

सशस्त्र प्रहरी बल नेपाल
प्राविधिक सशस्त्र प्रहरी निरीक्षक (इन्जिनियर - सिभिल (Civil Engineer)) पदको खुला प्रतियोगितात्मक
लिखित परीक्षाको पाठ्यक्रम
एवं परीक्षा योजना

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसार चरणमा परीक्षा लिइने छ :

प्रथम चरण :- लिखित परीक्षा

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता

पूर्णाङ्क :- ३०

१. प्रथम चरण : - लिखित परीक्षा						पूर्णाङ्क :- २००	
पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject and General Awareness	१००	४०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQs)	१०० प्रश्न x १ अङ्क	१ घण्टा १५ मिनेट
द्वितीय		१००	४०	विषयगत	छोटो उत्तर लामो उत्तर समस्या समाधान	६ प्रश्न X ५ अङ्क ४ प्रश्न X १० अङ्क २ प्रश्न X १५ अङ्क	३ घण्टा
२. द्वितीय चरण : - अन्तर्वार्ता							
विषय		पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		समय	
अन्तर्वार्ता		३०	-	मौखिक			

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- प्रथम र द्वितीय पत्रको पत्रको विषयवस्तु एउटै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरू सोधिनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको 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 ।
- विषयगत प्रश्नमा प्रत्येक पत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :- २०७५/०४/२० गते/

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प्रथम तथा द्वितीय पत्र :- Technical Subject and General Awareness

Part I : Technical Subject

Section - (A)

1. Structural Analysis and Design

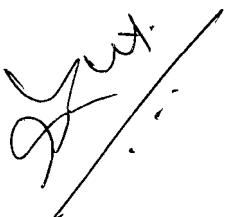
- 1.1 Stress and strain; theory of torsion and flexure; moment of inertia
- 1.2 Analysis of beams and frames: bending moment, shear force and deflection of beams and frames: determinate structure - energy methods; three hinged systems, indeterminate structures-slope deflection method and moment distribution method; use of influence line diagrams for simple beams, unit load method
- 1.3 Reinforced concrete structure: 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 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 binding materials
- 2.3 Ceramic materials: ceramic tiles, mosaic tile, brick types and testing
- 2.4 Cementing materials: types and properties of lime and cement; cement mortar tests
- 2.5 Metals: Steel; types and properties ; Alloys
- 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

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 Admixtures
- 3.5 High strength concrete
- 3.6 Pre-stressed concrete technology



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Section - (B)

4. Construction Management

- 4.1 Construction scheduling and planning: networks techniques(CPM,PERT) and bar charts
- 4.2 Contractural procedure and management: types of contract, tender and tender notice, preparation of binding (tender) document, contractors pre-qualification, evaluation of tenders and selection of contractor, contract acceptance, condition of contract; quotation and direct order ,classification of contractors; dispute resolution; muster roll
- 4.3 Material management: procurement procedures and materials handelling
- 4.4 Cost control and quality control
- 4.5 Project maintenance
- 4.6 Occupational health and safety
- 4.7 Project monitoring and evaluation
- 4.8 Quality assurance plan
- 4.9 Variation, alteration and omissions

5. Estimating and Costing Valuation and Specification

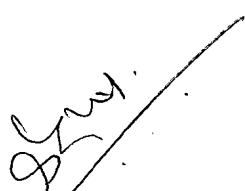
- 5.1 Types of estimates and their specific uses
- 5.2 Methods of calculating quantities
- 5.3 Key components of estimating norms and rate analysis
- 5.4 Preparation of bill of quantities
- 5.5 Purpose, types and importance of specification
- 5.6 Purpose, principles and methods of valuation

6. Drawing Techniques

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

7. Engineering Survey

- 7.1 Introduction and basic principles
- 7.2 Linear measurements: techniques; chain, tape, ranging rods and arrows; representation of measurements and common scales; sources of errors; effect of slop and slope correction; correction for chain and tape measurements; Abney level and clinometers



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- 7.3 Compass and plane table surveying: bearings; types of compass; 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; method of contouring
- 7.5 Theodolite traversing :need of traverse and its significance; computation of coordinates; adjustment of closed traverse ;closing errors
- 7.6 Use of Total Station and Electronic Distance Measuring Instruments

Section - (C)

8. Engineering Economics

- 8.1 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

9. Engineering Professional Practices

- 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 fellow professionals
- 9.4 Public procurement practices for works, goods and services and its importance

10. Transportation and Trail Bridge

- 10.1 Transportation system and its classification
- 10.2 Transportation planning: rationale, types and its philosophy
- 10.3 Road transport and road construction in Nepal
- 10.4 Classification of roads in Nepal (NRS and IRC)
- 10.5 General principles of road network planning
- 10.6 Feasibility study of road projects
- 10.7 Alignment, engineering survey and its stages
- 10.8 Geometric design of roads: map study, element of cross-section and highway alignment, design of horizontal curve, super elevation, transition curve, vertical curves, right of way
- 10.9 Drainage consideration in roads
 - 10.9.1 Introduction and design of culverts and minor bridges, cross drainage structures, subsurface drainage system
- 10.10 Special consideration in hill roads design
 - 10.10.1 Problems associated with hill roads construction
 - 10.10.2 Route location, hairpin bends and special structures
- 10.11 Road pavements: types of pavement and their applicability in hill roads, design of pavement



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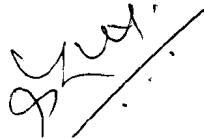
- 10.12 Bio engineering practices along hill side
- 10.13 Activities and techniques in road construction in rural roads
- 10.14 Maintenance, repair and rehabilitation of roads
- 10.15 Basic knowledge on design, construction and maintenance of suspended and suspension bridge in Nepal
- 10.16 Role of social mobilization in rural road development
- 10.17 Low-cost road construction

11. Water Supply and Sanitation

- 11.1 Rural and community based water supply system
- 11.2 Water supply sources and their management : surface and ground water
- 11.3 Selection of source
- 11.4 Water quantity and treatment, water demand and supply, source protection
- 11.5 Intakes, collection chamber and break pressure tanks
- 11.6 Reservoir and distribution system
- 11.7 Intakes, pipeline design, design of transmission and distribution system, reservoir design
- 11.8 Pipe and fittings: pipe materials, pipe laying and fittings
- 11.9 Operation and maintenance of water supply systems
- 11.10 Sanitation, wastewater and solid waste management:
 - 11.10.1 On-site sanitation system
 - 11.10.2 Types of sewerage system, design and construction of sewers
 - 11.10.3 Types, characteristics, sources, quantity, generation, collection, transportation and disposal of solid wastes
- 11.11 Sanitary landfill, incineration, composting, etc.
- 11.12 Environment health engineering – epidemiology, pathogens (bacteria, virus, helminthes, protozoa)

12. Energy System

- 12.1 Hydrological study, planning and design of small, medium and large hydropower projects
- 12.2 Stages of hydropower development: Reconnaissance, Pre-feasibility, feasibility studies and detailed engineering design
- 12.3 Head works and design of ROR, PROR and storage type hydropower power plant
- 12.4 Methods of fixing installed capacity of a hydropower plant
- 12.5 Estimation of power and energy
- 12.6 Intake, settling basin, forebay, penstock and its basic design
- 12.7 Head works, dams, spillways, surge tanks, stilling basin and its basic design
- 12.8 Selection of turbine
- 12.9 Generators and their types
- 12.10 Purpose and working principle of Governors
- 12.11 Sediment concentration in hydropower project and its impact
- 12.12 River diversion works



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- 12.13 Biogas-Introduction
- 12.14 Alternative energy systems in Nepal

Section - (D)

13. Irrigation and River Training Works

- 13.1 Status of irrigation development in Nepal
- 13.2 Methods of irrigation and their suitability
- 13.3 Design of irrigation canals
- 13.4 Operation and maintenance of irrigation systems
- 13.5 Management of farmers managed irrigation system
- 13.6 Preventive and remedial measures of water logging
- 13.7 Flood control, its necessity and flood mitigation measures
- 13.8 River training works
- 13.9 Specific considerations in design, operation and management of hill irrigation systems

14. Housing, Building and Urban Planning

- 14.1 Present status and practices of building construction in Nepal
- 14.2 Specific considerations in design and construction of buildings in Nepal
- 14.3 Indigenous technology in building design and construction
- 14.4 Local and modern building construction material in Nepal
- 14.5 Community buildings: school and hospital buildings and their design considerations
- 14.6 Urban planning needs and challenges in Nepal

15. Technology, Environment and Civil Society

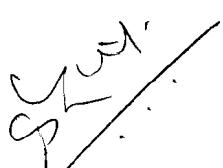
- 15.1 Technological development in Nepal
- 15.2 Promotion of local technology and its adaptation
- 15.3 Environmental Impact Assessment (EIA), Initial Environmental Examination (IEE), Global warming phenomena
- 15.4 Types of sources of pollution: point/non-point (for air and water)
- 15.5 Social mobilization in local infrastructure development and utilization in Nepal
- 15.6 Participatory approach in planning, implementation, maintenance and operation of local infrastructure

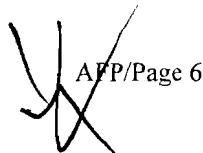
Part II: General Awareness

Section - (E)

1. सामान्य ज्ञान

- 1.1 नेपालको भौगोलिक, ऐतिहासिक, आर्थिक, सामाजिक, सांस्कृतिक र राजनैतिक अवस्था सम्बन्धी सामान्य जानकारी
- 1.2 राष्ट्रिय र अन्तर्राष्ट्रिय महत्वका समसामयिक घटनाहरु : राजनैतिक, आर्थिक, वैज्ञानिक, खेलकूद, सूचना प्रविधि, पुरस्कार



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- 1.3 विद्यमान नेपालको संविधानको सामान्य जानकारी
- 1.4 सशस्त्र प्रहरी बल र सुरक्षा निकाय सम्बन्धी सामान्य जानकारी
- 1.5 सशस्त्र प्रहरी ऐन, २०५८ र सशस्त्र प्रहरी नियमावली, २०७२

2. विविध

- 2.1 व्यवस्थापनको अवधारणा र प्रकार
- 2.2 निर्देशन
- 2.3 नेतृत्व
- 2.4 उत्प्रेरणा
- 2.5 निर्णय प्रक्रिया
- 2.6 द्वन्द व्यवस्थापन
- 2.7 समावेशीकरण

प्रथम तथा द्वितीय पत्रमा यथासम्भव निम्नानुसार प्रश्नहरू सोधिनेछ ।

प्रथम पत्र				
Part	Section	अङ्कभार	प्रश्न संख्या	
			वस्तुगत	विषयगत
I	A	१५	१५ प्रश्न X १ अङ्क = १५	-
	B	२५	२५ प्रश्न X १ अङ्क = २५	-
	C	२५	२५ प्रश्न X १ अङ्क = २५	-
	D	१५	१५ प्रश्न X १ अङ्क = १५	-
II	E	२०	२० प्रश्न X १ अङ्क = २०	-
द्वितीय पत्र				
Part	Section	अङ्कभार	प्रश्न संख्या	
			विषयगत	समस्या समाधान
I	A	२०	४ प्रश्न X ५ अङ्क = २० ४ प्रश्न X १० अङ्क = ४०	२ प्रश्न X १५ अङ्क = ३०
	B	३०		
	C	३०		
	D	२०		
II	E	१०	२ प्रश्न X ५ अङ्क = १०	-

१५/१५/२०