ગુજરાત જાહેર સેવા આયોગ

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

જાહેરાત ક્રમાંક : ૦૨/૨૦૨૪-૨૫

જગ્યાનું નામ: અધીક્ષક ઇજનેર, સોઇલ, ડ્રેનેજ અને રેકલેમેશન, વર્ગ-૧

(નર્મદા, જળ સંપત્તિ, પાણી પુરવઠા અને કલ્પસર વિભાગ)

ભાગ-૧ અને ભાગ-૨ ના ૧૮૦ મિનિટના સંયુક્ત પ્રશ્ન પત્રની પ્રાથમિક કસોટીનો

અભ્યાસક્રમ

સીધી પસંદગીથી ભરતીની પ્રાથમિક કસોટીનો અભ્યાસક્રમ ભાગ-૧ (સામાન્ય અભ્યાસ)		
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	30
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	
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. (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 નુકશાન. (૧૨) સમય અને કાર્ય, સમય અને અંતર, ઝડપ અને અંતર. (૧૩) સરળ ભૌતિક આકૃતિઓના ક્ષેત્રફળ અને પરિમિતિ, જથ્થો અને સપાટીનો વિસ્તાર (છ સમાંતર બાજું ઘરાવતો 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	૩૦
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 for preliminary test for recruitment from Direct Selection

Part-1 (General Studies)

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 Principles of State Policy (4) Composition of Parliament (5) Powers of the President of India (6) Powers of Governor (7) Judiciary (8) Provisions for Scheduled 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 Importance 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, Angles and Common geometrical figures - properties of transverse or	30

	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	
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.

Part-2 (Concerned Subject)

Syllabus for the Preliminary Test for the recruitment of Superintending Engineer (Soil, Drainage and Reclamation), Class-I

Narmada, Water Resources, Water Supply and Kalpsar Department

Marks – 200 **Questions – 200** **Medium - English**

1. Soil science

Nature and origin of soil; soil forming rocks and minerals, their classification and composition, soil forming processes, classification of soils – soil taxonomy orders; important soil physical properties; soil particle distribution; soil organic matter – its composition and decomposition, effect on soil fertility; soil reaction – acidic, saline and sodic soils, important inorganic fertilizers and their reactions in soils. Use of saline and sodic water for crop production, Gypsum requirement for reclamation of sodic soils.

2. Soil mechanics

Composition of earth's crust, Formation of various soils. Physical parameters; texture –specific gravity, particle density, definition, bulk density, Soil colour – definition, its significance, soil moisture, soil structure, definition, classification, soil consistency, plasticity, Atterberg's constants. Soil water, soil moisture constants, hygroscopic coefficient, wilting point, field capacity, moisture equivalent, maximum water holding capacity, energy concepts. Management of Soil Crusting, Soil Compaction. Methods and objective of soil survey, Soil degradation. Earth pressure: active and passive states, Rankine's theory of earth pressure, active and passive earth pressure for cohesive soils, Stability of slopes: introduction to stability analysis of infinite and finite slopes.

3. Soil erosion

Soil erosion - Introduction, causes and types - geological and accelerated erosion, agents, effects of erosion. Water erosion - Mechanics and forms - splash, sheet, rill, gully, ravine and stream bank erosion. Gullies - Classification, stages of development. Soil loss estimation. Soil erodibility - topography, crop management and conservation practice factors. Measurement of soil erosion. Water erosion control measures.

4. Conservation of soil

Soil erosion control structures - introduction, classification and functional requirements. Permanent structures for soil conservation and gully control - check dams, soil loss estimation and control measures- vegetative and mechanical measures. Land capability classification. Rate of sedimentation, silt monitoring.

5. Problematic soil and their management

Soil quality and health, Distribution of Waste land and problem soils in India, their categorization based on properties. Reclamation and management of Saline and sodic soils, Acid soils, Acid Sulphate soils, Eroded and Compacted soils, Flooded soils, Polluted soils. Irrigation water – quality and standards, utilization of saline water in agriculture. Collection and preparation of soil, irrigation water, waste water samples; Study of soil profile; Study of physical constraints in soils- Acid soils -Determination of soil pH, Electrical Conductivity (EC), Organic carbon, nutrient status, forms of acidity.

6. Water harvesting

Water harvesting-principles, importance and issues. Water harvesting techniques- classification based on source, storage and use. Run-off harvesting – short-term and long-term techniques. Purpose and design criteria of farm pond, percolation pond, *nala* bund. Construction of check dam, site selection, and design of check dam. Field activity-digging of pond, lining, inlet and outlet finishing. Cost estimation, evaluation.

7. Watershed hydrology

Hydrologic cycle, precipitation and its forms, rainfall measurement and estimation of mean rainfall, Mass curve, hyetograph, depth-area-duration curves and intensity-duration-frequency relationship. Infiltration measurement and indices. Evaporation - Estimation and measurement. Runoff - measurement, stage - discharge rating curve, estimation of peak runoff rate and volume, Geomorphology of watersheds – Linear, aerial and relief aspects of watersheds- stream order, drainage density and stream frequency. Hydrograph - Components, base flow separation, unit hydrograph theory.

8. Watershed planning and management

Watershed - introduction and characteristics. Watershed development - problems and prospects, investigation, topographical survey, soil characteristics, vegetative cover, present land use practices and socio-economic factors. Watershed management - concept, objectives, factors affecting, watershed planning based on land capability classes, hydrologic data for watershed planning, watershed codification, delineation and prioritization of watersheds – sediment yield index. Water budgeting in a watershed. Management measures - rainwater conservation technologies - *in-situ* and *ex-situ* storage, water harvesting and recycling. Integrated watershed management - concept, components, arable lands - agriculture and horticulture, non-arable lands.

9. Irrigation engineering

Major and medium irrigation schemes of India, purpose of irrigation, environmental impact of irrigation projects, measurement of irrigation water: weir, flumes and orifices and other methods; open channel water conveyance system : design and lining of irrigation field channels, on farm structures for water conveyance, control and distribution; underground pipe conveyance system: components and design; soil water plant relationship: measurement of soil moisture, moisture stress and plant response; water requirement of crops: concept of evapotranspiration (ET), measurement and estimation of ET, water and irrigation requirement of crops, depth of irrigation, frequency of irrigation, irrigation efficiencies; surface methods of water application: border, check basin and furrow irrigation-adaptability, Sprinkler irrigation, Discharge calculation, uniformity coefficient, Design consideration for sprinkler. Drip irrigation. Discharges-calculation: assessment of discharge. Designing of drip-data collection; pressure regulation; discharge distribution.

10. Drainage Engineering

Water logging- causes and impacts; drainage, objectives of drainage, surface drainage coefficient, types of surface drainage, design of surface drains; sub-surface drainage: purpose and benefits, investigations of design parameters- hydraulic conductivity, drainable porosity, water table design of subsurface drainage system; drainage materials, drainage pipes, drain envelope; layout, construction and installation of drains; drainage structures; vertical drainage; bio-

drainage; mole drains; salt balance, reclamation of saline and alkaline soils, leaching requirements, conjunctive use of fresh and saline water

11. Ground water

Occurrence and movement of ground water; aquifer and its types; classification of wells, fully penetrating tube wells and open wells, familiarization of various types of bore wells; design of open wells; groundwater exploration techniques; methods of drilling of wells: percussion, rotary, reverse rotary; design of tubewell and gravel pack, installation of well screen, completion and development of well; groundwater hydraulics-determination of aquifer parameters.

12. Hydraulics

Properties of fluids, hydrostatic pressure, pressure measurement, flow measuring devices, flow through pipes, pipes in series and pipes in parallel. Basic concept of open channel flow, design of lined and unlined channel. Theories of design of alluvial channel.

13. Geology

Basic knowledge of Engineering geology & its application.

14. Surveying and Leveling

Surveying Introduction. Classification and basic principles, Linear measurements. Chain Surveying, Compass survey. Errors in measurements, their elimination and correction. Plane table surveying. Leveling, Leveling difficulties and error in leveling. Contouring. Computation of area and volume. Theodolite traversing.

15. Building Construction and Cost Estimation.

Building Materials: Rocks, Stones and Bricks. Properties and varieties of Tiles, Lime, Cement, Concrete, Sand, Glass, Rubber, Plastics, Iron, Steel, Aluminum, Copper, Nickel and Timber. Building components : Lintels, Arches, staircases. Different types off floors. Finishing: Damp Proofing and waterproofing, Plastering, pointing. White washing and distempering – Painting. Building construction, Types of agricultural buildings and related needs. Application of design theory and practice to the conservation, sloped and flat roof buildings. Construction economics: Preliminary estimates. Detailed

Estimates of Buildings source of cost information, use of cost analyses for controlling design. Factors affecting building costs; cost evaluation of design and planning alternatives for building and estate development.

16. Environmental Science

Scope and Importance, Natural Resources, Ecosystems, Value of biodiversity, Threat to biodiversity, Conservation of biodiversity, Environmental pollution, Solid Waste Management, Climate change, Global warming, Environmental Act and related issues.

17. Current Trends and Recent Advancements in the above fields.

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