नगर विकास कोष
खुला प्रतियोगितात्मक परीक्षाका लागि पाठ्यक्रम
एवं परीक्षा योजना

स्तर : अधिकृत, सेवा/समूहः प्राविधिक, तहः ७, पदः अधिकृत, सिभिल इञ्जिनियर

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरणः लिखित परीक्षा **पूर्णाङ्कः २००**

द्वितिय चरणः अन्तर्वार्ता, **पूर्णाङ्कः ३०**

परीक्षा योजना (Examination Scheme)

१. प्रथम चरणः लिखित परीक्षा (Written Examination)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या xअङ्कभार	समय
प्रथम र द्वितीय	सिभिल इञ्जिनियरिङ्ग सम्बन्धी विषय	१००	४०	वस्तुगत बहुवैकल्पिक (MCQs)	१००x१ = १००	१ घण्टा १५ मिनेट
		१००	४०	विषयगत (Subjective)	१०x१० = १००	३ घण्टा

२. द्वितिय चरणः अन्तर्वार्ता (Interview) पूर्णाङ्कः ३०

विषय	पूर्णाङ्क	परीक्षा प्रणाली	समय
व्यक्तिगत अन्तर्वार्ता	३०	मौखिक	–

द्रष्टव्यः

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी हुनेछ ।

२. प्रथम पत्र र द्वितिय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

३. प्रथम पत्रमा प्रत्येक एकाईबाट कम्तिमा ८ वटा प्रश्न सोधिनेछ ।

४. लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरु सोधिनेछन् ।

५. वस्तुगत वहुउत्तरमा एक भन्दा बढी चिन्ह लागेमा अंक दिईनेछैन ।

६. विषयगत छोटो र लामो उत्तर प्रश्नमा प्रत्येक पत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तर पुस्तिका हुनेछन् । परीक्षीले प्रत्येक खण्का प्रश्नको उत्तर सोही खण्डका उत्तर पुस्तिकामा लेख्नुपर्नेछ ।

७. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषय वस्तुमा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरु परीक्षाको मिति भन्दा तीन महिना अगाडि (संशोधन भएको वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनुपर्दछ ।

८. प्रथम चरणको परीक्षामा छनौट भएका उम्मेदवारहरुलाई मात्र द्वितिय चरणको अन्तर्वार्तामा सम्मिलित गराईनेछ ।

९. यस भन्दा अगाडि लागु भएका माथि उल्लेखित सेवा, समूहको पाठ्यक्रम खारेज गरिएको छ ।

१०. पाठ्यक्रम लागु मिति २०७५।४।.....

प्रथम र द्वितीय पत्र : सिभिल इञ्जिनियरिङ्ग सम्बन्धी विषय

Group A

1. Structure Analysis and Design 15%

1.1 Stresses and strains; 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 structures: 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, column bases, Design principles on timber beams and columns

2. Construction Materials 15%

2.1 Properties of building materials: physical, chemical, constituents, thermal etc.

2.2 Stones-characteristics and requirements of stones as a building materials

2.3 Ceramic materials: ceramic tiles, Mosaic Tile, brick types and testing etc.

2.4 Cementing materials: types and properties of lime and cement; cement mortar tests

2.5 Metals: Steel; types and properties; Alloys

2.6 Timber and wood: timber trees in Nepal, types and properties of wood

2.7 Miscellaneous materials: Asphaltic materials (Asphalt, Bitumen and Tar); paints and varnishes; polymers

2.8 Soil properties and its parameters

Group B

3. Concrete Technology 10%

3.1 Constituents and properties of concrete (physical and chemical)

3.2 Water cement ratio

3.3 Grade and strength of concrete, concrete mix design, testing of concrete

3.4 Mixing, transportation pouring and curing of concrete

3.5 Admixtures

3.6 High strength concrete

3.7 Pre-stressed concrete technology

4. Construction Management 10%

4.1 Construction scheduling and planning: network techniques (CPM, PERT) and bar charts

4.2 Contractual procedure and management: types of contract, tender and tender notice, preparation of bidding (tender) document, contractors pre-qualification, evaluation of tenders and selection of contractor, contract acceptance, condition of contract; quotation and direct order, classifications of contractors; dispute resolution; muster roll

4.3 Material management: procurement procedures and materials handling

4.4 Cost control and quality control

4.5 Project maintenance

4.6 Occupational health and safety

4.7 Project monitoring and evaluation

4.8 Quality assurance plan

4.9 Variation, alteration and omissions

Group C

5. Estimating and Costing Valuation and Specification 10%

5.1 Types of estimates and their specific uses

5.2 Methods of calculating quantities

5.3 Key components of estimating norms and rate analysis

5.4 Preparation of bill of quantities

5.5 Purpose, types and importance of specification

5.6 Purpose, principles and methods of valuation

6. Drawing Techniques 10%

6.1 Drawing sheet composition and its essential components

6.2 Suitable scales, site plans, preliminary drawings, working drawings etc

6.3 Theory of projection drawing: perspective, orthographic and axonometric projection; first and third angle projection

6.4 Drafting tools and equipments

6.5 Drafting conventions and symbols

6.6 Topographic, electrical, plumbing and structural drawings

6.7 Techniques of free hand drawing

7. Engineering Survey 10%

7.1 Introduction and basic principles

7.2 Linear measurements: techniques; chain, tape, ranging rods and arrows; representation of measurement 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; methods of contouring

7.5 Theodolite traversing: need of traverse and its significance; computation of coordinates; adjustment of closed traverse; closing errors

7.6 Uses of Total Station and Electronic Distance Measuring Instruments

Group D

8. Engineering Economics 5%

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

9. Professional Practices 5%

9.1 Ethics and professionalism: code of conduct and guidelines for professional engineering practices

9.2 Nepal Engineering Council Act, 2055 and regulations, 2056

9.3 Relation with clients, contractor and fellow professionals

9.4 Public procurement practices for works, goods and services and its importance

9.5 Project Planning and Management

10. Urban Development 10%

10.1 Institutions involved in urban planning and development in Nepal, Types of urban development plans and programs in Nepal,

10.2 Conservation of heritage sites, Settlement planning for disaster mitigation, Municipalities of Nepal and their role in urban development,

10.3 Town Development Committees and their role in urban development, Different types of housing, Principles of housing design,

10.4 Different models of land development, Squatter and slums, Private housing development, Rural housing, housing development programs in Nepal, Prospects of apartments and group housing in Nepal.

10.5 Roles of responsibilities of TDF in urban infrastructure development.

प्रथम तथा द्वितीय पत्रमा यथासम्भव देहायबमोजिम प्रश्नहरु सोधिनेछ ।

Section	Topics	1st Paper	2nd Paper
		Objective Questions (Each 1 mark)	Subjective Questions (each 10 Marks)
A	1	15	3
	2	15	
B	3	10	1
	4	10	1
C	5	10	1
	6	10	1
	7	10	1
D	8	5	1
	9	5	
	10	10	1
Total		100 Questions	10 Questions

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