ગુજરાત જાહેર સેવા આયોગ

સેક્ટર – ૧૦–એ, છ–૩ સર્કલ પાસે, છ રોડ,
ગાંધીનગર – ૩૮૨૦૧૦

જાહેરાત ક્રમાંક:૩૭/૨૦૨૪–૨૫, નાયબ કાર્યપાલક ઈજનેર(સિવિલ), વર્ગ–૨ (GWRDC) ની જગ્યા પર ભરતી માટેની પ્રાથમિક કસોટીમાં ભાગ–૧ અને ભાગ–૨ ના ૧૮૦ મિનિટના સંયુક્ત પ્રશ્નપત્રનો અભ્યાસક્રમ

સીધી પસંદગીથી ભરતીની પ્રાથમિક કસોટીનો અભ્યાસક્રમ **ભાગ–૧**		
માધ્યમ: ગુજરાતી અને અંગ્રેજી.		**કુલ ગુણ : ૧૦૦**
મુદ્દા	વિષય	ગુણ
૧	ભારતની ભૂગોળ- ભૌગોલિક, આર્થિક, સામાજિક, કુદરતી સંસાધન અને વસ્તી અંગેની બાબતો- ગુજરાતના ખાસ સંદર્ભ સાથે	
૨	ભારતનો સાંસ્કૃતિક વારસો- સાહિત્ય, કલા, ધર્મ અને સ્થાપત્યો- ગુજરાતના ખાસ સંદર્ભ સાથે	
૩	ભારતનો ઈતિહાસ- ગુજરાતના ખાસ સંદર્ભ સાથે	
૪	ભારતની અર્થવ્યવસ્થા અને આયોજન	
૫	ભારતીય રાજનીતિ અને ભારતનું બંધારણ: (૧) આમુખ (૨) મૂળભૂત અધિકારો અને ફરજો (૩) રાજ્યનીતિના માર્ગદર્શક સિદ્ધાંતો (૪) સંસદની રચના (૫) રાષ્ટ્રપતિની સત્તા (૬) રાજ્યપાલની સત્તા (૭) ન્યાયતંત્ર (૮) અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિ અને સમાજના પછાત વર્ગો માટેની જોગવાઈઓ (૯) નીતિ આયોગ (૧૦) બંધારણીય તથા વૈધાનિક સંસ્થાઓ- ભારતનું ચૂંટણી પંચ, કોમ્પટ્રોલર એન્ડ ઓડિટર જનરલ, માહિતી આયોગ	૩૦
૬	સામાન્ય વિજ્ઞાન, પર્યાવરણ અને ઈન્ફર્મેશન એન્ડ કોમ્યુનિકેશન ટેકનોલોજી	૧૦
૭	ખેલ જગત સહિત રોજબરોજના પ્રાદેશિક, રાષ્ટ્રીય અને આંતરરાષ્ટ્રીય મહત્વના બનાવો	૧૦
૮	સામાન્ય બૌદ્ધિક ક્ષમતા કસોટી (૧) તાર્કિક અને વિશ્લેષણાત્મક ક્ષમતા (૨) સંખ્યાઓની શ્રેણી સંકેત અને તેનો ઉકેલ. (૩) સંબંધ વિષયક પ્રશ્નો. (૪) આકૃતિઓ અને તેના પેટા વિભાગ, વેન આકૃતિઓ (૫) ઘડીયાળ, કેલેન્ડર અને ઉમર સંબંધિત પ્રશ્નો. (૬) સંખ્યા વ્યવસ્થા અને તેના માનક્રમ.	૩૦

	(૭) રૈખિક સમીકરણ (એક કે બે ચલમાં) (૮) પ્રમાણ, હિસ્સો અને ચલ. (૯) સરેરાશ યા મધ્યક, મધ્યસ્થ અને બહુલક, ભારિત સરેરાશ. . (૧૦) ઘાત અને ઘાતાંક, વર્ગ, વર્ગમૂળ, ઘનમૂળ, ગુ.સા.અ. અને લ.સા.અ (૧૧) ટકા, સાદુ અને ચક્રવૃદ્ધિ વ્યાજ, નફો અને નુક્શાન. (૧૨) સમય અને કાર્ય, સમય અને અંતર, ઝડપ અને અંતર. (૧૩) સરળ ભૌતિક આકૃતિઓના ક્ષેત્રફળ અને પરિમિતિ, જથ્થો અને સપાટીનો વિસ્તાર (છ સમાંતર બાજું ધરાવતો ઘન, ઘન, સિલિન્ડર, શંકુ આકાર, ગોળાકાર). (૧૪) રેખા, ખૂણા અને સામાન્ય ભૌમિતિક આકૃતિઓ-સાદી કે ત્રાંસી સમાંતર રેખાઓના ગુણધર્મો, ત્રિકોણની સાપેક્ષ બાજુઓના માપનના ગુણધર્મો, પાયથાગોરસનો પ્રમેય, ચતુર્ભૂજ, લંબગોળ, સમાંતર બાજુ ચતુષ્કોણ, સમભૂજ ચતુષ્કોણ. (૧૫) બીજગણિતનો પરિચય-BODMAS-કાનાભાગુવઓ-વિચિત્ર પ્રતિકોની સરળ સમજુતિ. (૧૬) માહિતીનું અર્થઘટન, માહિતીનું વિશ્લેષણ, માહિતીની પર્યાપ્તતા, સંભાવના	
૯	ગુજરાતી વ્યાકરણ (૧) જોડણી (૨) સમાનાર્થી-વિરૂધ્ધાર્થી શબ્દો (૩) રૂઢિપ્રયોગો અને કહેવતો (૪) સમાસ (૫) સંધિ (૬) અલંકાર (૭) છંદ	૧૦
૧૦	English Grammar (1) Articles, Pronouns, Adjectives, Prepositions, Conjunctions and Question tag. (2) Verb and Tense, Agreement between subject and verb, Gerund, Participles. (3) Modal auxiliaries. Usage of can, may, could, should, etc. (4) Use of some, many, any, few, a little. Since and for. (5) Active and passive voice (6) Degrees of adjectives. (7) Common errors of usage.	૧૦

❖ મુદ્દા ક્રમાંક ૮ થી ૧૦ માટેનો અભ્યાસક્રમ ધોરણ- ૧૨ સમકક્ષ રહેશે.

Syllabus of preliminary test for recruitment from Direct Selection
Part-I

Medium: Gujarati and English **Total Marks: 100**

Point No	Subject	Marks
1	Geography of India – Geographical, Economic, Social, Natural Resources and Population related topics – With Special reference to Gujarat	30
2	Cultural Heritage of India – Literature, Arts, Religion and Architecture - With Special reference to Gujarat	
3	History of India- With Special reference to Gujarat	
4	Indian Economy and Planning	
5	Indian Politics and Constitution of India: (1) Preamble (2) Fundamental Rights and Fundamental Duties (3) Directive Principals of State Policy (4) Composition of Parliament (5) Powers of the President of India (6) Powers of Governor (7) Judiciary (8) Provisions for Scheduled Casts, Scheduled Tribes and Backward Classes of the society (9) NITI Aayog (10) Constitutional and Statutory Bodies: Election Commission of India, Comptroller and Auditor General, Information Commission	
6	General Science, Environment and Information & Communication Technology	10
7	Daily events of Regional, National and International Impotence including Sports	10
8	General Mental Ability Test (1) Logical Reasoning and Analytical Ability (2) Number Series, Coding-Decoding (3) Questions about relationship. (4) Shapes and their Sub-sections, Venn Diagram (5) Questions based on Clock, Calendar and Age (6) Number system and order of Magnitude (7) Linear Equations - in one or two Variables (8) Ratio, Proportion and Variation (9) Average of Mean, Median, Mode- including weighted Mean (10) Power and Exponent, Square, Square Root, Cube Root, H.C.F. & L.C.M. (11) Percentage, Simple and Compound Interest, Profit and Loss (12) Time and Work, Time and Distance, Speed and Distance (13) Area and Perimeter of Simple Geometrical Shapes, Volume and Surface Area of Sphere, Cone, Cylinder, Cubes and Cuboids (14) Lines, Angels and Common geometrical figures - properties of transverse or parallel lines, properties related to measure sides of a triangle, Pythagoras theorem, quadrilateral, rectangle, Parallelogram and rhombus. (15) Introduction to algebra-BODMAS, simplification of weird Symbols. (16) Data interpretation, Data Analysis, Data sufficiency, Probability	30

9	Gujarati Grammar (૧) જોડણી (૨) સમાનાર્થી-વિરૂદ્ધાર્થી શબ્દો (૩) રૂઢિપ્રયોગો અને કહેવતો (૪) સમાસ (૫) સંધિ (૬) અલંકાર (૭) છંદ	10
10	English Grammar (1) Articles, Pronouns, Adjectives, Prepositions, Conjunctions and Question tag. (2) Verb and Tense, Agreement between subject and verb, Gerund, Participles. (3) Modal auxiliaries. Usage of can, may, could, should, etc. (4) Use of some, many, any, few, a little. Since and for. (5) Active and passive voice (6) Degrees of adjectives. (7) Common errors of usage.	10

- The standard of the syllabus for point no. 8 to 10 will be equivalent to Standard 12.

Syllabus for the post of Deputy Executive Engineer, Class-II (Civil) (GWRDC)

Part-II

Question: 200 Medium: English Marks: 200

1. Building Materials:

Stone, Lime, Glass, Plastics, Steel, FRP, Ceramics, Aluminum, Fly Ash, Basic Admixtures, Timber, Bricks and Aggregates: Classification, properties and selection criteria;

Cement: Types, Composition, Properties, Uses, Specifications and various Tests; Lime & Cement Mortars and Concrete: Properties and various Tests; Design of Concrete Mixes: Proportioning of aggregates and methods of mix design, Pre-cast and Pre-fabricating technology.

2. Solid Mechanics:

Elastic constants, Stress, plane stress, Strains, plane strain, Mohr's circle of stress and strain, Elastic theories of failure, Principal Stresses, Bending, Shear and Torsion.

3. Structural Analysis:

Basics of strength of materials, Types of stresses and strains, Bending moments and shear force, concept of bending and shear stresses; Analysis of determinate and indeterminate structures; Trusses, beams, plane frames; Rolling loads, Influence Lines, Unit load method & other methods; Free and Forced vibrations of single degree and multi degree freedom system; Suspended Cables; Concepts and use of Computer Aided Design.

4. Design of Steel Structures:

Principles of Limit State methods, Design of tension and compression members, Design of beams and beam column connections, built-up sections, Girders, Industrial roofs, Principles of Ultimate load design.

5. Design of Concrete and Masonry structures:

Design, Design process, Design philosophy. Limit state design for bending, shear, axial compression and combined forces; Design of beams, Slabs, Lintels, Foundations, Retaining walls, Tanks, Staircases; Principles of pre- stressed concrete design including materials and methods; Design of Masonry Structure.

RC Design: Loading standards as per I.S, distribution & flow of loads, lateral load due to wind as per IS: 875(Part - III), load combinations, guidelines for preparation of structural layout for building.

Earthquake Engineering: Fundamentals of Earthquake Vibrations of buildings, Earthquake Basics, Earthquake resistant Masonry features, Philosophy of earthquake resistant design, earthquake proof v/s earthquake resistant design, seismic structural configuration, Introduction to IS: 1893(Part I), IS: 875 (Part V). Seismic load: Seismic coefficient method – base shear and lateral force distribution along height. Introduction to Response spectrum, IS code provisions. Modal analysis of building frame, Lateral Loads on Buildings, Lateral Load Distribution, Ductile Detailing, Introduction to soil liquefaction, structural controls & Seismic strengthening.

6. Building Construction

General Principles of Building, Brick and stone masonry walls, types of masonry, cavity walls, reinforced brickwork, building services, detailing of floors, roofs, ceilings, stairs, doors and windows, finishing, formwork, water proofing, false ceiling, functional planning of building, orientations of buildings, low cost housings.

7. Flow of Fluids, Hydraulic Machines and Hydro Power:

a) **Fluid Mechanics, Open Channel Flow, Pipe Flow:** Fluid properties; Dimensional Analysis and Modeling; Fluid dynamics including flow kinematics and measurements; Flow net; Viscosity, Boundary layer and control, Drag, Lift, Principles in open channel flow, Flow controls. Hydraulic jump; Surges; Pipe networks.

b) **Hydraulic Machines and Hydro power :** Various pumps, Air vessels, Hydraulic turbines – types, classifications & performance parameters; Power house – classification and layout, storage, pondage, control of supply.

8. Hydrology and Water Resources and Irrigation Engineering:

Hydrological cycle, measurement and analysis of rainfall, Ground water hydrology, Well hydrology and related data analysis; Streams and their gauging; River morphology; Flood, drought and their management; Capacity of Reservoirs.

Water Resources Engineering : Multipurpose uses of Water, River basins and their potential;, water demand assessment; Resources - storages and their yields; Water logging, canal and drainage design, Gravity dams, falls, weirs, Energy dissipaters, barrage Distribution works, Cross drainage works and head-works and their design;

Concepts in canal design, construction & maintenance; River training work. Introduction to use of remote sensing and GIS technologies in study of irrigated areas. Land grading and field layout, Design aspects in border strip method, check basin method and furrow irrigation. Irrigation systems: Types, principles, design, operation, maintenance and problems associated with it. Irrigation efficiencies, Scheduling of irrigation. Irrigation water quality. Design of Hydraulic Structures: Elements of Dam engineering, Embankment dam engineering, Concrete dam engineering, Dam outlet works, Drop structures.

9. Construction Practice, Planning and Management:

Construction - Planning, Equipment, Site investigation and Management including Estimation with latest project management tools and network analysis for different Types of works; Analysis of Rates of various types of works; Tendering Process and Contract Management, Environment Clearance, Quality Control, Productivity, Operation Cost; Land acquisition; Labour safety and welfare, maintenance and repair, Electrical layouts of simple Buildings, Heat Ventilation and air conditioning, Fire safety.

10. Geo-technical Engineering and Foundation Engineering:

a) **Geo-technical Engineering**: Soil exploration - planning & methods, Properties of soil, classification, various tests and interrelationships; Permeability & Seepage, Compressibility, consolidation and Shearing resistance, Stability of slopes, Earth pressure theories and stress distribution in soil; Properties and uses of geo-synthetics, Basics of foundation, Subsurface Investigation, Bearing capacity of shallow foundation, Pile foundations,

b) **Foundation Engineering**: Types of foundations & selection criteria, bearing capacity, settlement analysis, design and testing of shallow & deep foundations; Slope stability analysis, Earthen embankments, Dams and Earth retaining structures: types, analysis and design, Principles of ground modifications, ground water control techniques, cofferdams.

11. Surveying and Geology:

a) **Surveying**: Classification of surveys, various methodologies, instruments & analysis of measurement of distances, elevation and directions; Field astronomy, Global Positioning System; Map preparation; Photogrammetric; Remote sensing concepts; Survey Layout for culverts, canals, bridges, road/railway alignment and buildings, Setting out of Curves. Application of Geoinformatics in Civil Engineering: Land use and land cover mapping, Transportation studies, crop inventory studies, ground water mapping, urban growth studies, flood plain mapping, waste land mapping, Waste disposal facility in urban areas and disaster management.

b) **Geology**: Basic knowledge of Engineering geology & its application in projects. Types of structures and classification and their effect on Civil Engineering projects and Geological mapping.

12. Transportation Engineering:

Highways - Planning & construction methodology, Alignment and geometric design; Traffic Surveys and Controls; Principles of Flexible and Rigid pavements design. Different modes of Transport.

Bridges - Fundamentals of Bridge Engineering,

13.

Civil Engineering in Gujarat- Important Buildings, Monuments and Construction- Historical as well as Modern. Important Reservoir-Its Storage, Catchment and Command Area, Technical features and important characteristics.

14. Concrete Technology:

Cement, Aggregates and Water, Concrete, Concrete Mix Design and Testing of Concrete, Quality Control of Concrete: Chemical Admixture, Special Concrete and Extreme Weather concreting.

15. Tendering and Accounts

Procedure to execute the work, Contracts, Tender and Tender Documents, Accounts, Introduction to Valuation.

16. Estimating and Costing

Fundamentals of Estimating and Costing, Approximate Estimates, Detailed Estimate, Estimate for Civil Engineering Works, Rate Analysis.

17. Current Trends and Recent Advancements in the Above Fields.