જા.ક્ર.૧૩૯/૨૦૧૫-૧૬

જગ્યાનું નામ : મદદનીશ ઇજનેર (સિવિલ), વર્ગ-૨

ભાગ-૧ અને ભાગ-૨ ના ૧૦૦ મિનિટના સંયુક્ત પ્રશ્નપત્રની પ્રાથમિક કસોટીનો અભ્યાસક્રમ

ભાગ-૧ સામાન્ય અભ્યાસ

કુલ પ્રશ્નો : ૧૦૦ કુલ ગુણ : ૧૦૦ માધ્યમ : ગુજરાતી

૧.	ગુજરાતનીભૌગોલિક,આર્થિક અને સામાજિક ભૂગોળ
૨.	ગુજરાતનોસાંસ્કૃતિકવારસો-સાહિત્ય,કલા,ધર્મ
૩.	ભારતની અર્થવ્યવસ્થાઅને રાજનીતિ
૪.	ભારતનુંબંધારણ: (૧) આમુખ (૨) મૂળભૂત અધિકારો અને ફરજો (૩) રાજ્યનિતીના માર્ગદર્શક સિદ્ધાંતો (૪) સંસદની રચના(૫) રાષ્ટ્રપતિની સત્તાઓ (૬) ભારતનું ચુંટણીપંચ (૭) રાજ્યપાલશ્રીની સત્તાઓ (૮) ન્યાયતંત્ર (૯) એટર્ની જનરલ (૧૦) કમ્પ્ટ્રોલર અને ઓડિટર જનરલ (C.A.G.) (૧૧)અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિઅને સમાજના પછાત વર્ગો માટેની જોગવાઇઓ (૧૨) પંચાયતી રાજ (૧૩) નાણા પંચ
૫.	સામાન્યવિજ્ઞાન
૬.	ગણિતશાસ્ત્ર (૧) સંખ્યાત્મકકસોટી (૨) સામાન્યબૌદ્ધિકક્ષમતા અને તાર્કિક કસોટી
૭.	ગુજરાતી વ્યાકરણ (૧) જોડણી (૨) સમાનાર્થી-વિરુદ્ધાર્થી શબ્દો (૩)રૂઢિપ્રયોગો અને કહેવતો (૪)સમાસ (૫)અલંકાર (૬) છંદ (૭)સંધિ
૮.	અંગ્રેજી વ્યાકરણ (૧) Articles, Pronouns, Adjectives, Prepositions, Conjunctions and Questiontag. (2) Verb and Tense, Agreement between subject and verb, Gerund, Participles. (3) Model 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) Degree of adjectives. (7) Common errors of usage.
૯.	આધુનિક ભારતનો ઇતિહાસ
૧૦.	જાહેરાતમાં દર્શાવેલ જગ્યા અંગેની સામાન્ય ફરજો અને વિભાગની પ્રવૃત્તિની રૂપરેખા અને યોજનાઓ તથા ગુજરાતના વહીવટી તંત્રનું માળખું
૧૧.	ખેલ જગત
૧૨.	તાજેતરનાં મહત્વના બનાવો.

જા.ક્ર. 133/2015-16.

જા.ક્ર. 136/2024-25

ભાગ- ૨ સંબંધિત વિષયનો અભ્યાસક્રમ

જગ્યાનુ નામ:- મદદનીશ ઇજનેર (સિવિલ), વર્ગ-૨,(માર્ગ અને મકાન વિભાગ હેઠળ)

ક્રમ	પ્રશ્નપત્રનો વિષય	કુલ પ્રશ્નો	માધ્યમ	ગુણ
૧.	પ્રશ્નપત્ર-૧ અભ્યાસક્રમ:	૧૦૦	અંગ્રેજી	૨૦૦

1. Engineering Mechanics:

Statics: system of units, definition of force, non-coplanar and coplanar, concurrent and non-concurrent force-systems, Composition and resolution of forces, resultant of force systems, couple conditions of equilibrium, free body diagrams, concentrated and distributed forces, reactions of statically determinate beams, statics Friction, centre of gravity, centroid. Puppu's theorems, mass moment of inertia, moment of inertia of plane laminae and uniform bars, virtual work. Statically determinate plane trusses, methods of analysis of pin jointed trusses-joint method, method of section and graphical method. **Dynamics:** Newton's laws of motion, velocity, acceleration, displacements in rectilinear and curved motion, velocity time diagram, circular motion, motion of connected bodies, rotation of a rigid body about fix axis, relative motion instantaneous centre, motion of links, work, power and energy-principles of conservation of energy and momentum, impulse, collision of elastics bodies.

2. Strength of Materials:

Elastic, isotropic, and homogeneous materials, mechanical properties of materials and their determination in laboratory, stresses and strains, elastics constants and their relations, stresses and strains in composite bars due to loading and temperature, principal stresses and principal planes, Mohr's circle of stress, ellipse of stress (two dimensional). Bending moment, shear force and axial thrust diagrams, theory of bending, bending stresses and shear stresses in beams, flitched beams. Torsion of circular shafts, stresses produced, keys and couplings, closely coiled helical springs, theory of elastics failure, thin cylindrical and spherical shells, strains energy due to direct, shear and bending stresses.

3. Elements of Structural Analysis:

Deflection of determinate beams by using Macaulay's method, moment area method, Mohr's theorems conjugate beam method, combined direct and bending stresses, analysis of propped, fixed and continuous beams and rigid frames by using three moment theorem, moment distribution and slope deflection methods. Columns and struts, Euler's and Rankin's formula for long columns, secant formula. Rolling loads and influence lines of determinate beams. Analysis of three hinged and two hinged arches.

4. Elements of Geotechnical Engineering:

Deflection, importance of geotechniques in civil engineer, formation of soil, soil profile, index (physical) properties of soil, phase relationships, soil structure and texture, grain size distribution curve, consistency of soil. Atterberg's limits and their significance, soil classification and identification, soil water system, capillary phenomenon in soils, adsorbed and adsorbed water in soil permeability of soils, its field and laboratory determination, stratified deposits, sand boil (quick condition),seepage flownet, its property and use, compaction, optimum moisture content, field compaction methods and control.

5. Surveying:

General principles, sing conventions, chain surveying, principles of plane table surveying, two-point and three-point problems, compass surveying, traversing, bearings, local attraction, traverse computations, Corrections. **Leveling:** Temporary and permanent adjustments, fly-levels, reciprocal levelling contour

(P.T.O.)

Levelling, volume computations, refraction and curvature corrections. **Theodolite:** Adjustments, traversing, heights and distances, tachometric surveying. **Curve setting**: By chain and by theodolite, transition, horizontal and vertical curves. Principles of aerial photogrammetry and hydrographic surveying.

6. Fluid Mechanics:

Properties of fluids, hydrostatics, pressure at a point, centre of pressure, pressure on plane and curved surfaces, buoyancy, stability of floating bodies. **Hydrokinfematics:** Fundamentals of fluid flow, Bernoulli's equation, venturimeter, free and forced vortex. **Measurement of fluids:** Orifices, mouthpieces, notches, weirs, flow under variable head. Impact of jets, turbines and pumps.

7. Civil Engineering Materials:

Different materials of construction and their physical and mechanical properties, factors affecting selection, stones, bricks and clay products, limes, cements, mortars, concrete, different types of cements and concrete, concrete mix design, properties and testing of fresh and hardened concrete, different types of iron and steel, timber, paints, plastics polymeric materials and special uses. damp - proof, thermal proof, fire proof, sound proof and acoustical materials, anti-termite treatments.

8. Design of Structure: Reinforced concrete structure :

Philosophy, limit state and working stress methods of design, loading standard, recommendation of I.S.codes, design of rectangle T and L beams, one way and tow way slabs, staircase slabs, continues beams, design of columns, isolated and combined footings, retaining walls cantilever and counter fort type, design of circular and rectangle water tanks. **Prestressed concrete:** principles, methods of prestressing anchorages, loss of prestress, analysis and design of simple prestressed beam for flexure, structural detailing. **Steel structures: -** I.S. Standard, recommendation, computation of wind load as per I.S., typical roof trusses, design of tension and compression members, design of roof trusses, design of simple and plate beam, purlins, plate girder-design of simple and compound columns, column bases and connections. Design of gantry girder and trussed bridges, stiffened and un-stiffened connections to resist shear and moment, structural detailing.

9. Building Construction:

Cavity walls, reinforced brickwork, building services, detailing of floors, roofs, ceilings, stairs, finishing, formwork, ground water control techniques, cofferdams, Functional planning of building, orientation of buildings, rehabilitation, low-cost housing, building estimates, rate analyses and specifications. Contracts and tenders, construction of scheduling, PERT, CPM;, performance analyses and economics of earth moving and construction equipment.

10. Transportation Engineering:

Roads and highways: Traffic engineering and traffic surveys, intersections, road signs, signals and marking. Classification of roads. Planning, geometric design, design of flexible and rigid pavements, IRC guidelines on pavement designs and design methodologies.

11. Bridge Engineering

Fundamentals of Bridge Engineering , Bridge Site Investigations and Planning, Bridge Hydrology, Standards of Loadings for Bridge Design, Different Types of Bridges, Bridge Superstructure , Bearings and Substructure Design, Design of Bridge Foundations, Bridge Approaches, River Training Work & Protection Work, Methods of Bridge Construction, Inspection, maintenance & Repair of Bridges, Testing of Bridges, Bridge Architecture.