गोदावरी नगरपालिका, नगर कार्यपालिकाको कार्यालय, कैलाली

सिभिल ईन्जिनियर पदको लिखित परीक्षाको पाठ्यक्रम

विषय	पूर्णाङ्क	उत्तिर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या*अङ्क	समय
General Awareness and General Ability Test, General Technical Subject and Technical Subject	१००	४०	बस्तुगत बहुबैकल्पिक प्रश्न (MCQs)	१०० प्रश्न*१ अङ्क	१ घण्टा १५ मिनेट
अन्तर्वार्ता	२०	-	मौखिक	-	३० मिनेट

1. **General Awareness and Contemporary Issues**
   - 1.1 Physical, socio-cultural and economic geography and demography of Nepal
   - 1.2 Major natural resources of Nepal
   - 1.3 Geographical diversity, climatic conditions, and livelihood & lifestyle of people
   - 1.4 Notable events and personalities, social, cultural and economic conditions in modern history of Nepal
   - 1.5 Current periodical plan of Nepal
   - 1.6 Information on sustainable development, environment, pollution, climate change, biodiversity, science and technology
   - 1.7 Nepal's international affairs and general information on the UNO, SAARC & BIMSTEC
   - 1.8 The Constitution of Nepal (From Part 1 to 5 and Schedules)
   - 1.9 Governance system and Government (Federal, Provincial and Local)
   - 1.10 Provisions of civil service act and regulation relating to constitution of civil service, organisational structure, posts of service, fulfillment of vacancy and code of conduct
   - 1.11 Functional scope of public services
   - 1.12 Public Service Charter
   - 1.13 Concept, objective and importance of public policy
   - 1.14 Fundamentals of management : planning, organizing, directing, controlling, coordinating, decision making, motivation and leadership
   - 1.15 Government planning, budgeting and accounting system
   - 1.16 Major events and current affairs of national and international importance

2. **General Ability Test**

   2.1 **Verbal Ability Test**

   Jumble words, Series, Analogy, Classification, Coding-Decoding, Matrix, Ranking Order Test, Direction and Distance Sense Test, Common Sense Test, Logical Reasoning, Assertion and Reason, Statement and Conclusions

   2.2 **Numerical Ability Test**

   Series, Analogy, Classification, Coding, Arithmetical reasoning/operation, Percentage, Ratio, Average, Loss & Profit, Time & Work, Data interpretation & Data verification

   2.3 **Non-verbal/Abstract Ability Test**

   Figure Series, Figure Analogy, Figure Classification, Figure Matrix, Pattern Completion/Finding, Analytical Reasoning Test, Figure Formation and Analysis, Rule Detection, Water images, Mirror images, Cubes and Dice &Venn-diagram

1. **Structural Engineering**
   - 1.1 Center of gravity, moment of inertia , radius of gyration
   - 1.2 Stresses and strains, theory of torsion and flexure
   - 1.3 Analysis of beams and frames: bending moment, shear force and deflection of beams and frames
   - 1.4 Determinate structures (energy methods), three hinged systems, suspension cable system
   - 1.5 Indeterminate structures:- slope deflection method and moment distribution method, use of influence line diagrams for simple beams, unit load method, two hinged arch
   - 1.6 Plastic analysis of beam and frame
2. **Engineering Survey**
   - 2.1 Introduction and basic principles, classification of surveys
   - 2.2 Linear measurement techniques:- chain and tape method, 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
   - 2.3 Compass:- types of compass, problems and sources of errors in compass survey
   - 2.4 Plane table surveying: principles and methods of plane tabling
   - 2.5 Leveling: principle of leveling, temporary and permanent adjustment of level, bench marks, booking methods and their recording, longitudinal and cross sectioning, reciprocal leveling, trigonometric leveling
   - 2.6 Contouring: contour interval and characteristics of contours, methods of contouring, interpolation,use of contour map
   - 2.7 Theodolite traversing: need of traverse and its significance, principle of traverse, computation of coordinates; adjustment of closed traverse and linked traverse, closing errors
   - 2.8 Tacheometry: principle, tacheometric formula, relation of distance and elevation
   - 2.9 Uses of total station and electronic distance measuring instruments
   - 2.10 Curves: types and suitability, elements, geometry and setting out of curves (simple circular curve, vertical curve, transition curve)
   - 2.11 Calculation of area and volume: methods of area calculation of land, methods of area and volume calculation of cut and fill, mass haul diagram
3. **Construction Materials**
   - 3.1 Properties of building materials: physical, chemical, constituents, thermal
   - 3.2 Stones: characteristics and requirements of stones as a building 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: types and properties of steel,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
3.9 Local and modern building construction material in Nepal

4. **Concrete Technology**
   4.1 Constituents and properties of concrete (physical and chemical)
   4.2 Water cement ratio
   4.3 Grade and strength of concrete, concrete mix design, testing of concrete
   4.4 Mixing, transportation pouring and curing of concrete
   4.5 Admixtures
   4.6 High strength concrete
   4.7 Pre-stressed concrete

5. **Geotechnical Engineering**
   5.1 Formation of soil, general classification of soil depending on transporting agent and deposit media
   5.2 Three phases of soil: basic terms, relation between basic terms, volumetric relationship: mass and volume, weight and volume,specific gravity of soil and lab test, field density and determination methods
   5.3 Types of water in soil, moisture content and relationship, organic content in soil
   5.4 Index properties of soil: grain size distribution and types of soil depending on grain size distribution, consistency limit, relative density,lab test of index properties
   5.5 Types of rock, dip, strike, fold, fault, cleavage, geographical divisions of Nepal, earthquake: causes of earthquake, types of wave, grading of earthquake, seismic fault line in Nepal
   5.6 Tunneling:types of tunnels, component parts of a tunnel and tunnel cross section, survey for tunnel alignment, drainage, lighting and ventilation requirements for tunnels, method of tunneling in soft soils and rock

6. **Construction Management**
   6.1 Construction scheduling and planning: network techniques (CPM, PERT) and bar charts
   6.2 Contractual procedure and management: types of contract, bid and bid notice, preparation of bidding document, contractors pre-qualification, evaluation of tenders and selection of contractor, contract acceptance, condition of contract, quotation and direct purchase, classifications of contractors, dispute resolution, muster roll
   6.3 Material management: procurement procedures and materials handling
   6.4 Cost, quality and time control
   6.5 Project management
   6.6 Occupational health and safety
   6.7 Project monitoring and evaluation
   6.8 Quality assurance plan
   6.9 Variation, alteration and omissions

7. **Estimating, Costing, Specificationand Valuation**
   - 7.1 Types of estimates and their specific uses
   - 7.2 Methods of calculating quantities
   - 7.3 Key components of estimating norms and rate analysis
   - 7.4 Preparation of bill of quantities
   - 7.5 Purpose, types and importance of specification
   - 7.6 Purpose, principles and methods of valuation

8. **Engineering Drawing**
   - 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 Drafting tools and equipments
   - 8.5 Drafting conventions and symbols
   - 8.6 Topographic, electrical, plumbing and structural drawings
   - 8.7 Techniques of free hand drawing
   - 8.8 Community buildings: School and hospital buildings and their design considerations

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. **Professional Practices**
   - 10.1 Ethics, integrity 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
   - 10.5 National Building Code: Hierarchy of building codes and its application, procedure for implementation of building code in Nepal
   - 10.6 Building Bylaws