L3 तह (Sub Engineer, Agriculture Technician, Data Entry Assistant, Finance and Book Keeping Assistant) का पदको प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रमलाई दुई चरणमा विभाजन गरिएको छ।

प्रथम चरण- लिखित परीक्षा — पूर्णाङ्कः ७५

द्वितीय चरण- अन्तर्वार्ता — पूर्णाङ्कः २५

परीक्षा योजना (Examination Scheme)

चरण	विषय	प्रश्न संख्या	अंकभार	परीक्षा प्रणाली	समय	पूर्णाङ्क	उत्तीर्णाङ्क
प्रथम	(क) सेवा सम्बन्धि कार्यज्ञान	२५	२५x१.५=३७.५	बहुवैकल्पिक प्रश्न (MCQs)	४५ मिनेट	७५	४५
	(ख) स्वीकृत कार्यक्षेत्रगत शर्तमा आधारित विषयवस्तु	२५	२५x१.५=३७.५				
द्वितीय				अन्तर्वार्ता		२५	

द्रष्टव्य:

१. वस्तुगत बहुवैकल्पिक 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 ।

२. वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षरहरु (Capital letters): A,B,C,D मा लेख्नुपर्नेछ । सानो अक्षरहरु (Small letters): a,b,c,d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।

३. बहुवैकल्पिक प्रश्नहरु हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर प्रयोग गर्न पाइने छैन ।

४. यथासम्भव प्रश्नहरु यस कार्यक्रमको कार्यक्षेत्र कर्णाली प्रदेशको सन्दर्भमा सोधिने छन्।

५. प्रथम चरणको लिखित परीक्षामा उत्तीर्ण भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित गराईनेछ।

Sub Engineer पदको प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

प्रथम चरणको खण्ड (क)

सेवा सम्बन्धित कार्य-ज्ञान (Job based knowledge)

(२५ प्रश्न x १.५=३७.५ अङ्क)

1. Surveying

1.1 General

- 1.1.1 Classifications
- 1.1.2 Principle of surveying
- 1.1.3 Selection of suitable method
- 1.1.4 Scales, plans and maps
- 1.1.5 Entry into survey field books and level books

1.2 Levelling

- 1.2.1 Methods of levelling
- 1.2.2 Levelling instruments and accessories
- 1.2.3 Principles of leveling

1.3 Plane Tabling

- 1.3.1 Equipments required
- 1.3.2 Methods of palne tabling
- 1.3.3 Two and three point problems

1.4 Theodolite and Traverse surveying

- 1.4.1 Basic difference between different theodolites
- 1.4.2 Temporary adjustments of theodolites
- 1.4.3 Fundamental lines and desired relations
- 1.4.4 Tacheometry: stadia method
- 1.4.5 Trigonometrical levelling
- 1.4.6 Checks in closed traverse

1.5 Contouring

- 1.5.1 Characteristics of contour lines
- 1.5.2 Method of locating contours
- 1.5.3 Contour plotting

2. Construction Materials

2.1 Stone

- 2.1.1 Formation and availability of stones in Nepal
- 2.1.2 Methods of laying and construction with various stones

2.2 Cement

- 2.2.1 Different cements: Ingredients, properties and manufacture
- 2.2.2 Storage and transport
- 2.2.3 Admixtures

2.3 Clay and Clay Products

- 2.3.1 Brick: type, manufacture, laying, bonds

2.4 Paints and Varnishes

2.4.1 Type and selection
2.4.2 Preparation techniques
2.4.3 Use

2.5 Bitumen
2.5.1 Type
2.5.2 Selection
2.5.3 Use

3. Soil Mechanics

3.1 General
3.1.1 Soil types and classification
3.1.2 Three phase system of soil
3.1.3 Unit Weight of soil mass: bulk density, saturated density, submerged density and dry density
3.1.4 Interrelationship between specific gravity, void ratio, porosity, degree of saturation, percentage of air voids air content and density index

3.2 Soil Water Relation
3.2.1 Terzaghi's principle of effective stress
3.2.2 Darcy's law
3.2.3 Factors affecting permeability

3.3 Compaction of soil
3.3.1 Factors affecting soil compaction
3.3.2 Optimum moisture content
3.3.3 Relation between dry density and moisture content

3.4 Shear Strength of Soils
3.4.1 Mohr-Coulomb failure theory
3.4.2 Cohesion and angle of internal friction

3.5 Earth Pressures
3.5.1 Active and passive earth pressures
3.5.2 Lateral earth pressure theory
3.5.3 Rankine's earth pressure theory

3.6 Foundation Engineering
3.6.1 Terzaghi's general bearing capacity formulas and their application

4. Irrigation Engineering

4.1 General
4.1.1 Advantages and Disadvantages of irrigation

4.2 Crop Water Requirement
4.2.1 Crop season and crop water requirement for principal crops
4.2.2 Duty delta and base period

4.3 Irrigation Canals
4.3.1 Canal losses and their minimization
4.3.2 Maximum and minimum velocities
4.3.3 Design of irrigation canal section using Manning's formula
4.3.4 Need and location of weir/barrage
4.3.5 Head works for small canals

5. Highway Engineering

5.1 General

- 5.1.1 Introduction to transportation systems
- 5.1.2 Historic development of roads in Nepal
- 5.1.3 Classification of road in Nepal
- 5.1.4 Basic requirements of road alignment

5.2 Geometric Design

- 5.2.1 Basic design control and criteria for design
- 5.2.2 Elements of cross section, typical cross-section for all roads in filling and cutting
- 5.2.3 Camber
- 5.2.4 Determination of radius of horizontal curves
- 5.2.5 Super elevation
- 5.2.6 Sight distances
- 5.2.7 Gradient
- 5.2.8 Use of Nepal Road Standard and subsequent revision in road design

5.3 Drainage System

- 5.3.1 Importance of drainage system and requirements of a good drainage system

5.4 Road Pavement

- 5.4.1 Pavement structure and its components: subgrade, sub-base, base and surface courses

5.5 Road Machineries

- 5.5.1 Earth moving and compacting machines

5.6 Road Construction Technology

5.7 Bridge

- 5.7.1 T-beam bride
- 5.7.2 Timber bridges

5.8 Road Maintenance and Repair

- 5.8.1 Type of maintenance Works
- 5.9 Tracks and Trails

6. Estimating and Costing

6.1 General

- 6.1.1 Main items of work
- 6.1.2 Units of measurement and payment of various items of work and material
- 6.1.3 Standard estimate formats of government offices

6.2 Rate Analysis

- 6.2.1 Basic general knowledge on the use of rate analysis norms of Government of Nepal and approved district rates

6.3 Specifications

- 6.3.1 Interpretation of specifications

6.4 Valuation

- 6.4.1 Methods of valuation
- 6.4.2 Basic general knowledge of standard formats used by commercial banks and NIDC for valuation

7. Construction Management

7.1 Organization

- 7.1.1 Need for organization
- 7.1.2 Responsibilities of a civil sub-engineer
- 7.1.3 Relation between Owner, Contractor and Engineer

7.2 Site Management

- 7.2.1 Preparation of site plan
- 7.2.2 Organizing labor
- 7.2.3 Measures to improve labor efficiency
- 7.2.4 Accident prevention

7.3 Contract Procedure

- 7.3.1 Contracts
- 7.3.2 Force account and day- works
- 7.3.3 Types of contracts
- 7.3.4 Tender and tender notice
- 7.3.5 Bid security
- 7.3.6 Preparation before inviting tender
- 7.3.7 Agreement
- 7.3.8 Conditions of contract
- 7.3.9 Construction supervision

7.4 Accounts

- 7.4.1 Administrative approval and technical sanction
- 7.4.2 Familiarity with standard account keeping formats used in governmental organizations
- 7.4.3 Muster roll
- 7.4.4 Completion report

7.5 Planning and Control

- 7.5.1 Construction schedule
- 7.5.2 Equipment and materials schedule
- 7.5.3 Construction stages and operations
- 7.5.4 Bar chart

प्रथम चरणको खण्ड (ख) कार्यक्षेत्रगत शर्तमा आधारित बहुबैकल्पिक प्रश्नहरु