प्रदेश लोक सेवा आयोग

कर्णाली प्रदेश

नेपाल इञ्जिनियरिङ्ग सेवा, सिभिल समूह चौथो तह, असिस्टेन्ट सव-इन्जिनियर पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रुपरेखाः— यस पाठ्यक्रमको आधारमा निम्नानुसार चरणमा परीक्षा लिइने छः

लिखित परीक्षा — पूर्णाङ्कः— १००

अन्तर्वार्ता — पूर्णाङ्कः— २०

प्रथम चरणः- लिखित परीक्षा योजना (Examination Scheme)

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या x अङ्क भार	समय
सेवा सम्बन्धी	१००	४०	वस्तुगतः बहुवैकल्पिक (Multiple Choice)	७० प्रश्न x १ अङ्क = ७०	१ घण्टा ३० मिनेट
			विषयगतः छोटो उत्तर (Short Answers)	६ प्रश्न x ५ अङ्क = ३०	

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	२०	मौखिक

<u>द्रष्टव्यः</u>

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनसक्नेछ ।

२. लिखित परीक्षाको वस्तुगत र विषयगत प्रश्नहरुको लागि छुट्टा छुट्टै उत्तरपुस्तिका परीक्षा सुरु हुनु अगावै दिइनेछ। परीक्षार्थीले वस्तुगत र विषयगत प्रश्नहरुको उत्तर सम्बन्धित उत्तरपुस्तिकामा लेख्नुपर्नेछ।

३. पाठ्यक्रमका एकाईवाट निम्नानुसार प्रश्नहरु सोधिनेछन् ।

एकाई	१	२	३	४	५	६	७	८	९	१०
वस्तुगत	७	८	७	१०	१०	७	७	७	६	१
विषयगत	१			१	१		१	१	१	

४. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरुको उत्तर सही दिएका प्रत्येक सही उत्तर बापत १ (एक) अङ्क प्रदान गरिनेछ भने 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 ।

५. यस पाठ्यक्रममा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका ऐन, नियमहरु तथा नीतिहरु परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधनभई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।

६. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित गराइनेछ ।

७. पाठ्यक्रम लागू मितिः– २०७८।७।११

विषयः सेवा सम्बन्धी

1. Engineering Drawing
   - 1.1 Unit, Dimension and their conversion with special reference to SI system
   - 1.2 Elementary idea of drawing, Building drawings
   - 1.3 Drafting techniques and methods in common practice
     - 1.3.1 Different types of lines and effects
     - 1.3.2 Vertical line, horizontal line & inclined line (thick, thin, dark, light)
     - 1.3.3 Representation of different materials: stone, timber, glass, metal, brick, concrete, sand, earth, tile, plaster
     - 1.3.4 Dimensioning: element to element, centre to centre and overall dimensioning
   - 1.4 Measured Drawing
     - 1.4.1 Methods of measurement of horizontal and vertical dimensions
     - 1.4.2 Sectional measurements
     - 1.4.3 Scales: choice, use and conversion
   - 1.5 Working Drawing
     - 1.5.1 Significance of detailing in terms of accuracy of estimation, bill of quantities and construction supervision
     - 1.5.2 Structural working drawings and structural detail: column, beam, slab, foundation, and other structural elements
2. Estimating, Costing and Supervision
   - 2.1 Purpose of estimating
   - 2.2 Methods of estimate
   - 2.3 Types of estimates (preliminary estimate, approximate quantity estimate, detailed estimate, revised estimate)
   - 2.4 Standard estimate formats of government of Nepal
   - 2.5 Rate analysis and Norms
   - 2.6 Estimating items of construction works
   - 2.7 Estimate of civil works, and site development work
   - 2.8 Specifications: purpose, types and necessity
   - 2.9 Concept and purpose of property valuation
   - 2.10 Supervision
3. Engineering Survey
   - 3.1 Basics of surveying, its importance and types
   - 3.2 Scale, plans, maps
   - 3.3 Conventional signs and system of field booking of surveying
   - 3.4 Basics of Chain, Compass, Levelling and Theodolite
4. Construction Materials

4.1 Rocks/stone: types of rocks, their characteristics & properties of good stone
4.2 Aggregates (fine & coarse)
4.3 Cement : Different types of cement and its properties, Admixtures
4.4 Metal and alloys
4.5 Brick: types & sizes of bricks available in Nepal
4.6 Lime and Surkhi: types, properties and its uses
4.7 Mortar: types, properties and its uses along with proportions
4.8 Paints and varnishes : constituents, types and its uses
4.9 Floor finishes-punning, tiles, mosaic, clay, concrete, vinyl, marble, flagstones, wooden boarding, parquet
4.10 Wall finishes: plasters (cement, lime and mud), punning and cladding (wooden, stone, tiles, marbles)
4.11 Roofing materials

5. Construction Technology
   5.1 Description and Objectives
   5.2 Types of construction works
      5.2.1 Masonry works, concrete works, flooring works, finishing works
      5.2.2 Construction of building components
      5.2.3 Earthquake Resistant Building Construction
      5.2.4 Temporary constructions
      5.2.5 Rural technology and alternative energy
   5.3 Concrete technology and management
      5.3.1 Constituents of cement concrete (cement, aggregate, water, admixture)
      5.3.2 Grading of aggregates
      5.3.3 Water cement ratio
      5.3.4 Workability and strength of concrete
      5.3.5 Concrete mix, laying, pouring, and compaction
      5.3.6 Reinforcement laying
      5.3.7 Formwork
      5.3.8 Curing of concrete
      5.3.9 Storage and management of construction material
      5.3.10 Record keeping at construction site (daily work done, manpower mobilized, material storage)
      5.3.11 Construction safety
      5.3.12 Scheduling tool (bar chart)
6. Building Services
   6.1 Water supply, Types of storage (underground, overhead), types of water supply pipes and its fitting

6.2 Septic tank, soak pit, vent pipe, manhole, types of sewerage pipes
6.3 General principle of electrical installation and distribution, types of wiring systems (surface, conceal), safety precautions (earthing, lightening arrestors)
6.4 Lighting: General principle of lighting & lighting fixtures

7. Roads and Bridges
   7.1. Types of roads and bridges
   7.2. Development of road network in Nepal
   7.3. Layout and construction of trails
   7.4. Rural roads and motorable roads
   7.5. Cross drains (bridges, culverts, causeways)
   7.6. Side drains for roads
   7.7. Retaining walls
   7.8. Road signs and Traffic signals
   7.9. River training works
8. Irrigation and hydropower
   8.1. Need for irrigation
   8.2. Methods of irrigation
   8.3. Head works and canal network
   8.4. Operation and maintenance of irrigation system
   8.5. Micro hydro development in Karnali province
9. Water Supply and sanitation
   9.1. Community based water supply system
   9.2. Selection of water source with adequate quantity
   9.3. Water demand analysis
   9.4. operation and maintenance of water supply system
   9.5. Common types of latrines
10. Civil Service Act, 2049 & Regulation, 2050 (conduct, punishment and leave to which civil employee is entitled)

Model Questions

Objective Questions

1. The unit of measurement of holdfast is:
   a) Number b) KG
   c) Sq. m d) Cu. M

2.Which one information is not found in specification:

a) Nature of works b) Quality of materials

c) types of workmanship d) Dimension

3. A relatively fixed point of known elevation above datum is called:

a) Datum point b) Bench Mark

c) Reduced level d) Reference point

4. Cadastral Map is a map having:

a) Small scale b) Medium scale

c) large scale d) All of the above

5. Slate stone is:

a) Igneous rock b) Sedimentary rock

c) Metamorphic rock d) None of the above

6. The initial and final setting times of ordinary Portland cement are:

a) 30 minutes and 10 hours b) 15 minutes and 10 hours

c) 5 minutes and 30 minutes d) 5 minutes and 10 minutes

7. In bricks masonry, the frog of the brick generally kept on:

a) Top face b) Bottom face

c) Exposed face d) Interior face

8. Workability of concrete …… with increase in water cement ratio.

a) Decrease b) Increase

c) Remains same d) None of the above

9. Grade of M30 concrete is …….. M20 concrete.

a) Lesser than b) Higher than

c) Same with d) None of the above

10. The device/ structure installed for drawing water from source is called:

a) Filter b) Aquifers

c) BPT d) Intake

11. The inlet and outlet pipes of septic tank are bent:

a) Upward b) Downward

c) Inlet upward and Outlet downward d) Inlet downward and outlet upward

12. The method of river training is:

a) Groynes b) Guide bank

c) Pitched bank d) All of the above

13. The width of the carriageway of two lanes road is:

a) 7.0 m b) 7.5 m

c) 5.5 m d) 5.0 m

14. Green color of a colored light traffic signal indicates:

a) Go b) Stop

c) Clearance time d) None of the above

15. The example of rigid pavement is:

a) Gravel road b) Asphalt road

b) WBM d) Cement Concrete road

16. Suitable irrigation method if availability of water is low:

a) Sprinkle Irrigation b) Drip Irrigation

c) Free flooding d) Furrow irrigation

17. Diversion head work is constructed to:

a) Regulate the intake of water into the canal

b) Lower the water level in the river

c) Increase the silt entry into the canal

d) All of the above

18. Per capita water demand in liters is taken in:

a) Per person per day b) Per person per week

c) Per person per month d) Per house per day

19. The type of from work provided for ferro cement tank in rural water supply schemes is:

a) Steel b) Wood

c) HDPE pipe d) All of the above

20. निजामति सेवा नियमावली अनुसार एक बर्षमा कति दिन घर बिदा पाइन्छ?

a) १२ दिन b) १८ दिन

c) २४ दिन d) ३० दिन

Subjective Questions:

1. What is specifications and why it is necessary? (2+3)
2. Brick is very common construction material in Nepal. Explain the advantages and disadvantages of brick over stone. (2.5+2.5)
3. What is curing of concrete and why it is necessary? List out the different methods of curing. (1+2+2)
4. Draw a typical section of Hill road and explain about the different elements. (2+3)
5. Explain the major maintenance works necessary in Irrigation system (5)
6. Explain the functions of Intake and Break pressure tank. (2.5+2.5)