

गुठी संस्थान
प्राविधिक समूह, अधिकृत तृतीय श्रेणी सिभिल इन्जिनियर पदको खुला प्रतियोगितात्मक परीक्षाको
पाठ्यक्रम

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसारका चरणमा परीक्षा लिइने छ :

प्रथम चरण :- लिखित परीक्षा

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता

पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- ३००

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	सेवा समूह	१००	४०	वस्तुगत बहुवैकल्पिक (Multiple Choice)	५० प्रश्न X २ अङ्क	४५ मिनेट
द्वितीय	सम्बन्धी	१००	४०	विषयगत (Subjective)	१० प्रश्न X १० अङ्क	३ घण्टा

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	३०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी हुनेछ ।
- पाठ्यक्रमको प्रथम र द्वितीय पत्रको विषयवस्तु एउटै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरू सोधिनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको 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 ।
- विषयगत खण्डका लागि छुट्टै उत्तरपुस्तिका हुनेछ । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम 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 ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :- २०७६।५।३०

गुठी संस्थान
प्राविधिक समूह, अधिकृत तृतीय श्रेणी सिभिल इन्जिनियर पदको खुला प्रतियोगितात्मक परीक्षाको
पाठ्यक्रम

प्रथम र द्वितीय पत्र :- सेवा समूह सम्बन्धी इन्जिनियरिङ्ग विषय

खण्ड (क) – (५० %)

- 1. Structural Analysis and Design**
 - 1.1 Stress and strain; theory of torsion and flexure; moment of inertia
 - 1.2 Analysis of beams and frames: bending moment, shear force and deflection of beams and frames: determinate structure - energy methods; three hinged systems, indeterminate structures-slope deflection method and moment distribution method; use of influence line diagrams for simple beams, unit load method
 - 1.3 Reinforced concrete structure: Difference between working stress and limit state philosophy, analysis of RC beams and slabs in bending, shear, deflection, bond and end anchorage, Design of axially loaded columns; isolated and combined footings, introduction to pre-stressed concrete
 - 1.4 Steel and timber structures: Standard and built-up sections: Design of riveted, bolted and welded connections, design of simple elements such as ties, struts, axially loaded and eccentric columns bases, Design principles on timber beams and columns

- 2. Concrete Technology**
 - 2.1 Constituents and properties of concrete (physical and chemical)
 - 2.2 Water cement ratio
 - 2.3 Grade and strength of concrete, concrete mix design, testing of concrete
 - 2.4 Admixtures
 - 2.5 High strength concrete
 - 2.6 Pre-stressed concrete technology

- 3. Construction Materials**
 - 3.1 Properties of building materials: physical, chemical, constituents, thermal, etc.
 - 3.2 Stones – characteristics and requirements of stones as a binding materials
 - 3.3 Ceramic materials: ceramic tiles, mosaic tile, brick types and testing
 - 3.4 Cementing materials: types and properties of lime and cement; cement mortar tests
 - 3.5 Metals: Steel; types and properties ; Alloys
 - 3.6 Timber and wood: timber trees in Nepal ,types and properties of wood
 - 3.7 Miscellaneous materials: Asphaltic materials (Asphalt, Bitumen and Tar); paints and varnishes; polymers
 - 3.8 Soil properties and its parameters

- 4. Construction Management**
 - 4.1 Construction scheduling and planning: networks techniques(CPM,PERT) and bar charts
 - 4.2 Contractual procedure and management: types of contract, tender and tender notice, preparation of binding (tender) document, contractors pre-qualification, evaluation of

गुठी संस्थान

प्राविधिक समूह, अधिकृत तृतीय श्रेणी सिभिल इन्जिनियर पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- tenders and selection of contractor, contract acceptance, condition of contract; quotation and direct order ,classification of contractors; dispute resolution
- 4.3 Material management: procurement procedures and materials handling
 - 4.4 Quality Control Plan, Cost Control and Quality Control Mechanisms
 - 4.5 Project maintenance
 - 4.6 Occupational health and safety
 - 4.7 Project monitoring and evaluation
 - 4.8 Technical Auditing
 - 4.9 Variation, alteration and omissions
5. **Soil Mechanics and Foundations**
- 5.1 Soil characteristics, soil properties, classifications, effective stresses, permeability and well hydraulics
 - 5.2 Compressibility, consolidation and compaction
 - 5.3 Earth pressure theories
 - 5.4 Terzaghi's bearing capacity theories and their applications
 - 5.5 Water-water relationship
6. **Estimating and Costing Valuation and Specification**
- 6.1 Types of estimates and their specific uses
 - 6.2 Methods of calculating quantities
 - 6.3 Key components of estimating norms and rate analysis
 - 6.4 Preparation of bill of quantities
 - 6.5 Purpose, types and importance of specification
 - 6.6 Purpose, principles and methods of valuation
7. **Engineering Survey**
- 7.1 Introduction and basic principles
 - 7.2 Linear measurements: techniques; chain, tape, ranging rods and arrows; representation of measurements and common scales; sources of errors; effect of slope and slope correction; correction for chain and tape measurements; Abney level and clinometers
 - 7.3 Compass and plane table surveying: bearings; types of compass; problems and sources of errors of compass survey; principles and methods of plane tabling
 - 7.4 Leveling and contouring : principle of leveling; temporary and permanent adjustment of level; bench marks; booking methods and their reductions; longitudinal and cross sectioning; reciprocal leveling; trigonometric leveling; contour interval and characteristics of contours; method of contouring
 - 7.5 Theodolite traversing :need of traverse and its significance; computation of coordinates; adjustment of closed traverse ;closing errors
 - 7.6 Use of Total Station and Electronic Distance Measuring Instruments

गुठी संस्थान
प्राविधिक समूह, अधिकृत तृतीय श्रेणी सिभिल इन्जिनियर पदको खुला प्रतियोगितात्मक परीक्षाको
पाठ्यक्रम

खण्ड (ख) – (५० %)

8. Drawing Techniques

- 8.1 Drawing sheet composition and its essential components
- 8.2 Suitable scales, site plans, preliminary drawings, working drawings
- 8.3 Theory of projection drawing: perspective, orthographic and axonometric projection; first and third angle projection
- 8.4 Drawing tools and equipments
- 8.5 Drafting conventions and symbols
- 8.6 Topographic, electric, plumbing and structural drawings
- 8.7 Techniques of free hand drawing

9. Engineering Economics

- 9.1 Benefit cost analysis, cost classification, sensitivity analysis, internal rate of return, time value of money; economic equilibrium, demand, supply and production, net present value, financial and economic evaluation

10. Engineering Professional Practices

- 10.1 Ethics and professionalism: code of conduct and guidelines for professional engineering practices
- 10.2 Nepal Engineering Council Act, 2055 and Regulations, 2056
- 10.3 Relation with clients, contractor and fellow professionals
- 10.4 Public procurement practices for works, goods and services and its importance

11. Housing, Building and Urban Planning

- 11.1 Present status and practices of building construction in Nepal
- 11.2 Specific considerations in design and construction of buildings in Nepal
- 11.3 Indigenous technology in building design and construction
- 11.4 Local and modern building construction material in Nepal
- 11.5 Community buildings: school and hospital buildings and their design considerations
- 11.6 Urban planning needs and challenges in Nepal

12. Architecture

- 12.1 History of architecture
- 12.2 Contemporary world architecture
- 12.3 Contemporary Nepalese architecture
- 12.4 Traditional architecture of Nepal
- 12.5 Architecture of Kathmandu Valley
- 12.6 Principles of architectural design.
- 12.7 Factors to be considered while designing buildings.
- 12.8 Standards to be followed while designing buildings in Nepal
- 12.9 Contemporary world architects and their works

गुठी संस्थान
प्राविधिक समूह, अधिकृत तृतीय श्रेणी सिभिल इन्जिनियर पदको खुला प्रतियोगितात्मक परीक्षाको
पाठ्यक्रम

- 12.10 Architectural landmarks in Nepal
- 12.11 Conservation of historic buildings
- 12.12 Ethics of architects in professional practice

13. Technology, Environment and Civil Society

- 13.1 Technological development in Nepal
- 13.2 Promotion of local technology and its adaptation
- 13.3 Environmental Impact Assessment (EIA), Initial Environmental Examination (IEE), Global warming phenomena
- 13.4 Types of sources of pollution: point/non-point (for air and water)
- 13.5 Social mobilization in local infrastructure development and utilization in Nepal
- 13.6 Participatory approach in planning, implementation, maintenance and operation of local infrastructure

14. गुठी संस्थान र सम्बन्धित कानूनहरु

- 14.1 गुठीको इतिहास, गुठी व्यवस्थाको परिचय र प्रकार
- 14.2 गुठी संस्थानको स्थापनाको उद्देश्य र कार्यहरु
- 14.3 धार्मिक एवम् सांस्कृतिक सम्पदाको संरक्षण, विकास तथा व्यवस्थापन
- 14.4 गुठियार, मोही र मोहियानी हक सम्बन्धी जानकारी
- 14.5 गुठी संस्थान ऐन, २०३३
- 14.6 गुठी संस्थान (कार्य व्यवस्था) विनियम, २०४९
- 14.7 गुठी संस्थान कर्मचारी सेवा, शर्त तथा सुविधा सम्बन्धी विनियम, २०५१ (संशोधन सहित)
- 14.8 सम्पत्ति सुद्विकरण ऐन, २०६४
- 14.9 सूचनाको हक सम्बन्धि ऐन २०६४
- 14.10 अख्तियार दुरुपयोग अनुसन्धान आयोग ऐन २०४८
- 14.11 भ्रष्टाचार निवारण ऐन २०५९

प्रथम पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरु सोधिने छ ।

प्रथम पत्र			
विषय	खण्ड	अङ्कभार	वस्तुगत बहुवैकल्पिक प्रश्न
सेवा समूह सम्बन्धी	(क)	५०	२५ प्रश्न X २ अङ्क = ५०
	(ख)	५०	२५ प्रश्न X २ अङ्क = ५०
जम्मा		१००	५० प्रश्न X २ अङ्क = १००

द्वितीय पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरु सोधिने छ ।

द्वितीय पत्र			
विषय	खण्ड	अङ्कभार	विषयगत प्रश्न
सेवा समूह सम्बन्धी	(क)	५०	५ प्रश्न X १० अङ्क = ५०
	(ख)	५०	५ प्रश्न X १० अङ्क = ५०
जम्मा		१००	१० प्रश्न X १० अङ्क = १००