat pump cycle; properties of moist air, psychrometric chart, basic psychrometric processes.
8	<b>Internal Combustion Engine</b> Classification of I.C. Engine, circle Analysis of IC, SI, CI engines, Super charging/ Turbocharger Performance characteristics of SI and CI, Air pollution due to IC engine and its norms, engine fuels, engine lubricants, engine cooling, Introduction to CNG, LPG, wankle engines etc., Recent development in IC engine.
9	<b>Power Plant Engineering</b> Hydro power plant – Rainfall, run off and its measurement hydrographs, flow duration curve, reservoir storage capacity, classification of plants – run off river plant, storage river plant, pump storage plant, layout of hydroelectric power plant.
10	<b>Renewable Energy Sources</b> <b>a. Solar Energy</b> - Solar concentrators and tracking, Dish and Parabolic trough concentrating generating systems, Central tower solar power plants; Solar Ponds. Basic principle of power generation in a PV cell; Band gap and efficiency of PV cells, solar cells, characteristics, manufacturing methods of mono and poly-crystalline cells; Amorphous silicon thin film cells. <b>b. Wind Energy</b> - Basic component of WEC, Type of wind turbine – HAWT, VAWT, Performance parameters of wind turbine, Power in wind, Wind electric generators, wind characteristics and site selection; wind farms for bulk power supply to grid.
11	<b>Strength of Materials</b> Stress and Strain, Elastic Constants: Poission's Ratio, Modulus of elasticity, Modulus of rigidity, Bulk modulus, Shear Force and Bending Moment diagram, Deflection of Beams, Thin Cylindrical and Spherical Shells, Strain Energy, Torsion.
12	<b>Theory of Machines and Vibration</b> Kinematics - Structure, Machine, Link and its types, Kinematics pairs, Kinematic chain and mechanism, Grubler's criteria, Inversions of kinematics chains, inversions of-four bar chain, single slider crank chain and double slider crank chain. Displacement, Velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope. Free and forced vibration of single degree of freedom systems, effect of damping , vibration isolation, resonance critical speeds of shafts.
13	<b>Design of Machine Elements</b>

पेपर २

विषयाशी संबंधीत घटक (अभियांत्रिकी सेवा - पाणीपुरवठा, जलनिस्सारण व स्वच्छता)

	Design consideration in castings & forgings, theories of failure, Design for static loadings, Design against fluctuating loads, Design of shafts, Design of springs, Design of belts.
14	<b>Materials Technology</b> Strain Hardening, Constitution of Alloys, Iron-Carbon Equilibrium Diagram, Heat Treatment of Steels, Cast Irons, Introduction to International Standards/Codes, Non Ferrous Metals and Alloys, Fatigue Failure, Creep, Alloy Steels, Strengthening mechanism, Powder Metallurgy.
15	Environmental chemistry - chemistry involved in water and wastewater treatment, water and waste water parameters analysis procedures
16	<b>Water Sources, water quality -</b> Physical, chemical and biological water quality and their prescribed standards standards, water borne diseases, water treatment - physical and chemical treatment process
17	<b>Wastewater-</b> Characteristics and composition, sources, physical and chemical treatment operations and processes, biological treatment processes - aerobic and anaerobic treatment system - their working principle and design
18	<b>Air pollution fundamentals -</b> sources, effects, standards, meteorology of air pollution, air quality managements, air quality monitoring, air pollution control systems, their working principles and design
19	<b>Solid waste-</b> Characteristics and composition, functional units of solid waste managements, solid waste treatment techniques, ultimate disposal
20	<b>Environmental Engineering</b> Quality of water, Source of water supply, Purification of water, Distribution of water, Need of sanitation, Sewerage systems, Circular sewers, Oval sewer, Sewer appurtenances, Surface water drainage sewage treatments.Environment protection Act

**“महाराष्ट्र नगरपरिषदा, नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३  
करीताचा अभ्यासक्रम ”**

**५. महाराष्ट्र नगरपरिषद लेखापरीक्षण व लेखा सेवा**

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधित घटक	४०	८०	पदवी	मराठी व इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
एकूण = पेपर - १ + पेपर २		१००	२००			मिनिटे	

**नकारात्मक गुणदान -**

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

**-: अभ्यासक्रम :-**

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद लेखापरीक्षण व लेखा सेवा		
पेपर १		
Sr. No	Topic	विषय
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे	<b>Marathi</b> : सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद लेखापरीक्षण व लेखा सेवा

पेपर १

Sr. No	Topic	विषय
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	Indian History with special reference to Maharashtra
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	Indian Geography with special reference to Maharashtra
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>• भारतीय आयात निर्यात</li> <li>• राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>• शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी</li> </ul> किंमती वाढण्याची/चलन वाढ कारणे व उपाय	<p>Indian Economy with special reference to Maharashtra</p> <ul style="list-style-type: none"> <li>• Indian Imports – Exports</li> <li>• Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>• Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> </ul> <p>Inflation – reasons and measures</p>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>• भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>• संसद व राज्य विधान मंडळ इ.</li> <li>• राज्य व्यवस्थापन (प्रशासन) ग्रामीण व शहरी प्रशासन</li> </ul>	<p>Indian Political System :-</p> <ul style="list-style-type: none"> <li>• Indian Polity &amp; Constitution</li> <li>• Parliament, state assembly etc.</li> <li>• State administration</li> </ul> <p>Rural and Urban administration</p>
३.५	चालु घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>• मानवी विकास व पर्यावरण,</li> <li>• पर्यावरण पुरक विकास,</li> <li>• नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>• विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> </ul> पर्यावरण संवर्धनात कार्यरत असलेल्या	<p>Environment:-</p> <ul style="list-style-type: none"> <li>• Human development and environment,</li> <li>• Environment friendly / Sustainable development</li> <li>• Conservation of natural resources specially forest conservation</li> <li>• Types of pollutions and environmental disasters</li> </ul> <p>Institutions engaged in environmental conversation at International, National and State Level,</p>



संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद लेखापरीक्षण व लेखा सेवा		
पेपर १		
Sr. No	Topic	विषय
	राज्य / जागतिक / राष्ट्र / संस्था / पातळीवरील संघटना	
४	<p><b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न</p> <p><b>अंकगणित</b> - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश , अपूर्णांक व टक्केवारी इ.</p>	<p><b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think.</p> <p><b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage, etc.</p>

पेपर २	
विषयाशी संबंधीत घटक (लेखापरीक्षण व लेखा)	
५	<b>Accounting</b>
५.१	<p><b>Accounting</b> Introduction of Book-Keeping &amp; Accountancy Accounting Standards, Introduction to Accounting Standards, Overview of Accounting <b>(Indian AS)</b> Standard AS 1: Disclosure of Accounting Policies, AS 2: Valuation of Inventories, AS 3: Cash Flow Statements, AS 6: Depreciation Accounting, AS 7: Construction Contracts , AS 9: Revenue Recognition, AS 10: Accounting for Fixed Assets/ Property, Plant and Equipment, AS 12 : Accounting for Government Grants, AS 13: Accounting for Investments, AS 14: Accounting for Amalgamation - Financial statements of Company-Preparation of financial statements- Cash flow Statement (Profit and Loss Account, Balance Sheet and Cash Flow Statement)-Profit/Loss prior to incorporation- Accounting for Bonus Issue, Amalgamation and Reconstruction, Average Due Date and Account Current, Self-Balancing Ledgers, AS 19 : Lease, AS 29 : Provisions, Contingent Liabilities &amp; Contingent Assets Financial Statements of Not-for-Profit Organizations, Accounts from Incomplete Records, Accounting for Special Transactions (a) Hire purchase and instalment sale transactions (b) Investment accounts (c) Insurance claims for loss of stock and loss of profit. Issues in Partnership Accounts</p>
५.२	<p><b>Business Laws</b> The Indian Contract Act, 1872, The Negotiable Instruments Act, 1881, The Payment of Bonus Act, 1965, The Employees' Provident Fund and Miscellaneous Provisions Act, 1952, The Payment of Gratuity Act, 1972, Minimum Wages act 1948, Industrial Dispute Act 1947</p>
५.३	<p><b>Company Law</b> The Companies Act, 2013, Preliminary, Prospectus, Share and Share capital,</p>
५.४	<p><b>Cost Accounting</b> Introduction to Cost Accounting, Materials, Labour, Overheads, Operating, Process and Operation, Standard Costing, Marginal Costing, Budgets and Budgetary Control <b>(Basics)</b></p>

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद लेखापरीक्षण व लेखा सेवा		
पेपर १		
Sr. No	Topic	विषय
५.५	<b>Financial Management</b> Scope and Objectives of Financial Management, Time Value of Money, Financial Analysis and Planning, Financing Decisions, Types of Financing, Investment Decisions, Management of working capital, fund flow, leverages.	
५.६	<b>Income-tax</b> The Income-tax Act, 1961, Basic concepts, Residential status and scope of total income, Incomes which do not form part of total income ( Sec 10), 5 Heads of income, Provisions of Clubbing, Set-off and carry forward of losses, Deductions from gross total income, Computation of total income and tax payable. Provisions concerning Advance tax and TDS, Provisions for filing of return of income.	
५.७	<b>Auditing and Assurance</b> Auditing Concepts, Auditing and Assurance Standards, Preparation for an Audit, Internal Control, Types of Audit, Vouching, Verification of Assets and Liabilities, Audit Report, Special Audits Bombay local fund audit act and rules 1930.	
५.८	<b>Information Technology</b> Computer software, Data Storage, Retrievals and Data Base Management Systems, ERP, SA. Tally	
५.९	<b>Double Entry System &amp; Single Entry System of Accounting</b> Meaning & Fundamentals of Double Entry, Journal, Ledger Account posting, Subsidiary Book and Cash book & Petty cash book Accounting, Preparation of Trial Balance and final accounts, Rectification of Errors, bills of exchange, Maharashtra Municipal Account code 2013,	
५.१०	<b>Accounting of Not-for-Profit Organizations</b> Accounts of Non-profit making organisation, Final Account of non-profit making organisation, Accounting standards applicable to non-profit organisation	
५.११	<b>Bank Reconciliation Statement preparation</b>	
५.१२	<b>Depreciation Accounting</b>	
५.१३	<b>Preparation of Accounting Documents</b> such as vouchers, cash memo, Invoice etc.	
५.१४	<b>Goods and Service Tax Act 2017</b>	
५.१५	<b>Business Ethics and communication -principles of business ethics, corporate governance and corporate social responsibility ,essentials of communication ,group dynamics</b>	

**" महाराष्ट्र नगरपरिषदा, नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३  
करीताचा अभ्यासक्रम**

**६. महाराष्ट्र नगरपरिषद करनिर्धारण व प्रशासकीय सेवा**

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधित घटक	४०	८०	पदवी	मराठी व इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
एकूण = पेपर १ + पेपर २		१००	२००			मिनिटे	

**नकारात्मक गुणदान -**

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

**-: अभ्यासक्रम :-**

संवर्गाचे नाव : महाराष्ट्र नगरपरिषद करनिर्धारण व प्रशासकीय सेवा	
पेपर - १	
अ. क्र	विषय
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच <b>Marathi</b> : सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार

संवर्गाचे नाव : महाराष्ट्र नगरपरिषद करनिर्धारण व प्रशासकीय सेवा

पेपर - १

अ. क्र	विषय	
	उतान्यावरील प्रश्नांची उत्तरे	यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	<ul style="list-style-type: none"> <li>Indian History with special reference to Maharashtra</li> </ul>
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	<ul style="list-style-type: none"> <li>Indian Geography with special reference to Maharashtra</li> </ul>
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>भारतीय आयात निर्यात</li> <li>राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी</li> <li>किंमती वाढण्याची/चलन वाढ कारणे व उपाय</li> </ul>	Indian Economy with special reference to Maharashtra <ul style="list-style-type: none"> <li>Indian Imports – Exports</li> <li>Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> <li>Inflation – reasons and measures</li> </ul>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>संसद व राज्य विधान मंडळ इ.</li> <li>राज्य व्यवस्थापन (प्रशासन)</li> <li>ग्रामीण व शहरी प्रशासन</li> </ul>	Indian Political System :- <ul style="list-style-type: none"> <li>Indian Polity &amp; Constitution</li> <li>Parliament, state assembly etc.</li> <li>State administration</li> <li>Rural and Urban administration</li> </ul>
३.५	चालू घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>मानवी विकास व पर्यावरण,</li> <li>पर्यावरण पुरक विकास,</li> <li>नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> </ul>	Environment:- <ul style="list-style-type: none"> <li>Human development and environment,</li> <li>Environment friendly / Sustainable development</li> <li>Conservation of natural resources specially forest conservation</li> <li>Types of pollutions and</li> </ul>

संवर्गाचे नाव : महाराष्ट्र नगरपरिषद करनिर्धारण व प्रशासकीय सेवा

पेपर - १

अ. क्र	विषय
	<ul style="list-style-type: none"> <li>विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> <li>पर्यावरण संवर्धनात कार्यरत असलेल्या राज्य / जागतिक / राष्ट्र / संस्था / पातळीवरील संघटना</li> </ul>
४	<p><b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न</p> <p><b>अंकगणित</b> - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश, अपूर्णांक व टक्केवारी, इ.</p>
	<p>environmental disasters</p> <ul style="list-style-type: none"> <li>Institutions engaged in environmental conseversation at State, National and International Level</li> </ul> <p><b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think.</p> <p><b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage, etc.</p>

पेपर २

विषयाशी संबंधीत घटक (कर निर्धारण व प्रशासकीय सेवा परीक्षा अभ्यासक्रम)

	विषय	Topic
१	<p><b>महाराष्ट्राचा भूगोल-</b></p> <p>महाराष्ट्राचा रचनात्मक (Physical) भूगोल, मुख्य रचनात्मक (Physiographic) विभाग, हवामान, पर्जन्यमान व तापमान, पर्जन्यातील विभागवार बदल, प्रमुख नदी प्रणाली, पर्वत व डोंगर, राजकीय व महसुली विभाग, नैसर्गिक संपत्ती- वने व खनिजे, मानवी व सामाजिक भूगोल. शहरी समस्या भौगोलिक माहिती प्रणाली (GIS), जागतिक स्थिती प्रणाली (GPS)</p>	<p><b>Geography of Maharashtra-</b></p> <p>Physical geography of Maharashtra, main Physiographic divisions of Maharashtra, Climate, Rainfall and temperature, variation in divisional rainfall, rivers, mountains; Political divisions, Natural resources – Forest and minerals, Human and Social Geography, urban problems</p> <p>GIS, GPS</p>
२	<p><b>मानवी वसाहत</b></p> <p>ग्रामीण व नागरी वसाहत - स्थळ, जागा, प्रकार, आकार, अंतरे व त्यांची रचना</p> <p>ग्रामीण व नागरी वस्त्यांमधील समस्या</p>	<p>Human Settlements - Rural Urban Settlements - Site, Situation, type, size, spacing and morphology, Major problems of Rural and urban Settlements</p>

पेपर २

विषयाशी संबंधीत घटक (कर निर्धारण व प्रशासकीय सेवा परीक्षा अभ्यासक्रम)

	नागरीकरण - नागरीकरणाची प्रक्रिया, नागरी प्रभाव क्षेत्र, प्रादेशिक विकासातील असंतुलन	Urbanisation - Process of Urbanisation, sphere of urban influence, Regional imbalances
३	पर्यटन पर्यटनाचे प्रकार, सांस्कृतिक वारसा व जतन	Tourism - Types of Tourism, Cultural Heritage
४	महाराष्ट्राचा इतिहास- सामाजिक व आर्थिक जागृती (१८८५-१९४७), १८५७ च्या लढ्यातील महाराष्ट्राचे योगदान प्रमुख समाज सुधारक, महत्वाच्या नेत्यांचे काम / भूमिका महाराष्ट्रातील सामाजिक जागृतीतील वर्तमानपत्रे व शिक्षणाचा परिणाम/भूमिका, स्वातंत्र्यपूर्व काळातील इतर समकालीन चळवळी, राष्ट्रीय चळवळी मधील महाराष्ट्राचे योगदान, संयुक्त महाराष्ट्र लढा	<b>History of Maharashtra :</b> Social and Economic awareness (1885 - 1947), the role of the prominent leaders, Impact and role of the education and newspapers on the social awareness in pre-independence period of India; parallel movements in pre-independence period, National movements.
५	भारतीय राज्यघटना- घटनेची निर्मिती, घटनेच्या प्रस्तावने मागची भूमिका व तत्वे, सरनामा घटनेची महत्वाची कलमे, ठळक वैशिष्ट्ये, केंद्र व राज्य संबंध, मुलभूत हक्क व कर्तव्ये, राज्याच्या धोरणाची मार्गदर्शक तत्वे- नवे शैक्षणिक धोरण, राज्यपाल, मुख्यमंत्री व मंत्रीमंडळ - Role, अधिकार व कार्य, राज्य विधीमंडळ- विधानसभा, विधानपरिषद व त्यांचे सदस्य, अधिकार, कार्य व Role, विधी समित्या.	<b>Indian Constitution</b> Formation of Indian Constitution, The objectives and principles of preamble to the Constitution of India, Important articles of the Indian constitution / Salient features, relationship between the center and state, Secular state, fundamental rights and duties, Directive Principles of state policy- Education, Uniform civil code, Governor, Chief minister, cabinet - role, rights and functions, state assembly- legislative assembly, legislative council and their members, rights, functions and role, law committees.
६	राजकीय यंत्रणा (शासनाची रचना अधिकार व कार्य) केंद्र सरकार, केंद्रीय विधीमंडळ आणि राज्य सरकार व प्रशासन (महाराष्ट्राचा विशेष संदर्भ)	<b>Indian political System-</b> Indian political system ( The Structure, Rights and Functions), The central and state legislature, state government and administration (With Special reference to - Maharashtra)
७	जिल्हा प्रशासन, ग्रामीण आणि नागरी स्थानिक शासन (विशेष महाराष्ट्र संदर्भ) स्थानिक शासनाची वैशिष्ट्ये,	<b>District Administration, Rural and Urban Local Government (Maharashtra)</b> <b>Attributes of Local Government</b> <b>Urban Local Government and</b>

पेपर २

विषयाशी संबंधीत घटक (कर निर्धारण व प्रशासकीय सेवा परीक्षा अभ्यासक्रम)

	नागरी स्थानिक शासन व प्रशासन नगरपंचायत, नगरपरिषद, महानगरपालिका आणि कटक मंडळ - रचना, अधिकार व कार्ये, मुख्याधिकारी कार्य व भूमिका ७४ वी घटनादुरुस्ती - प्रमुख वैशिष्ट्ये नागरी विकास व नागरी स्थानिक संस्था	<b>administration</b> <b>Nagar panchayat, Municipal Council, Municipal Corporation and Cantonment Board - Composition, Powers and Functions,</b> <b>Chief Officer- Functions and Role</b> <b>74<sup>th</sup> Constitutional amendment - Main Features</b> <b>Urban Development and Urban Local Bodies</b>
८	<b>निवडणूक प्रक्रिया</b> निवडणूक प्रक्रियेची ठळक वैशिष्ट्ये प्रौढ मताधिकार निवडणूक यंत्रणा - निवडणूक आयोग व राज्य निवडणूक आयोग स्थानिक संस्थांच्या निवडणुका	<b>The Electoral Process</b> <b>Main features of Electoral Process</b> <b>Adult Franchise</b> <b>Election Machinery - Election Commission of India, State Election Commissions</b> <b>Elections to Local Bodies</b>
९	<b>प्रशासनिक कायदा</b> प्रशासनिक न्यायाधीकरणे, नैसर्गिक न्यायाची तत्त्वे, लोकसेवकांना संविधानिक संरक्षण	<b>Administrative Law</b> <b>Administrative Tribunals, Principles of Natural Justice, Constitutional Protection to public Servants</b>
१०	<b>कामगार कल्याण</b> समस्या व प्रश्न (सामाजिक स्थिती, मजुरी, आरोग्य आणि संघटीत व असंघटीत क्षेत्राशी संबंधित समस्या)	<b>Labour Welfare</b> <b>Problems and issues (working conditions, wages, health and problems related to organized and unorganized sectors)</b>
११	<b>न्यायमंडळ-</b> न्यायमंडळाची रचना, एकात्मिक न्यायमंडळ- कार्य, सर्वोच्च न्यायालय व उच्च न्यायालयाची भूमिका व अधिकार, दुय्यम न्यायालये- लोकपाल, लोकायुक्त आणि लोक न्यायालय, सांविधानिक आदेशाचे रक्षण करणारे न्यायमंडळ, न्यायालयीन सक्रियता, जनहित याचिका.	<b>Judicial System</b> :Judicial system- Composition Integrated Judicial System- functions ; The Role and the rights/power of the Supreme court and the High court, Subordinate Courts, The Lokapal and Lokayukta, Lok Adalat, Judicial system for the protection of the constitutional orders, Judicial Activism, Public interest litigation.
१२	<b>माहिती अधिकार अधिनियम-२००५</b>	<b>Right to Information Act 2005</b>
१३	<b>महाराष्ट्र लोकसेवा हक्क अधिनियम -२०१५</b>	<b>The Maharashtra Right to Public Services Act, 2015</b>
१४	<b>भ्रष्टाचार प्रतिबंधक अधिनियम १९८८</b>	<b>The Prevention of Corruption Act, 1988</b>
१५	<b>संगणक व माहिती तंत्रज्ञान- आधुनिक समाजातील</b>	<b>Computer and Information Technology -</b> The role of computer in modern Society,

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विषयाशी संबंधीत घटक (कर निर्धारण व प्रशासकीय सेवा परीक्षा अभ्यासक्रम)

	संगणकाची भूमिका, जीवनातील वेगवेगळ्या क्षेत्रात संगणकाचा वापर, डाटा कम्युनिकेशन, नविन उद्योग म्हणून माहिती तंत्रज्ञानचा निरनिराळ्या सेवा सुविधांची माहिती मिळण्यासाठी होणारा उपयोग, भारतातील माहिती तंत्रज्ञान उद्योगाची वाढ व त्याचा दर्जा, शासनाचे कार्यक्रम, जसे मिडीया लॅब एशिया, विद्या वाहिनी, ज्ञान वाहिनी, सामुहिक माहिती केंद्र इत्यादी,	Data communication Information technology as a new industry, use of information technology to get information about various services and facilities, The growth of the IT Industry and status in India, Government Programs i.e. Media Asia lab, Vidya vahini, Dnyan Vahini, Collective Information center etc.
१६	<b>आर्थिक सुधारणा व कायदे</b> -नवे आर्थिक धोरण पार्श्वभूमी, उदारीकरण, खाजगीकरण, जागतिकरण संकल्पना व त्याचा अर्थ आणि व्याप्ती, मर्यादा, केंद्र व राज्य स्तरावरील आर्थिक सुधारणा, GST विक्रीकर, VAT, इत्यादीशी संबंधीत कायदे / नियम.	<b>Economic Reforms and Related Acts new economic reforms policy</b> Background, concept of Liberalization, privatization and Globalization, meaning and Scope, limits; Economic reforms done by State and central government, WTO - Provisions and Reforms, It's expected impact on Indian Economy, difficulties and problems, Act/ Rules related to GST, Sales Tax, VAT and WTO.
१७	<b>सार्वजनिक वित्त व्यवस्था</b> महसुलाचे साधन, टॅक्स, नॉनटॅक्स, कर व करेतर महसूल भारतातील केंद्र व राज्यातील सार्वजनिक ऋण, केंद्र व राज्याची सार्वजनिक खर्च वाढ, सार्वजनिक खर्च सुधारणा आधारित अर्थसंकल्प, शुन्याधारित अर्थसंकल्प, अर्थसंकल्प व त्याचे प्रकार भारतातील करसुधारणा आढावा, राज्य पातळीवरील करसुधारणा कर व त्याचे प्रकार VAT सार्वजनिक ऋण वाढ, रचना आणि भार, राज्याची कर्जबाजारीपणाची समस्या, राजकोषीय तुट, संकल्पना, तुटीचे नियंत्रण, केंद्र, राज्य शासनाचे उपक्रम व रिझर्व्ह बँक, बँकिंग यंत्रणा व रचना भारतातील राजकोषीय सुधारणा, केंद्र व राज्यस्तरावरील आढावा.	<b>Public Finance</b> The source of Revenue, Tax, non-tax; public debt in the central and State; Increase in the Central and the State Public Expenditure, Public expenditure reform based budget, zero budget, the review of the tax reforms in India, tax reforms done at the State, VAT, increase in the public debt , Problem related to growing debts of states, Revenue deficit- Concept and Controlling measures , Undertaking of the Central and the State and the Reserve Bank, Revenue reforms in India, The Review on the Central and the State level.



" महाराष्ट्र नगरपरिषदा , नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३

करीताचा अभ्यासक्रम

७. नगरपरिषद अभियांत्रिकी सेवा - अग्निशमन

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधित घटक	४०	८०	पदवी	इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०			१२०	
एकूण = पेपर १ + पेपर २		१००	२००			मिनिटे	

नकारात्मक गुणदान -

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण एकूण गुणांमधून वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

अभ्यासक्रम

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद - अग्निशमन सेवा		
पेपर - १		
अ. क्र	विषय	
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे	<b>Marathi :</b> सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे
२.	इंग्रजी: Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and	<b>2 English:</b> Common Vocabulary, Sentence Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and

संवर्गाचे नाव :- महाराष्ट्र नगरपरिषद - अग्निशमन सेवा		
पेपर - १		
अ. क्र	विषय	
	comprehension of passage.	comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	<ul style="list-style-type: none"> <li>Indian History with special reference to Maharashtra</li> </ul>
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	<ul style="list-style-type: none"> <li>Indian Geography with special reference to Maharashtra</li> </ul>
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>भारतीय आयात निर्यात</li> <li>राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी किंमती वाढण्याची/चलन वाढ कारणे व उपाय</li> </ul>	Indian Economy with special reference to Maharashtra <ul style="list-style-type: none"> <li>Indian Imports – Exports</li> <li>Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> <li>Inflation – reasons and measures</li> </ul>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>संसद व राज्य विधान मंडळ इ.</li> <li>राज्य व्यवस्थापन (प्रशासन)</li> <li>ग्रामीण व शहरी प्रशासन</li> </ul>	Indian Political System :- <ul style="list-style-type: none"> <li>Indian Polity &amp; Constitution</li> <li>Parliament, state assembly etc.</li> <li>State administration</li> <li>Rural and Urban administration</li> </ul>
३.५	चालू घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>मानवी विकास व पर्यावरण,</li> <li>पर्यावरण पुरक विकास,</li> <li>नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> <li>पर्यावरण संवर्धनात कार्यरत असलेल्या राज्य / जागतिक /राष्ट्र / संस्था / पातळीवरील संघटना</li> </ul>	Environment:- <ul style="list-style-type: none"> <li>Human development and environment,</li> <li>Environment friendly / Sustainable development</li> <li>Conservation of natural resources specially forest conservation</li> <li>Types of pollutions and environmental disasters</li> <li>Institutions engaged in environmental conseversation at State, National and International Level</li> </ul>
४	<b>बुद्धीमापन चाचणी</b> - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न	<b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think. <b>Numerical Ability:</b> Summation,

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<b>पेपर - १</b>	
<b>अ. क्र</b>	<b>विषय</b>
	<p>अंकगणित - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश, अपूर्णाक व टक्केवारी.</p> <p style="text-align: right;">Subtraction, Multiplication, Division, Decimals, Fractions, Percentage</p>

<b>पेपर २</b>	
<b>विषयाशी संबंधीत घटक (अग्निशमन सेवा)</b>	
	<p><b>1. AIR-CONDITIONING &amp; REFRIGERATION</b> Introduction, Types of Air-conditioning Systems, Hazards and Structural precautions, Precautions and Special problems associated with each systems, principle of Refrigeration and types, Common refrigerents and their properties, Basic precaution, Hazards and Method of Control in Refrigerating and Air conditioning plant.</p>
	<p><b>2. BREATHING APPARATUS</b> Introduction and Need/Importance of Breathing Apparatus in Fire Services, Compressed Air Breathing Apparatus- description of the set, face-mask and demand valve whistle manifold and reducer, Airline equipment, Testing and Maintenance, Working duration of Breathing Apparatus, Breathing Apparatus Equipment, Distress Signal Unit, Communication Equipment, Guide and Personnel lines Calculation of condition and duration. Reference to ISS Specification.</p>
	<p><b>3. BUILDING CONSTRUCTION &amp; STRUCTURAL FIRE PROTECTION</b> Introduction, Fire Resistance of Elements of structure, Behaviour of Elements structure in a Fire and Causes of wall collapse, Criteria for assessing the fire properties of building materials and Elements of Structure Fire load and grading of occupancies by fire load, Classification of Building based on occupancy and Fire Zones as per N.S.C. Occupational Hazard and Structural Fire Precautions including Means of Escape- Fire Protection in Buildings.</p>
	<p><b>4. PHYSICS &amp; CHEMISTRY FOR COMBUSTION</b> Combustion related properties of matter, Mechanism of Extinction-Effects of combustion, spontaneous-combustion, Hazardous materials.</p>
	<p><b>5. DISCIPLINE</b> Introduction, Discipline vis-a-vis Leadership, General rules and principles of discipline in the Fire Service, Management and enforcement.</p>
	<p><b>6. ELECTRICITY</b> Sources, Generation - methods, conductors, Insulators, Distribution and special hazards of Transformer and Sub-stations, Cables, Junction Boxes, Wiring Systems, Switches-Switch Gears etc. Lighting Lamps, Static Electricity, Electrical Hazards - Shock and Protection, Fire-fighting techniques for live installations.</p>

**पेपर २**

**विषयाशी संबंधीत घटक (अग्निशमन सेवा)**

	<p><b>7. EXPLOSIVE</b> Introduction, Types of Chemical Explosives, Chemical Classification of Explosives, Principles of Storage &amp; Transportation, Fire-fighting Classifications and Fire-fighting technique.</p>
	<p><b>8. FIRE EXTINGUISHERS</b> <b>Construction and Practical use of</b> (a) Water type Extinguishers (i) Foam and Mechanical Foam Extinguishers (ii) Vapour Forming-Liquids or Gas Extinguishers-- Use of Halon Extinguishers. (iii) Dry Chemical Powder Extinguishers, Maintenance Procedure of all types of extinguishers IS Specifications for different sizes/types of extinguishers</p>
	<p><b>9. FIRE SERVICE ADMINISTRATION</b> Structure of Fire Service organisation: (a) Organisation of Fire Service (b) Duties of different level of commands (c) Chain of Command. (d) Ranks and Rank Markings (e) Operational Jurisdiction. Station Administration: (a) Introduction to Station Management (b) Routines work at Station level (c) Duties of Station Officers at Station level to subordinate ranks for supervision and management procedure, Liaison Works in other departments and the public at large</p>
	<p><b>10. FIRST-AID &amp; AMBULANCE AID</b> Importance of First-aid in Fire Service structure and functions of the body-Blood Circulatory System, Wound accompanied by severe haemorrhage, Direct pressure, Pressure-points. Haemorrhage from an internal organ- signs, symptoms and management. Unconsciousness-causes, clinical features and classifications, Emergency Care of burns, Respiratory Distress-Causes, signs, symptoms and Emergency care, Shock-causes, signs, symptoms and management.</p>
	<p><b>11. FIXED FIRE FIGHTING INSTALLATION</b> Introduction, Purpose &amp; principle of Installation, Types of Installation-Manual and Automatic Suppression and their use, care and maintenance systems used in India and Regulations as per National Building Code, Codes of Practice prepared by Bureau of Indian Standard.</p>
	<p><b>12. FOAM &amp; FOAM MAKING EQUIPMENT</b> Introduction, Different foam concentrates, functional requirements &amp; compatibility of foam-concentrate and dry chemical powder, Foam making equipment, Care and Maintenance of Foam making equipment. Reference to relevant ISS</p>
	<p><b>13. FIRE HAZARDS IN SPECIAL RISKS AREA AND FIRE PROTECTION</b></p>

पेपर २

विषयाशी संबंधीत घटक (अग्निशमन सेवा)

	<p>(a) Town Other Gas Works (b) Oil Installation and Tanks (c) Cross-Country pipelines of Gas mains (d) Industrial Materials and Dangerous Chemicals (e) Places of High Fire/Life Risks (i) Pressurised Tunnelling. (ii) Oxygen enriched atmosphere.</p>
	<p><b>14. FIRE SERVICE COMMUNICATION</b> Importance and function of Watch-room and Control room &amp; its requirements Procedure of handling of fire calls and special Service Calls etc. Identification of Communication requirement of Fire Service, Details of communication requirement of Fire Service. (a) Link Communication. (b) Radio-Communication Communication Planning in Fire Service</p>
	<p><b>15. FIRE PREVENTION INSPECTION PROCEDURE</b> Preparation of check-list and follow-up procedure &amp; maintenance of mastered register</p>
	<p><b>16. GAS, FIRES</b> Classifications, Characteristics of gases and their risks, Dust Explosion, LPG, its hazards and Fire Precautions, Methods used by the Fire Service of Extinguishing Gas Fires</p>
	<p><b>17. HOSE</b> Introduction, General Characteristics of Standard Delivery and Section Hose Material, Construction Maintenance, Repairs &amp; Testing and latest development as per bureau of Indian Standard -Reference to relevant ISS</p>
	<p><b>१८. HOSE FITTINGS</b> Standard Couplings, Branches and Nozzles special types of Branch and Nozzle, Branch Holders, Radial Branches and Monitors, Stand-pipes, Collecting heads and Suction- Hose Fittings, Breechings, Asaptors, Miscellaneous, Hose Fittings and Ramps. With reference to IS Specifications.</p>
	<p><b>१९. HYDRANTS &amp; WATER SUPPLY</b> Determination technique of "Fire flow" in accordance to fire load, Distribution of water supplies, Water resources for Fire-Fighting. Code of practice in respect of requirements and Standardisation of Hydrants, Hydrant Gear, Use of Flow-Motor, Marking, Testing, Care &amp; Maintenance</p>
	<p><b>२०. HYDRAULICS</b> Characteristics of Suction Lift and Atmospheric pressure, Pump-power and efficiency, Characteristics of flow in Hose and Nozzle discharge, Friction Loss, Jet-reaction and Water Hammer, Formulae and problems of the above.</p>
	<p><b>२१. INTERNAL COMBUSTION ENGINES</b> Introduction, Principles of Internal Combustion Engine, Terminology used in this</p>

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विषयाशी संबंधीत घटक (अग्निशमन सेवा)

	connection, description of power Units and the systems in relation to Petrol and Diesel Engines.
<b>२२. INVESTIGATION OF FIRE</b>	Introduction, Procedure of detection to the causes of fire–point of Ignition, Time of Ignition and cause of Ignition, Circumstances leading to suspicion and motives leading to Arson, Fire-fighting Techniques in case of Arson and guarding of evidence, Investigation Report, Conducting of Court of Enquiry
<b>२३. LADDERS</b>	Introduction of sophisticated aerial ladder, construction, use, Testing and Maintenance of TTL & Hydraulic platform Method of practical Operation and technique and safety requirement
<b>२४. PUMPS</b>	Introduction–Centrifugal Pumps and its characteristics, different types of Primers, design parameters of Pumping Appliances and their characteristics.
<b>२५. PLAN READING</b>	Importance of plan reading, its requirements and preparation of standard symbols, Introduction to the reading of Building plan and common symbols used and Abbreviations.
<b>२६. PRACTICAL FIREMANSHIP</b>	Principles to be followed at Fire Ground viz. Survey and recce and sizing up, Methods of Entry, Methods of Search and Rescue, Working in Smoke and Darkness, Hot atmosphere, central at a Fire, Ventilation and Procedure after fire/incidents, Fire-fighting strategy and tactics
<b>२७. RESUSCITATION</b>	Different methods of manual resuscitation, their advantages and disadvantages, Classification of Resuscitation sets, their construction and descriptions. Signs and symptoms of Asphyxiated persons in same special case, cases where artificial respiration not recommended.
<b>२८. RURAL &amp; FOREST FIRE</b>	Causes of rural fires, specification, difficulties encountered in rural fires, normal methods and special technique employed in rural fire-fighting. Forest Fires–causes, characteristics, features and method of attack on a forest fire.
<b>२९. SALVAGE</b>	Introduction, Importance of Salvage, various factors of damage and their remedy, pre-planning and procedure for salvage work before, during and after the fire
<b>३०. SMALL GEARS</b>	Function and construction of various sophisticated small gears used in fire services including powered operated gears, Description and Operational use of Oxy Acetylene cutting sets, Oxy-Propane cutting sets, Pneumatic Jacks, Jumping Cushions, Blower exhauster and various types of Protective Clothing Powered spreader, Lifting bag, powered

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विषयाशी संबंधीत घटक (अग्निशमन सेवा)

	saw and cutting tools.
<b>३१. SPECIAL APPLIANCES</b>	Emergency Tender, Crash fire, Tender, TTL Hydraulic Platform, Hose Laying Lorry, Break-down Van, Control Units, Canteen Vans, DCP Tender, Foam Tender, as per Standard specifications
<b>३२.SPECIAL SERVICES</b>	Rescue by Ordinary Means, Rescue by Fire Service Appliances and Equipment, Rescue from Lift, Rescue from Sewers and Wells, ponds, rivers, Rescue during earthquake and flood, rescue from nuclear Radiation Incident, Rescue Procedure in the presence of poisonous gases, Rescue problems and Rescue procedure in case of Highway accident Water rescue.
<b>३३. STORAGE OF HAZARDOUS GOODS</b>	Classification and study of conditions essential for storage of hazardous goods, Standard requirements for Transportation of Hazardous goods. Fire Service Authority seizure. Action by Operational Officer at accident of Hazchem on road control of Hazchem movement through city during daytime.
<b>३४.WATER &amp; WATER RELAY</b>	Water requirements with reference to IS. Principles and Practical consideration of various methods Water Relay and operational hints.
<b>३५.WATER TENDER</b>	Study of various Indian Specification of conventional Fire Tenders and appliance as per Indian Standard
<b>३६. MAINTENANCE OF EQUIPMENT &amp; APPLIANCES</b>	
<b>३७. FIRE PREVENTION &amp; FIRE PROTECTION</b>	
<b>३८. FIRE PROTETION SURVEY- NORMS FOR ESTABLISHMENT OF FIRE STATION</b>	
<b>३९. The Maharashtra Fire Prevention and life Safty measure Act 2006 with updated Amendment</b>	
<b>४०. The Maharashtra Fire Prevention and life Safty measure Rules 2009 with updated Amendment</b>	

**“महाराष्ट्र नगरपरिषदा , नगरपंचायती व औद्योगिक नगरे राज्यसेवा परीक्षा - २०२३  
करीताचा अभ्यासक्रम ”**

**८. महाराष्ट्र नगरपरिषद स्वच्छता निरीक्षक सेवा**

प्रश्नपत्रिकांची संख्या:- दोन (पेपर -१ व पेपर - २ एकत्रित)

विषय		प्रश्न संख्या	गुण	दर्जा	माध्यम	कालावधी	प्रश्नपत्रिकेचे स्वरूप
पेपर - १	मराठी	१५	३०	बारावी	मराठी	७० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
	इंग्रजी	१५	३०	बारावी	इंग्रजी		
	सामान्य ज्ञान	१५	३०	पदवी	मराठी व इंग्रजी		
	बौद्धिक चाचणी	१५	३०	पदवी	मराठी व इंग्रजी		
एकूण		६०	१२०				
पेपर - २	विषयांशी संबंधित घटक	४०	८०	पदवी	मराठी व इंग्रजी	५० मिनिटे	वस्तुनिष्ठ बहुपर्यायी
एकूण		४०	८०				
एकूण = पेपर १ + पेपर २		१००	२००				

**नकारात्मक गुणदान -**

१)	प्रत्येक चुकीच्या उत्तराकरिता २५% किंवा १/४ एवढे गुण वजा / कमी करण्यात येतील.
२)	वरीलप्रमाणे कार्यपद्धतीचा अवलंब करताना एकूण अंतिम गुणांची बेरीज अपूर्णाकात आली तरीही ती अपूर्णाकातच राहिल व पुढील कार्यवाही त्याच्या आधारे करण्यात येईल.
३)	एखाद्या प्रश्नाचे उत्तर अनुत्तरित असेल तर, अशा प्रकरणी नकारात्मक गुणांची पध्दत लागू असणार नाही.

**अभ्यासक्रम**

संवर्गाचे नांव :- महाराष्ट्र नगरपरिषद स्वच्छता निरीक्षक सेवा		
Sr. No	Topic	विषय
१.	मराठी: सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे	<b>Marathi</b> : सर्वसामान्य शब्दसंग्रह, वाक्यरचना, व्याकरण, म्हणी व वाक्यप्रचार यांचा अर्थ आणि उपयोग तसेच उतान्यावरील प्रश्नांची उत्तरे
२.	इंग्रजी: Common Vocabulary, Sentence	<b>2 English:</b> Common Vocabulary, Sentence



संवर्गाचे नांव :- महाराष्ट्र नगरपरिषद स्वच्छता निरीक्षक सेवा		
Sr. No	Topic	विषय
	Structure, Grammar, letter and e-mail writing Use of Idioms and phrases & their meaning and comprehension of passage.	Structure, Grammar, Use of Idioms and phrases & their meaning and comprehension of passage.
३	सामान्य ज्ञान	<b>General Studies</b>
३.१	भारताचा विशेषतः महाराष्ट्राचा इतिहास	Indian History with special reference to Maharashtra
३.२	भारताचा विशेषतः महाराष्ट्राचा भूगोल	Indian Geography with special reference to Maharashtra
३.३	भारतीय अर्थव्यवस्था विशेषतः महाराष्ट्र <ul style="list-style-type: none"> <li>• भारतीय आयात निर्यात</li> <li>• राष्ट्रीय विकासात सरकारी, सहकारी ग्रामीण बँकांची भूमिका</li> <li>• शासकीय अर्थव्यवस्था - अर्थसंकल्प लेखा, लेखापरीक्षण इत्यादी</li> </ul> किंमती वाढण्याची/चलन वाढ कारणे व उपाय	<p>Indian Economy with special reference to Maharashtra</p> <ul style="list-style-type: none"> <li>• Indian Imports – Exports</li> <li>• Role of Nationalise/Commercial, Co-operative, Rural banks in Indian Economy national development</li> <li>• Government Economy, Sources and application of funds - Budgets Accounts and Audit etc</li> </ul> <p>Inflation – reasons and measures</p>
३.४	भारतीय राज्य व्यवस्था :- <ul style="list-style-type: none"> <li>• भारताच्या घटनेचा प्राथमिक अभ्यास,</li> <li>• संसद व राज्य विधान मंडळ इ.</li> <li>• राज्य व्यवस्थापन (प्रशासन)</li> </ul> ग्रामीण व शहरी प्रशासन	<p>Indian Political System :-</p> <ul style="list-style-type: none"> <li>• Indian Polity &amp; Constitution</li> <li>• Parliament, state assembly etc.</li> <li>• State administration</li> </ul> <p>Rural and Urban administration</p>
३.५	चालु घडामोडी- जागतिक व भारतासंबंधी	Current Affairs related to India and World,
३.६	पर्यावरण:- <ul style="list-style-type: none"> <li>• मानवी विकास व पर्यावरण,</li> <li>• पर्यावरण पुरक विकास,</li> <li>• नैसर्गिक साधनसंपत्तीचे संधारण विशेषतः वनसंधारण</li> <li>• विविध प्रकारची प्रदुषणे व पर्यावरणीय आपत्ती</li> </ul> पर्यावरण संवर्धनात कार्यरत असलेल्या राज्य / जागतिक /राष्ट्र / संस्था / पातळीवरील संघटना	<p>Environment:-</p> <ul style="list-style-type: none"> <li>• Human development and environment,</li> <li>• Environment friendly / Sustainable development</li> <li>• Conservation of natural resources specially forest conservation</li> <li>• Types of pollutions and envi mental disasters</li> </ul> <p>Institutions engaged in environmental conseversation at State, National and International Level</p>

संवर्गाचे नांव :- महाराष्ट्र नगरपरिषद स्वच्छता निरीक्षक सेवा		
Sr. No	Topic	विषय
४	<p>बुद्धीमापन चाचणी - उमेदवार किती लवकर व अचूकपणे विचार करू शकतो हे आजमावण्यासाठी प्रश्न</p> <p>अंकगणित - बेरीज, वजाबाकी, गुणाकार, भागाकार, दशांश, अपूर्णांक व टक्केवारी.</p>	<p><b>General Mental Ability :</b> Questions will check how fast and accurate a candidate can think.</p> <p><b>Numerical Ability:</b> Summation, Subtraction, Multiplication, Division, Decimals, Fractions, Percentage</p>

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विषयाशी संबंधित घटक (स्वच्छता निरीक्षक)	
१	<p>सार्वजनिक आरोग्य</p> <ul style="list-style-type: none"> <li>• सार्वजनिक आरोग्य व्यवस्थेची संरचना</li> <li>• नागरी स्थानिक स्वराज्य संस्थामधील आरोग्य विभागाच्या जबाबदाऱ्या</li> <li>• संसर्गजन्य आणि असंसर्गजन्य आजारांचे विज्ञान</li> <li>• आजारांचे प्रसारण व नियंत्रण</li> <li>• साथीच्या रोगांचा प्रसार व नियंत्रण</li> <li>• जनजागृती व व्यवहार विज्ञान आणि आरोग्य शिक्षण</li> <li>• माता व बालकल्याण</li> <li>• पोषण, लसीकरण</li> <li>• व्यक्तिगत स्वच्छता व प्रथमोपचार</li> <li>• जनसंख्या आणि जनसांख्यिकी विज्ञान</li> <li>• जन्म मृत्यू कायदा आणि महत्वपूर्ण सांख्यिकी</li> <li>• राष्ट्रीय आरोग्य कार्यक्रम</li> <li>• आरोग्य विषयक सांख्यिकी माहिती</li> <li>• महाराष्ट्र नगरपरिषदा, नगरपंचायती व ओद्योगिक नगरी अधिनियम, १९६५ मधील आरोग्य व स्वच्छते विषयी तरतूदी</li> <li>• पर्यावरण संवर्धन</li> <li>• सफाई कर्मचारी यांना आवश्यक सुरक्षा साधने हाताळणी व व्यवस्थापन</li> </ul>
२	<p>स्वच्छता व्यवस्थापन</p> <ul style="list-style-type: none"> <li>• स्वच्छता निरीक्षकांच्या जबाबदाऱ्या</li> <li>• घनकचरा व्यवस्थापन नियम</li> <li>• जैववैद्यकीय कचरा व्यवस्थापन</li> <li>• स्वच्छ भारत अभियान व स्वच्छ सर्वेक्षण</li> <li>• शहर स्वच्छता आराखडा</li> <li>• मलजलाचे व्यवस्थापन व शौचालयांचे प्रकार</li> <li>• यात्रा, शिबीरे आणि सणांच्या दरम्यान करावयाची स्वच्छता व्यवस्था</li> <li>• कचऱ्याच्या विविध स्रोतांचे नियोजन (संकलन)</li> <li>• ई-कचरा, गार्डन वेस्ट, घरगुती धोकादायक कचरा, बांधकाम व पाडकाम कचरा (C &amp; D) व्यवस्थापन</li> </ul>

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विषयाशी संबंधीत घटक (स्वच्छता निरीक्षक)	
	<ul style="list-style-type: none"> <li>• ओला कचरा जिरविणे तंत्रज्ञान प्रणाली</li> <li>• हाताने मैला उचलणाऱ्या कामगारांच्या नियुक्तीस प्रतिबंध करणे व त्यांचे पुर्नवसन करणे अधिनियम २०१३ (Manual Scavenging Act २०१३)</li> <li>• घरगुती कचरा व्यवस्थापन (होम कंपोस्टिंग व इतर चे प्रकार)</li> <li>• उनाड व भटकी कुत्री व जनावरे यांचे व्यवस्थापन</li> </ul>
३	<p>पर्यावरण</p> <ul style="list-style-type: none"> <li>• पर्यावरण विषयक कायदे</li> <li>• पर्यावरण स्थिती अहवाल</li> <li>• महाराष्ट्र / केंद्रीय प्रदूषण नियंत्रण मंडळाची भूमिका</li> <li>• नॅशनल ग्रीन ट्रीब्युनल कायदा व व्यवस्थापन</li> </ul>
४	<p>संगणक ज्ञान व नवीन तंत्रज्ञान</p> <ul style="list-style-type: none"> <li>• भौगोलिक माहिती प्रणाली</li> <li>• जिओ टॅगींग</li> <li>• मासिक अहवाल / MIS reporting</li> <li>• क्यू आर कोडींग</li> <li>• आर.एफ.आय.डी.</li> <li>• कृत्रिम बुद्धिमत्ता, ड्रोन, रोबोटिक्स तंत्रज्ञान</li> </ul>
५	महाराष्ट्रातील नागरी प्रशासनाचे ज्ञान