बेनी नगरपालिका

प्राविधिक तर्फ इञ्जिनियरिङ्ग सेवा, सिभिल समूह, अधिकृत छैठौं तह, इञ्जिनियर पदको प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

पाठ्यक्रमको रुपरेखाः यस पाठ्यक्रमको आधारमा निम्नानुसार चरणमा परीक्षा लिइने छ ।

प्रथम चरण : लिखित परीक्षा पूर्णाङ्क : १००
द्वितीय चरण : अन्तर्वार्ता पूर्णाङ्क : २०

प्रथम चरण : लिखित परीक्षा योजना (Written Examinations)

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या र अङ्कभार	समय
सेवा सम्बन्धी	१००	४०	वस्तुगत बहुबैकल्पिक प्रश्न	५० प्रश्न × २ अङ्क = १०० अङ्क	६० मिनेट

द्वितीय चरण : अन्तर्वार्ता

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

क) यो पाठ्यक्रम योजनालाई लिखित परीक्षा र अन्तर्वार्ता गरी दुई चरणमा विभाजन गरिएको छ ।

ख) प्रश्नपत्रको भाषा अंग्रेजी हुनेछ ।

ग) वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरुको गलत उत्तर दिएमा वा उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।

घ) परीक्षामा कुनै प्रकारको क्याल्कुलेटर प्रयोग गर्न पाइने छैन ।

ङ) लिखित परीक्षामा यथासम्भव निम्नानुसार प्रश्नहरु सोधिनेछ ।

पाठ्यक्रम एकाई	१	२	३	४	५	६	७	८	९
प्रश्न संख्या	९	७	६	६	५	६	४	३	४

च) लिखित परीक्षामा छनौट भएका उम्मेदवारहरुलाई मात्र अन्तिम चरणको अन्तर्वार्तामा सम्मिलित गराइनेछ ।

छ) लिखित परीक्षा र अन्तिम चरणको अन्तर्वार्ताको कुल अङ्क योगका आधारमा अन्तिम परीक्षाफल प्रकाशित गरिनेछ ।

बेनी नगरपालिका

प्राविधिक तर्फ इञ्जिनियरिङ्ग सेवा, सिभिल समूह, अधिकृत छैठौं तह, इञ्जिनियर पदको प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

प्रथम पत्र : सिभिल इन्जिनियरिङ

1. Structure Analysis and Design

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

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; Alumunium

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

2.9 Alternative materials / technology

3. Concrete Technology

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

4.1 Construction scheduling and planning: network techniques, bar charts and computer aided construction management

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 negociation, contract acceptance, condition of contract; quotation and direct order, classifications of contractors; dispute resolution

4.3 Material management: procurement procedures and materials handling 4.4 Cost control, quality control and time control

4.5 Utility maintenance

4.6 Health, safety and insurance

4.7 Project monitoring and evaluation

4.8 Quality assurance plan
4.9 Variation and changes
4.10 Use of construction equipments

5. Estimating and Costing, Valuation and Specification

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 and importance of specification
5.6 Purpose, principles and methods of valuation

6. Drawing Techniques

6.1 Drawing sheet composition and its essential components
6.2 Suitable scales, site plans and location plans, preliminary drawings, conceptual and working drawings
6.3 Theory of projection drawing: perspective, orthographic and axonometric projection; first and third angle projection
6.4 Drafting tools and equipments; conventions and symbols
6.5 Topographic, electrical, plumbing and structural drawings
6.6 Techniques of free sketches drawing

7. Engineering Survey

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 compasses; 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, Electronic Distance Measuring Instruments & GPS **8.**

8. **Engineering Economics**

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

9. Professional Practices and Legislations

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 professionals
9.4 Public procurement concept and practices for works, goods and services and its importance
9.5 The Constitution of Nepal (From Part 1 to 5, 13, 14, 15, 16, 17, 18, 19 & 20; and Schedules)
9.6 Local Government Operation Act, 2074