गुठी संस्थान

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

पाठ्यक्रमको रुपरेखा :– 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 सम्बन्धी	१००	४०	वस्तुगत बहुवैकल्पिक (Multiple Choice)	५० प्रश्न X २ अङ्क	४५ मिनेट
द्वितीय		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 :

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी हुनेछ ।
२. पाठ्यक्रमको प्रथम र द्वितीय पत्रको विषयवस्तु एउटै हुनेछ ।
३. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
४. लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरु सोधिनेछ ।
५. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरुको 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 ।
६. विषयगत खण्डका लागि छुट्टै उत्तरपुस्तिका हुनेछ । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
७. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरु परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।
८ प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
९. 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 इञ्जिनियरिङ्ग 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 stricture - 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 mortor 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 Contractural procedure and management: types of contract, tender and tender notice, preparation of binding (tenser) document, contractors pre-qualification, evaluation of

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 handelling
- 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 slop 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

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

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 सुद्धिकरण 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