नेपाल रेल्वे कम्पनी लिमिटेड

इञ्जिनियरिङ्ग सेवा, सिभिल समूह, सहायक चौंथो तह (प्राविधिक), ट्रयाक निरीक्षक पदको खुला प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

पाठ्यक्रम योजनालाई निम्नानुसारका दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :– लिखित परीक्षा पूर्णाङ्क :– २००

द्वितीय चरण :– अन्तर्वार्ता पूर्णाङ्क :– ३०

परीक्षा योजना (Examination Scheme)

१.प्रथमचरण: – लिखित परीक्षा पूर्णाङ्क :– २००

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्याxअङ्क	समय
प्रथम	सेवा (प्राविधिक विषय) सम्बन्धी र संस्थागत ज्ञान	१००	४०	वस्तुगत - बहुवैकल्पिक प्रश्न (MCQ)	५० प्रश्न X २ अङ्क	४५ मिनेट
द्वितीय		१००	४०	विषयगत- छोटो उत्तर आउने प्रश्न	८ प्रश्न X ५अङ्क	२ घण्टा ३० मिनेट
				विषयगत- लामो उत्तर आउने प्रश्न	६ प्रश्न X १०अङ्क	

२. द्वितीय चरण : – अन्तर्वार्ता पूर्णाङ्क :– ३०

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	३०	मौखिक

द्रष्टव्य :

१. यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई चरणमा विभाजन गरिएको छ ।

२. प्रथम र द्वितीय पत्रको पत्रको विषयवस्तु एउटै हुनेछ ।

३. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

४. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।

५. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नको 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 ।

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

७. बहुवैकल्पिक प्रश्न हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।

८. परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र /विषयमा दिइए अनुसार हुनेछ ।

९. विषयगत प्रश्न हुने पत्रका हकमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डको उत्तरपुस्तिकामा लेख्नुपर्ने छ ।

१०. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरु परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।

११. प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

१२. पाठ्यक्रम स्वीकृत मिति :– **मिति २०८१/१०/२९**

नेपाल रेल्वे कम्पनी लिमिटेड

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प्रथम र द्वितीय पत्र (Paper I & II) :

सेवा (प्राविधिक विषय) सम्बन्धी र संस्थागत ज्ञान

भाग (Part I) –

Service Related (Technical Subject)

खण्ड (Section) – (A)

1. **Engineering Surveying and Drawing**
   - 1.1 Definition and importance of surveying in engineering
   - 1.2 Classification, types and objectives of surveying
   - 1.3 Precision, accuracy, errors and tolerance
   - 1.4 Tools and equipment used for measurement
   - 1.5 Linear and angular measurement
   - 1.6 Method of surveying: levelling-Abney level, auto level; tachometric survey and its calculation
   - 1.7 Simple curves, contour map and introduction to Total Station
   - 1.8 Importance of drawing in engineering
   - 1.9 Drawing sheet and their standard sizes, scales and different types of lines
   - 1.10 Construction of different regular geometrical figures
   - 1.11 Understanding of different types of drawing such as tender drawing and construction drawing

2. **Construction Materials**
   - 2.1 **Stone**: formation of rocks; igneous, sedimentary and metamorphic; source; river boulders, stone quarry; characteristics of good building stones; shape: rounded, irregular, angular and flaky; selection and use of stones for various construction; dressing, seasoning and stacking (extraction and preparation for use)
   - 2.2 **Aggregate**: classification according to nature of formation, size and shape; testing of sand: silt content; sieve analysis
   - 2.3 **Brick and Tiles**: composition (mud, cement); manufacturing: soil/mortar preparation, molding, drying, burning; brick types and their uses; machine made and locally made bricks and their sizes
   - 2.4 **Cement**: composition, manufacturing process, types, test, storage and setting
   - 2.5 **Mortar**: definition, types, water cement ratio, batching, mixing, transporting and placing, curing processes
   - 2.6 **Concrete**: definition, types: PCC & RCC, water cement ratio, and preparation: batching and mixing, transporting, placing, compacting, curing, grade/strength, tests (concept only): slump test, compression test

3. **Construction Technology**
   - 3.1 **Stone masonry**: types, tools and equipment, dressing, wall and their types
   - 3.2 **Brick masonry**: types of brick bond, tools and equipment, procedure of making bonds
   - 3.3 **Wall**: definition and types of walls
   - 3.4 **Protective measures in building**: dampness its causes and effects, method of damp proofing, anti-termite treatments
   - 3.5 **Concrete works**: PCC and RCC and their ingredients, water cement ratio and strength, batching, mixing, transporting, compacting and curing, roles of steel reinforcement.

3.6 **Flooring and Finishing**: types of flooring, plastering, pointing, cladding etc.
3.7 **Building and Components**: types of building, components of buildings, foundation, stairs, doors and windows, roof and roof covering, false ceiling
3.8 **Common problems in building:** cracks and its causes, floor shrinking and its remedies
3.9 **Earthquake resistant buildings:** earthquake resistant design of load bearing and frame structure buildings, retrofitting techniques
3.10 **Temporary Construction**: shoring, scaffolding, formwork
3.11 **Laboratory testing:** aggregate abrasion value, aggregate impact value, flakiness index, specific gravity and water absorption test

खण्ड (Section) – (B)

4. **Railway Engineering**
4.1 Railways systems terminology, different types of rails and their use
4.2 Railway geometry design, different components of railway as station and yard, railways lines and standard rail section
4.3 Railway track: constituent of railway track; requirement of good railway tracks, ballast, sleeper, rail, fasteners, railway gauge, signaling and communication system
4.4 Railway alignment: importance of good alignment; basic requirement and selection of an ideal alignment; criteria for selecting good alignment, level crossing
4.5 Railroad inspection
4.5.1 Inspection requirements, creation of inspection records
4.5.2 Planning of inspection, classes of track, trolley inspection, fast train inspection
4.5.3 Restoration or renewal of track under traffic measuring track geometry and rail deflection on load and off load
4.6 Roadbed inspection
4.6.1 Drainage, measurement of ballast, roadbed vegetation, sleepers (crossties), measure track gauge, schedule required for track inspection
4.7 Rail defects: fastening system: fasteners clips, bearing pads, tie plates
4.8 Patrolling and track tolerances: gang patrol during abnormal rainfall or storm, night patrolling during monsoon, track parameters tolerances, safety tolerances, track tolerances for good riding quality
4.9 Railway track: constituent of railway track; requirement of good railway tracks
4.10 Classification of routes, different rail gauges
4.11 Track geometry: checking of curve, tangent and curve alignment, maximum allowable speed on curves, track surface, runoff, profile, deviation in cross level, difference in cross level, harmonics
4.12 Sleepers: function and types of sleepers; handling of sleepers; laying of sleepers
4.13 Ballast: function and types of ballast, requirement of good ballast, collection and transportation of ballasts
4.14 Rail joints: introduction, function, types of joints- fishplate joint, welding joint, modern welding's technique
4.15 Fastening system: rail to sleeper fastening, elastic fastening and its types
4.16 Points and crossing: function of turnouts; different parts of turnout; types of turnouts; layout of turnout
4.17 Draining water in railway components: requirement of good drainage system, sources of water to be drained, track drainage system, drainage in railway stations, drainage in station yard, drainage in station yard, sub surface drainage

4.18 Railway track maintenance: introduction, causes for maintenance, types, tools for railway track maintenance and their functions, surface defects and their remedial measures

5. **Estimating and Costing**
   - 5.1 Introduction and purpose of estimating
   - 5.2 Types of estimates, unit of measurement for different items and data required for estimating
   - 5.3 Estimate of earthwork, masonry footing, wall of building, rcc works, plastering, punning, pointing works
   - 5.4 Rate analysis: definition, current district rate, format for rate analysis, factor affecting rate analysis, rate of material, transportation rate and procedure of rate analysis
   - 5.5 Analysis of rate of brickwork, steel reinforcement

6. **Construction Supervision**
   - 6.1 **Role of Supervisor:** supervisor as a builder's/employee's agent, duties of supervisor, relationships between client, consultant and contractor
   - 6.2 **Manage Construction sites**: major component of construction site (site office, site store, fabrication yard, perishable item stock yard, workers' & technicians' accommodation etc.), list of site logistics, arrangement of utilities (water supply, electricity, telephone etc.), surface water control, maintaining good sanitary condition/effect of unsanitary condition, arrangement of equipment, necessity of safety construction, safety rules
   - 6.3 **Prepare Progress report and builders diary**: daily work progress report, monthly progress report, definition of builder's diary, supervisor's daily diary, methods to entry diary
   - 6.4 Log book, measurement book, running bill, final bill
   - 6.5 Tender notice, tender evaluation, award and signing of contract, contract document and conditions of contract
   - 6.6 Completion certificate and post construction activities
   - 6.7 Concept of gabion protection works

भाग (Part II) –
Institutional Awareness
खण्ड (Section) – (C)

१. **संस्थागत ज्ञान**
   - १.१ नेपालमा रेल्वेको इतिहास र विकास
   - १.२ नेपाल रेल्वे कम्पनी लिमिटेडको परिचय, संगठनात्मक संरचना, उद्देश्य र कार्यक्षेत्र
   - १.३ भौतिक पूर्वाधार तथा यातायात मन्त्रालय, रेल विभाग, नेपाल रेल्वे कम्पनी लिमिटेड र अन्य निकायहरु बीचको अन्तरसम्बन्ध र समन्वय
   - १.४ रेल प्रणालीको विभिन्न प्रकार
   - १.५ रेल यातायात प्रणाली र अन्य यातायात प्रणाली बीच भिन्नता

२. **ऐन, नियम र नीति**
   - २.१ नेपाल रेल्वे ऐन, २०७९
   - २.२ नेपाल रेल्वे कम्पनी लिमिटेडको प्रबन्धपत्र तथा नियमावली
   - २.३ नेपाल रेल्वे कम्पनी लिमिटेडको कर्मचारी प्रशासन सम्वन्धी विनियमावली, २०७७

नेपाल रेल्वे कम्पनी लिमिटेड

इञ्जिनियरिङ्ग सेवा, सिभिल समूह, सहायक चौंथो तह (प्राविधिक), ट्रयाक निरीक्षक पदको खुला प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

२.४ श्रम ऐन, २०७४

२.५ सार्वजनिक खरिद ऐन, २०६३ (खरिदको उद्देश्य, विधि र प्रक्रिया बारे सामान्य जानकारी)

प्रथम पत्रको लागि निम्नानुसार प्रश्नहरु सोधिने छ ।

प्रथम पत्र (वस्तुगत)					
भाग	**विषय**	**खण्ड**	**परीक्षा प्रणाली**	**अङ्कभार**	**प्रश्न संख्या**
I	सेवा सम्वन्धी	A	बहुवैकल्पिक प्रश्न (MCQs)	४०	२० प्रश्न x २ अङ्क = ४०
		B		४०	२० प्रश्न x २ अङ्क = ४०
II	संस्थागत ज्ञान	C		२०	१० प्रश्न x २ अङ्क = २०

द्वितीयपत्रको लागि निम्नानुसार प्रश्नहरु सोधिनेछ ।

द्वितीय पत्र (विषयगत)					
भाग	**विषय**	**खण्ड**	**अङ्कभार**	**छोटो उत्तर**	**लामो उत्तर**
I	सेवा सम्वन्धी	A	४०	२ प्रश्न x ५ अङ्क = १०	३ प्रश्न x १० अङ्क = ३०
		B	४०	२ प्रश्न x ५ अङ्क = १०	३ प्रश्न x १० अङ्क = ३०
II	संस्थागत ज्ञान	C	२०	४ प्रश्न x ५ अङ्क = २०	-