

लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, सिभिल समूह, बिल्डिङ्ग एण्ड आर्किटेक उपसमूह, राजपत्र अनंकित द्वितीय श्रेणी, असिष्टेण्ट सव-इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

प्रथम चरण : लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

पत्र	विषय	पूर्णाङ्क	उर्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या × अङ्क	समय
प्रथम	सामान्य ज्ञान र सार्वजनिक व्यवस्थापन (General Awareness & Public Management)	१००	४०	वस्तुगत (Objective)	बहुवैकल्पिक प्रश्न (MCQs)	२० प्रश्न × २ अङ्क	४५ मिनेट
	सेवा सम्बन्धित कार्य-ज्ञान (Job Based - knowledge)					३० प्रश्न × २ अङ्क	
द्वितीय	सेवा सम्बन्धित कार्य-ज्ञान (Job Based - knowledge)	१००	४०	विषयगत (Subjective)	छोटो उत्तर (Short Answer) लामो उत्तर (Long Answer)	१२ प्रश्न × ५ अङ्क ४ प्रश्न × १० अङ्क	२ घण्टा १५ मिनेट

द्वितीय चरण : अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

पत्र / विषय	पूर्णाङ्क	उर्तीर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता (Interview)	३०		मौखिक (Oral)

द्रष्टव्य :

- यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई चरणमा विभाजन गरिएको छ ।
- लिखित परीक्षाको प्रश्नपत्रको माध्यम भाषा पाठ्यक्रमको विषयवस्तु जुन भाषामा दिइएको छ सोही भाषाको आधारमा नेपाली वा अंग्रेजी मध्ये कुनै एक मात्र भाषा हुनेछ । तर विषयवस्तुलाई स्पष्ट गर्नुपर्ने अवस्थामा दुवै भाषा समेत प्रयोग सकिने छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- प्रथम पत्र र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ । तर एकैदिनमा परीक्षा लिइनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षरहरू (Capital letters): A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षरहरू (Small letters): a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्न हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नहरूको हकमा तोकिएको अंकको एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुईभन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- विषयगत प्रश्न हुनेका हकमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नको उत्तर सोहीखण्डको उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा दिइए अनुसार हुनेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।

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१२. प्रथम चरणको परीक्षाबाट छनोट भएका उम्मेदवारलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
१३. यस भन्दा अगाडि लागू भएको माथि उल्लेखित सेवा, समूहको पाठ्यक्रम खारेज गरिएको छ ।
१४. पाठ्यक्रम लागू मिति : - २०८०/१०/२२

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इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

प्रथम पत्र (Paper I) :-

सामान्य ज्ञान र सार्वजनिक व्यवस्थापन तथा सेवा सम्बन्धित कार्य-ज्ञान

भाग (Part I) :

सामान्य ज्ञान र सार्वजनिक व्यवस्थापन

(General Awareness and Public Management)

खण्ड (Section - A) : (१० प्रश्न× २ अङ्क = २० अङ्क)

1. सामान्य ज्ञान (General Awareness)

- 1.1 नेपालको भौगोलिक अवस्था, प्राकृतिक स्रोत र साधनहरू
- 1.2 नेपालको ऐतिहासिक, सांस्कृतिक र सामाजिक अवस्था सम्बन्धी जानकारी
- 1.3 नेपालको आर्थिक अवस्था र चालु आवधिक योजना सम्बन्धी जानकारी
- 1.4 जैविक विविधता, दिगो विकास, वातावरण, प्रदुषण, जलवायु परिवर्तन र जनसंख्या व्यवस्थापन
- 1.5 मानव जीवनमा प्रत्यक्ष प्रभाव पार्ने विज्ञान र प्रविधिका महत्वपूर्ण उपलब्धिहरू
- 1.6 जनस्वास्थ्य, रोग, खाद्य र पोषण सम्बन्धी सामान्य जानकारी
- 1.7 नेपालको संविधान (भाग १ देखि ५ सम्म र अनुसूचीहरू)
- 1.8 संयुक्त राष्ट्रसंघ र यसका विशिष्टीकृत संस्था सम्बन्धी जानकारी
- 1.9 क्षेत्रीय संगठन (सार्क, विमस्टेक, आसियान र युरोपियन संघ) सम्बन्धी जानकारी
- 1.10 राष्ट्रिय र अन्तर्राष्ट्रिय महत्वका समसामयिक गतिविधिहरू

खण्ड (Section - B) : (१० प्रश्न× २ अङ्क = २० अङ्क)

2. सार्वजनिक व्यवस्थापन (Public Management)

- 2.1 कार्यालय व्यवस्थापन (Office Management)
 - 2.1.1 कार्यालय (Office) : परिचय, महत्व, कार्य र प्रकार
 - 2.1.2 सहायक कर्मचारीका कार्य र गुणहरू
 - 2.1.3 कार्यालय स्रोत साधन (Office Resources): परिचय र प्रकार
 - 2.1.4 कार्यालयमा सञ्चारको महत्व, किसिम र साधन
 - 2.1.5 कार्यालय कार्यविधि (Office Procedure) : पत्र व्यवहार (Correspondence), दर्ता र चलानी (Registration & Dispatch), फाइलिङ (Filing), परिपत्र (Circular), तोक आदेश (Order), टिप्पणी लेखन र टिप्पणी तयार पार्दा ध्यान दिनुपर्ने कुराहरू
 - 2.1.6 अभिलेख व्यवस्थापन (Record Management)
- 2.2 निजामती सेवा ऐन र नियमावलीमा भएका देहायका व्यवस्थाहरू
 - 2.2.1 निजामती सेवाको गठन, संगठन संरचना, पदपूर्ति गर्ने तरिका र प्रक्रियाहरू
 - 2.2.2 कर्मचारीको नियुक्ति, सरुवा, बढुवा, बिदा, विभागीय सजाय र अवकाश
 - 2.2.3 कर्मचारीले पालन गर्नुपर्ने आचरण, नैतिक दायित्व र कर्तव्यहरू
- 2.3 संघीय मामिला तथा सामान्य प्रशासन मन्त्रालय सम्बन्धी जानकारी
- 2.4 संवैधानिक निकाय सम्बन्धी जानकारी
- 2.5 सरकारी बजेट, लेखा र लेखापरीक्षण प्रणाली सम्बन्धी सामान्य जानकारी
- 2.6 सार्वजनिक सेवा प्रवाहको अर्थ, सेवा प्रवाह गर्ने निकाय, तरिका र माध्यमहरू
- 2.7 मानव अधिकार, सुशासन र सूचनाको हक सम्बन्धी सामान्य जानकारी
- 2.8 सार्वजनिक बडापत्र (Public Charter)
- 2.9 व्यवस्थापनको अवधारणा तथा सार्वजनिक व्यवस्थापनमा निर्देशन, नियन्त्रण, समन्वय, निर्णय प्रक्रिया, उत्प्रेरणा र नेतृत्व सम्बन्धी जानकारी
- 2.10 मानवीय मूल्य मान्यता (Human Values), नागरिक कर्तव्य र दायित्व तथा अनुशासन

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इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

भाग (Part II) :-

सेवा सम्बन्धित कार्य-ज्ञान (Job Based - Knowledge)

(३० प्रश्न× २ अङ्क = ६० अङ्क)

I - Civil Engineering

1. Engineering Drawing

- 1.1. Preparation of standard drawing sheets: A₀, A₁, A₂, A₃, A₄ size of sheet (length x breadth)
- 1.2. Drafting techniques and methods in common practice
 - 1.2.1. Different types of lines and effects
 - 1.2.1.1. Vertical line, horizontal line & inclined line (thick, thin, dark, light)
 - 1.2.2. Texture of different materials: stone, timber, glass, metal, brick, concrete, sand, earth, tile, plaster
 - 1.2.3. Dimensioning : element to element, centre to centre & overall dimensioning
- 1.3. Measured Drawing
 - 1.3.1. Methods of measurement of horizontal and vertical dimensions
 - 1.3.2. Sectional measurements
 - 1.3.3. Scales: choice, use and conversion
- 1.4. Working Drawing
 - 1.4.1. Significance of detailing in terms of accuracy of estimation, bill of quantities and construction supervision
 - 1.4.2. Working drawing for private and public buildings, sanitary installation and electrification
 - 1.4.3. Structural working drawings and structural detail: column, beam, slab, foundation, and other structural elements

2. Estimating and costing

- 2.1. General
 - 2.1.1. Purpose of estimating
 - 2.1.2. Units of measurements and modes of payment of various items of work and materials
 - 2.1.3. Standard estimate formats of government of Nepal
 - 2.1.4. Methods of estimate
 - 2.1.5. Preparation of detail estimate and abstract of cost
 - 2.1.6. Types of estimates (preliminary estimate, approximate quantity estimate, detailed estimate, revised estimate)
- 2.2. Rate analysis and Norms
 - 2.2.1. Approved district rate of materials
 - 2.2.2. Transportation cost of materials, labour charge, vehicles and others
 - 2.2.3. Need for contractors overheads
 - 2.2.4. Need for VAT and contingencies
 - 2.2.5. Standard Rate analysis and Norms
- 2.3. Specifications
 - 2.3.1. Purpose, types and necessity
 - 2.3.2. Understanding of specifications
 - 2.3.3. Standards specifications of building
- 2.4. Estimating
 - 2.4.1. Estimate of civil works, and site development work
 - 2.4.2. Estimate of water supply, sanitary installations
 - 2.4.3. Estimate of Electrification works

- 2.4.4. Estimate of repair and maintenance
- 2.4.5. Use of spread sheet for estimating and costing
- 2.5. Valuation: Concept and purpose of property valuation

3. Surveying

3.1. General

- 3.1.1. Introduction and its importance
- 3.1.2. Classifications based on instruments and on surveying methods
- 3.1.3. Basic principle of surveying
- 3.1.4. Scale, plans, maps
- 3.1.5. Conventional signs and system of field booking of surveying and levelling the survey data
- 3.1.6. Uses of ranging rods, arrows and bench marks
- 3.1.7. Linear measurements: chain, tape & steel band
- 3.1.8. Abney level

3.2. Levelling

- 3.2.1. Classification of levelling works
- 3.2.2. Methods of levelling
- 3.2.3. Levelling instruments and accessories
- 3.2.4. Principles of levelling
- 3.2.5. Temporary and permanent adjustments of a level
- 3.2.6. Profile levelling
- 3.2.7. Booking and reducing levels
- 3.2.8. Errors and its adjustment

3.3. Chain survey

- 3.3.1. Principles
- 3.3.2. Detail, offsets, ties
- 3.3.3. Setting 3, 4, 5 right triangle
- 3.3.4. Use of isosceles triangle
- 3.3.5. Sources of error, limitations of scale and accuracy
- 3.3.6. Plotting and use of base lines

3.4. Contouring : definition & use of contour maps

3.5. Setting out : buildings & locating the boundaries of lands

3.6. Organization and management

- 3.6.1. Definition of organization and its importance
- 3.6.2. Building agencies: DUDBC, Municipality, Town development Authority
- 3.6.3. Organizational Structure of the Department of Urban Development and Building Construction (DUDBC)
- 3.6.4. Responsibilities of Assistant sub-Engineer

II -Building Material and Building Construction

4. Building construction technology

4.1. Foundation

- 4.1.1. Types of foundation: shallow, deep
- 4.1.2. Safe bearing capacity of soil and its improvement
- 4.1.3. Methods of excavation, shoring and dewatering
- 4.1.4. Stone/brick masonry foundation
- 4.1.5. Isolated, combined and raft foundation
- 4.1.6. Strap beam, foundation beam and DPC beam

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- 4.2. Damp proofing
 - 4.2.1. Source of dampness
 - 4.2.2. Remedial measures to prevent dampness
 - 4.2.3. Vertical and horizontal damp proofing
 - 4.2.4. Damp proofing materials and their application methods
- 4.3. Walls
 - 4.3.1. Types of walls: solid wall, partition wall, cavity wall, curtain wall
 - 4.3.2. Types of stone masonry: rubble, dressed, ashlar
 - 4.3.3. Brick masonry: English bond, Flemish bond, Rat-Trap bond etc.
 - 4.3.4. Concrete block: Hollow block, Solid Block etc.
 - 4.3.5. Seismic resistant features in wall: corner strengthening, Plinth band sill band, lintel band, gable band, vertical reinforcement, through stone
- 4.4. Concrete technology and management
 - 4.4.1. Constituents of cement concrete(cement, aggregate, water, admixture)
 - 4.4.2. Grading of aggregates
 - 4.4.3. Water cement ratio
 - 4.4.4. Workability and strength of concrete
 - 4.4.5. Concrete mix, laying, pouring, and compaction
 - 4.4.6. Reinforcement laying
 - 4.4.7. Formwork
 - 4.4.8. Curing of concrete
 - 4.4.9. Storage and management of construction material
 - 4.4.10. Record keeping at construction site (daily work done, manpower mobilized, material storage etc)
 - 4.4.11. Construction safety
 - 4.4.12. Scheduling tool(bar chart)
- 4.5. Doors and windows
 - 4.5.1. Types of timber door and windows
 - 4.5.2. Types of timber pannel, frame and shutters
 - 4.5.3. Other materials (Aluminium, UPVC, PVC, Metal etc.)
 - 4.5.4. Joinery details
- 4.6. Staircase : Types (Dog Legged, openwell, straight flight) & layout of staircase

5. Construction Materials

- 5.1. Rocks/stone: types of rocks, their characteristics & properties of good stone
- 5.2. Aggregates (fine & coarse)
- 5.3. Cement
 - 5.3.1. Different types of cement and its properties
 - 5.3.2. Admixtures
- 5.4. Metal and alloys
 - 5.4.1. Steel: composition and properties
 - 5.4.2. Corrosion and its prevention
- 5.5. Brick: types of bricks & sizes of bricks available in Nepal
- 5.6. Lime and Surkhi: types, properties and its uses.
- 5.7. Mortar: types, properties and its uses along with proportions
- 5.8. Paints and varnishes : constituents, types and its uses
- 5.9. Finishes
 - 5.9.1. Floor finishes-punning, tiles, mosaic, clay, concrete, vinyl, marble, flagstones, wooden boarding, parquet etc.

लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, सिभिल समूह, बिल्डिङ्ग एण्ड आर्किटेक उपसमूह, राजपत्र अनंकित द्वितीय श्रेणी, असिष्टेण्ट सव-इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

5.9.2. Wall finishes : plasters (cement, lime and mud), punning and cladding (wooden, stone, tiles, marbles)

5.10. Roofing materials

5.10.1. Clay tiles, ceramic tiles and slates

5.10.2. Sheet-C.G.I. and UPVC, Fiber glass

5.10.3. Water proofing materials

5.10.4. Application aspects

6. Structural Details and Its Interpretation

6.1. Clear cover for structural elements (slab, beam, column, foundation, shear wall, staircase)

6.2. Development length for different grade of concrete and reinforcement

6.3. Detailing of stirrups and ties

6.4. Detailing of beam - column joint

6.5. Rebar schedule

6.6. Lapping zone for different structural elements

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7.1. Water supply

7.1.1. Necessity of water supply

7.1.2. Types of storage (underground, overhead)

7.1.3. Types of water supply pipes and its fitting

7.2. Disposal system

7.2.1. Septic tank, soak pit, vents, manhole

7.2.2. Rain water harvesting (Recharging system)

7.2.3. Types of sewerage pipes

7.3. Electricity

7.3.1. General principle of electrical installation and distribution

7.3.2. Types of wiring systems (surface, conceal)

7.3.3. Safety precautions (earthing, lightning arrestors)

7.4. Lighting : General principle of lighting & Lighting fixtures

III -Architecture and Planning

8. Elements of building (components)

8.1. Walls (load bearing and frame structure)

8.2. Floors

8.3. Opening (doors and windows)

8.4. Connecting elements (staircase/ramps/elevators/Escalators)

9. Synthesis of components into a total building

9.1. The specific programme- space requirements

9.2. Site topography (flat/slope) and surroundings

9.3. Orientation and climatic elements (sun, wind, precipitation, humidity and its relationship with orientation)

9.4. Culture tradition, values, introduction to vernacular architecture

9.5. Natural light and natural ventilation (skylight/atrium)

9.6. Sun-shading (Horizontal, Vertical and Egg-crate) devices and its uses

लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, सिभिल समूह, बिल्डिङ्ग एण्ड आर्किटेक उपसमूह, राजपत्र अनंकित द्वितीय श्रेणी, असिष्टेण्ट सव-इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

10. Planning

- 10.1. Building byelaws: Setback, Floor area ratio (FAR), Ground coverage, Right of way (ROW) and Height controls;
- 10.2. Building Code: Introduction, its types & uses
- 10.3. Concepts of land development
 - 10.3.1. Definition of guided land development
 - 10.3.2. Definition site and services
 - 10.3.3. Land pooling

11. Medium for presentation

- 11.1. Pencil techniques
- 11.2. Colour-primary, secondary, tertiary, colour wheel
- 11.3. Computer application in building drawing (AutoCAD)

प्रथम पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरू सोधिने छ ।

प्रथम पत्र (वस्तुगत)					
भाग	खण्ड	विषयबस्तु	परीक्षा प्रणाली	अङ्कभार	प्रश्न संख्या × अङ्क
I	(A)	सामान्य ज्ञान (General Awareness)	बहुवैकल्पिक प्रश्न (MCQs)	२०	१० प्रश्न × २ अङ्क = २०
	(B)	सार्वजनिक व्यवस्थापन (Public Management)		२०	१० प्रश्न × २ अङ्क = २०
II	-	सेवा सम्बन्धित कार्य-ज्ञान (Job Based -knowledge)		६०	३० प्रश्न × २ अङ्क = ६०

प्रथम पत्रको **भाग (Part II)** सेवा सम्बन्धित कार्य-ज्ञान (Job based -knowledge) को पाठ्यक्रमका इकाईबाट परीक्षामा यथासम्भव देहाय बमोजिम प्रश्नहरू सोधिने छ ।

इकाई	1	2	3	4	5	6	7	8	9	10	11
प्रश्न संख्या	4	4	4	3	3	2	2	2	2	2	2

लोक सेवा आयोग
नेपाल इन्जिनियरिङ्ग सेवा, सिभिल समूह, बिल्डिङ्ग एण्ड आर्किटेक उपसमूह, राजपत्र अनंकित द्वितीय श्रेणी, असिष्टेण्ट सव-
इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

द्वितीय पत्र (Paper II) :-

सेवा सम्बन्धित कार्य-ज्ञान (Job Based -knowledge)

खण्ड (Section) (A) :- ४० अङ्क

I - Civil Engineering

1. Engineering Drawing

- 1.1. Preparation of standard drawing sheets: A₀, A₁, A₂, A₃, A₄ size of sheet (length x breadth)
- 1.2. Drafting techniques and methods in common practice
 - 1.2.1. Different types of lines and effects
 - 1.2.1.1. Vertical line, horizontal line & inclined line (thick, thin, dark, light)
 - 1.2.2. Texture of different materials: stone, timber, glass, metal, brick, concrete, sand, earth, tile, plaster
 - 1.2.3. Dimensioning : element to element, centre to centre & overall dimensioning
- 1.3. Measured Drawing
 - 1.3.1. Methods of measurement of horizontal and vertical dimensions
 - 1.3.2. Sectional measurements
 - 1.3.3. Scales: choice, use and conversion
- 1.4. Working Drawing
 - 1.4.1. Significance of detailing in terms of accuracy of estimation, bill of quantities and construction supervision
 - 1.4.2. Working drawing for private and public buildings, sanitary installation and electrification
 - 1.4.3. Structural working drawings and structural detail: column, beam, slab, foundation, and other structural elements

2. Estimating and costing

- 2.1. General
 - 2.1.1. Purpose of estimating
 - 2.1.2. Units of measurements and modes of payment of various items of work and materials
 - 2.1.3. Standard estimate formats of government of Nepal
 - 2.1.4. Methods of estimate
 - 2.1.5. Preparation of detail estimate and abstract of cost
 - 2.1.6. Types of estimates (preliminary estimate, approximate quantity estimate, detailed estimate, revised estimate)
- 2.2. Rate analysis and Norms
 - 2.2.1. Approved district rate of materials
 - 2.2.2. Transportation cost of materials, labour charge, vehicles and others
 - 2.2.3. Need for contractors overheads
 - 2.2.4. Need for VAT and contingencies
 - 2.2.5. Standard Rate analysis and Norms
- 2.3. Specifications
 - 2.3.1. Purpose, types and necessity
 - 2.3.2. Understanding of specifications
 - 2.3.3. Standards specifications of building
- 2.4. Estimating
 - 2.4.1. Estimate of civil works, and site development work
 - 2.4.2. Estimate of water supply, sanitary installations
 - 2.4.3. Estimate of Electrification works

लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, सिभिल समूह, बिल्डिङ्ग एण्ड आर्किटेक उपसमूह, राजपत्र अनंकित द्वितीय श्रेणी, असिष्टेण्ट सव-इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- 2.4.4. Estimate of repair and maintenance
- 2.4.5. Use of spread sheet for estimating and costing
- 2.5. Valuation: Concept and purpose of property valuation

3. Surveying

3.1. General

- 3.1.1. Introduction and its importance
- 3.1.2. Classifications based on instruments and on surveying methods
- 3.1.3. Basic principle of surveying
- 3.1.4. Scale, plans, maps
- 3.1.5. Conventional signs and system of field booking of surveying and levelling the survey data
- 3.1.6. Uses of ranging rods, arrows and bench marks
- 3.1.7. Linear measurements: chain, tape & steel band
- 3.1.8. Abney level

3.2. Levelling

- 3.2.1. Classification of levelling works
- 3.2.2. Methods of levelling
- 3.2.3. Levelling instruments and accessories
- 3.2.4. Principles of levelling
- 3.2.5. Temporary and permanent adjustments of a level
- 3.2.6. Profile levelling
- 3.2.7. Booking and reducing levels,
- 3.2.8. Errors and its adjustment

3.3. Chain survey

- 3.3.1. Principles
- 3.3.2. Detail, offsets, ties
- 3.3.3. Setting 3, 4, 5 right triangle
- 3.3.4. Use of isosceles triangle
- 3.3.5. Sources of error, limitations of scale and accuracy
- 3.3.6. Plotting and use of base lines.

3.4. Contouring : definition & use of contour maps

3.5. Setting out : buildings & locating the boundaries of lands

3.6. Organization and management

- 3.6.1. Definition of organization and its importance
- 3.6.2. Building agencies: DUDBC, Municipality, Town development Authority
- 3.6.3. Organizational Structure of the Department of Urban Development and Building Construction (DUDBC)
- 3.6.4. Responsibilities of Assistant sub-Engineer

खण्ड (Section) (B) : - ६० अङ्क

II -Building Material and Building Construction

4. Building construction technology

4.1. Foundation

- 4.1.1. Types of foundation: shallow, deep
- 4.1.2. Safe bearing capacity of soil and its improvement
- 4.1.3. Methods of excavation, shoring and dewatering
- 4.1.4. Stone/brick masonry foundation
- 4.1.5. Isolated, combined and raft foundation
- 4.1.6. Strap beam, foundation beam and DPC beam

लोक सेवा आयोग

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- 4.2. Damp proofing
 - 4.2.1. Source of dampness
 - 4.2.2. Remedial measures to prevent dampness
 - 4.2.3. Vertical and horizontal damp proofing
 - 4.2.4. Damp proofing materials and their application methods
- 4.3. Walls
 - 4.3.1. Types of walls: solid wall, partition wall, cavity wall, curtain wall
 - 4.3.2. Types of stone masonry: rubble, dressed, ashlar
 - 4.3.3. Brick masonry: English bond, Flemish bond, Rat-Trap bond etc.
 - 4.3.4. Concrete block: Hollow block, Solid Block etc.
 - 4.3.5. Seismic resistant features in wall: corner strengthening, Plinth band sill band, lintel band, gable band, vertical reinforcement, through stone.
- 4.4. Concrete technology and management
 - 4.4.1. Constituents of cement concrete(cement, aggregate, water, admixture)
 - 4.4.2. Grading of aggregates
 - 4.4.3. Water cement ratio
 - 4.4.4. Workability and strength of concrete
 - 4.4.5. Concrete mix, laying, pouring, and compaction
 - 4.4.6. Reinforcement laying
 - 4.4.7. Formwork
 - 4.4.8. Curing of concrete
 - 4.4.9. Storage and management of construction material
 - 4.4.10. Record keeping at construction site (daily work done, manpower mobilized, material storage etc)
 - 4.4.11. Construction safety
 - 4.4.12. Scheduling tool (bar chart)
- 4.5. Doors and windows
 - 4.5.1. Types of timber door and windows
 - 4.5.2. Types of timber pannel, frame and shutters
 - 4.5.3. Other materials (Aluminium, UPVC, PVC, Metal etc.)
 - 4.5.4. Joinery details
- 4.6. Staircase : Types (Dog Legged, openwell, straight flight) & layout of staircase

5. Construction Materials

- 5.1. Rocks/stone: types of rocks, their characteristics & properties of good stone
- 5.2. Aggregates (fine & coarse)
- 5.3. Cement
 - 5.3.1. Different types of cement and its properties
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 - 5.4.1. Steel: composition and properties
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- 5.6. Lime and Surkhi: types, properties and its uses
- 5.7. Mortar: types, properties and its uses along with proportions
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 - 5.9.1. Floor finishes-punning, tiles, mosaic, clay, concrete, vinyl, marble, flagstones, wooden boarding, parquet etc.

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5.9.2. Wall finishes : plasters (cement, lime and mud), punning and cladding (wooden, stone, tiles, marbles)

5.10. Roofing materials

5.10.1. Clay tiles, ceramic tiles and slates

5.10.2. Sheet-C.G.I. and UPVC, Fiber glass

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6. Structural Details and Its Interpretation

6.1. Clear cover for structural elements (slab, beam, column, foundation, shear wall, staircase)

6.2. Development length for different grade of concrete and reinforcement

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6.4. Detailing of beam - column joint

6.5. Rebar schedule

6.6. Lapping zone for different structural elements

7. Building Services

7.1. Water supply

7.1.1. Necessity of water supply

7.1.2. Types of storage (underground, overhead)

7.1.3. Types of water supply pipes and its fitting

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7.2.2. Rain water harvesting (Recharging system)

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7.3.1. General principle of electrical installation and distribution

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7.3.3. Safety precautions (earthing, lightning arrestors)

7.4. Lighting : General principle of lighting & Lighting fixtures

III -Architecture and Planning

8. Elements of building (components)

8.1. Walls (load bearing and frame structure)

8.2. Floors

8.3. Opening (doors and windows)

8.4. Connecting elements (staircase/ramps/elevators/Escalators)

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9.1. The specific programme- space requirements

9.2. Site topography (flat/slope) and surroundings

9.3. Orientation and climatic elements (sun, wind, Precipitation, humidity and its relationship with orientation)

9.4. Culture tradition, values, introduction to vernacular architecture

9.5. Natural light and natural ventilation (skylight/atrium)

9.6. Sun-shading (Horizontal, Vertical and Egg-crate) devices and its uses

लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, सिभिल समूह, बिल्डिङ्ग एण्ड आर्किटेक उपसमूह, राजपत्र अनंकित द्वितीय श्रेणी, असिष्टेण्ट सव-इन्जिनियर वा सो सरह पदको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

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 - 10.3.1. Definition of guided land development
 - 10.3.2. Definition site and services
 - 10.3.3. Land pooling

11. Medium for presentation

- 11.1. Pencil techniques
- 11.2. Colour-primary, secondary, tertiary, colour wheel
- 11.3. Computer application in building drawing(AutoCAD)

द्वितीय पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरु सोधिनेछ ।

द्वितीय पत्र (विषयगत)					
पत्र	विषय	खण्ड	अङ्कभार	छोटो उत्तर	लामो उत्तर
द्वितीय	सेवा सम्बन्धित कार्य-ज्ञान (Job Based-Knowledge)	(A)	४०	४ प्रश्न × ५ अङ्क = २०	२ प्रश्न × १० अङ्क = २०
		(B)	६०	८ प्रश्न × ५ अङ्क = ४०	२ प्रश्न × १० अङ्क = २०