  
 जीतपुरीसुसु उपरुवडुनगरपालिका  
 नगर ककारुपालिकाको कारुयालय, जीतपुर, बारा  
 कार्यपालिकाको कारुयालय, जीतपुर, बारा

प्राविधिक सेवा, वास सव-ईञ्जिनियर उेदकी प्रतियोगितात्मक लिखित परिक्षाको पाठ्यक्रम

1. प्रथम चरण:- लिखित परिक्षा योजना (Examination Scheme)


पत्र	विषय	प्रश्न सङ्ख्या x अङ्कभार	प्रश्न संख्या	परीक्षा प्रणाली	समय	पूर्णाङ्क	उत्तिर्णाङ्क
प्रथम पत्र	सेवा सम्बन्धि: Civil Engineering	५० प्रश्न x २ अङ्क	५०	वस्तुगत बहुवैकल्पिक (Multiple Choice)	१ घण्टा	१००	४०

2. द्वितीय चरण:- अन्तर्वार्ता योजना

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	२०	मौखिक

द्रष्टव्यः

- लिखित परिक्षाको माध्यम नेपाली/अंग्रेजी दुवै हुन सक्नेछ ।
- प्रथम चरणको लिखित परिक्षाबाट छनौट भएका उम्मेदवारहरु मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित हुन पाउनेछन् ।
- पाठ्यक्रममा भएका यथा सम्भव सवै पाठ्यांशहरुबाट प्रश्न सोधिनेछ । पाठ्यक्रममा इकाईबाट सोधिने प्रश्नहरुको संख्या सम्बन्धित इकाईहरुमै उल्लेख गरिएको छ ।
- यस पाठ्यक्रममा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका ऐन, नियमहरु परिक्षाको मिति भन्दा ३ महिना अगाडि (संसोधन भएका वा संशोधन भई हटाईएका वा थप गरीप संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- पाठ्यक्रम लागू मिति २०७८/०६/२४

  
 चेत कुमार पोखरेल  
 प्रमुख प्रशासकीय अधिकृत

जीतपुरसिंहरा उपमहानगरपालिका  
नगर कार्यपालिकाको कार्यालय, जीतपुर, बारा

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प्रथम पत्र

सेवा सम्बन्धि: Civil Engineering

1. Surveying

(5x2=10)

1.1 General

- 1.1.1 Classifications
- 1.1.2 Principles 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 Leveling

- 1.2.1 Methods of Leveling
- 1.2.2 Leveling instruments and accessories
- 1.2.3 Principles of Leveling

1.3 Plane Tabling

- 1.3.1 Equipment's required
- 1.3.2 Methods of plane tabling
- 1.3.3 Two and Three points problems

1.4 Theodolite and Traverse Surveying

- 1.4.1 Basic difference between difference theodolites
- 1.4.2 Temporary adjustment of theodolites
- 1.4.3 Fundamental lines and desired relations
- 1.4.4 Tachometry: stadia method
- 1.4.5 Trigonometrically leveling
- 1.4.6 Checks in close traverse

1.5 Contouring

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

1.6 Layout

- 1.6.1 Small building

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जीतपुर सिमरौली समूह नगरपालिका  
नगर कार्यपालिकाको कार्यालय, जीतपुर, बारा

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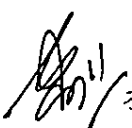
- 1.6.2 Simple curves
- 1.7 Basic introduction to Geographical Information System (GIS)
  - 1.7.1 Information on overview of GIS software
  - 1.7.2 GIS and Map
- 2 Construction Materials (3x2=6)
  - 2.1 Stone
    - 2.1.1 Formation & availability of stone in Nepal
    - 2.1.2 Methods of laying and construction 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 Mechanics of Materials and Structures (2X2=4)
  - 3.1 Mechanics of materials
    - 3.1.1 Internal effects of loading
    - 3.1.2 Ultimate strength and working stress of materials
  - 3.2 Mechanics of Beams
    - 3.2.1 Relation, between shear force and bending moments
    - 3.2.2 Thrust, shear, and bending moments diagrams for statically determinate beams under various types of loading
- 4 Fluid Mechanics/Hydraulics (5x2=10)
  - 4.1 General
    - 4.1.1 Properties of fluid: Mass density, specific weigh, specific volume, specific gravity, viscosity and capillarity.

बिना कुमार पोखरेल  
मुख्य प्रशासकीय अधिकृत

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- 4.1.2 Pressure and its measurement, Pascal's, Pressure force
- 4.2 Hydro- Kinematics and Hydro-dynamics
  - 4.2.1 Energy of flowing liquid: Equation Bernoulli, its physical meaning and application.
- 4.3 Measurements of Discharge
  - 4.3.1 Weirs and Notches
  - 4.3.2 Discharge formulae
- 4.4 Flows: Characteristics of pipe and open channel flows
- 5 Soil Mechanics (5X2=10)
  - 5.1 General
    - 5.1.1 Soil types and classification
    - 5.1.2 Three phase system of soil
    - 5.1.3 Unit weigh of soil mass: bulk density, saturated density, submerged density and dry density
    - 5.1.4 Interrelationship between specific gravity, void ratio, porosity, degree of saturation, percentage of air voids air content and density index.
  - 5.2 Soil water Relation
    - 5.2.1 Terzaghi's principles of effective stress
    - 5.2.2 Darcy's Law
    - 5.2.3 Factors affecting permeability
  - 5.3 Compaction of Soil
    - 5.3.1 Factors affecting soil compaction
    - 5.3.2 Optimum moisture content
    - 5.3.3 Relation between dry density and moisture content
  - 5.4 Shear Strength of Soils
    - 5.4.1 Mohr-Coulomb Failure theory
    - 5.4.2 Cohesion and angle of internal friction
  - 5.5 Earth Pressure
    - 5.5.1 Active and Passive earth pressure
    - 5.5.2 Lateral earth pressure theory
    - 5.5.3 Rankin's earth pressure theory
  - 5.6 Foundation Engineering
    - 5.6.1 Tezaghi's general bearing capacity formulae and their application

  
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जीतपुर, बारा

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- 6 Structural Design (5X2=10)
- 6.1 R.C. Sections in bending
    - 6.1.1 Under reinforced, over reinforced, and balanced sections
    - 6.1.2 Analysis of singles and double reinforced rectangular sections
  - 6.2 Shear and Bond for RC sections
    - 6.2.1 Shear resistance of RC sections
    - 6.2.2 Types of shear reinforcement and their design
    - 6.2.3 Determination of anchorages length
  - 6.3 Axially loaded RC Columns
    - 6.3.1 Short and long column
    - 6.3.2 Design of a rectangular column section
  - 6.4 Design and drafting of RC structures
    - 6.4.1 Singly and doubly reinforced rectangular beams
    - 6.4.2 Simple one way and two way slab
    - 6.4.3 Axially loaded short and long column
- 7 Building construction Technology (5X2=10)
- 7.1 Foundations
    - 7.1.1 Subsoil exploration
    - 7.1.2 Type and suitability of different foundations: shallow and deep
    - 7.1.3 Shoring and dewatering
    - 7.1.4 Design of simple brick or stone masonry foundations
  - 7.2 Walls
    - 7.2.1 Types of walls and their functions
    - 7.2.2 Choosing wall thickness, height to length relation
    - 7.2.3 Use of scaffolding
  - 7.3 Damp Proofing
    - 7.3.1 Source of dampness
    - 7.3.2 Remedial measure to prevent dampness
  - 7.4 Concrete technology
    - 7.4.1 Constituents of cement concrete
    - 7.4.2 Grading of aggregates
    - 7.4.3 Concrete mixes
    - 7.4.4 Water cement ratio
    - 7.4.5 Factors affecting strength of concrete

जेत कुपार गोखरे  
महासकीय अधिकृत

जीतपुरसिमरा उपमहानगरपालिका  
नगर कार्यपालिकाको कार्यालय, जीतपुर, बारा

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- 7.4.6 Form work
- 7.4.7 Curing
- 7.5 Wood Work
  - 7.5.1 Frame and shutters of doors and window
  - 7.5.2 Timber construction or upper floors
  - 7.5.3 Design and construction of stairs
- 7.6 Flooring and finishing
  - 7.6.1 Floor finishes: bricks, concrete, flag stone
  - 7.6.2 Plastering
- 8 Water supply Engineering (10x2=20)
  - 8.1 Quantity of Water
    - 8.1.1 Design Period
    - 8.1.2 Per capita demand
    - 8.1.3 Population forecasting
    - 8.1.4 Total water demand
  - 8.2 Source of water supply
    - 8.2.1 Surface source: River, spring
    - 8.2.2 Groundwater source: tube well, infiltration gallery
  - 8.3 Gravity Water supply system
    - 8.3.1 Object of water supply system
    - 8.3.2 Source of Water and its selection: gravity and artesian spring, shallow and deep wells,
    - 8.3.3 Design period
    - 8.3.4 Determination of daily water demand
    - 8.3.5 Determination storage tank capacity
    - 8.3.6 Selection of pipe
    - 8.3.7 Pipe line design and hydraulic grade line
  - 8.4 Pump and pumping
    - 8.4.1 Necessity of pumps
    - 8.4.2 Classifications of pumps
    - 8.4.3 Working principle of pumps
  - 8.5 Quality of Water
    - 8.5.1 Physical, chemical, and biological impurities
    - 8.5.2 Water Borne diseases


  
चेत कुमार गोखरेल  
प्रशासकीय अधिकृत

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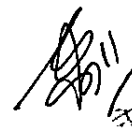
- 8.6 Purification of Water
- 8.6.1 Sequence of water treatment
  - 8.6.2 Sedimentation, coagulation and filtration
  - 8.6.3 Disinfection of water
- 8.7 Distribution System
- 8.7.1 Water pressure in Distribution system
  - 8.7.2 Layout
  - 8.7.3 Simple design criteria
  - 8.7.4 Appurtenances in the distribution system
- 8.8 Introduction to supervision control and data acquisition (SCADA)
- 9 Sanitary Engineering (5x2=10)
- 9.1 Introduction to sewage, and sewerage
- 9.2 Sewer
- 9.2.1 Types of sewer
  - 9.2.2 Design of sewer
  - 9.2.3 Quantity of sanitary sewage, maxim,
  - 9.2.4 Minimum and cleansing velocity
- 9.3 Surface and storm water drainage
- 9.3.1 Factors affecting storm water drainage
  - 9.3.2 Determination of storm water flow
  - 9.3.3 Laying and construction
- 9.4 Sewer appurtenances
- 9.4.1 Manholes (drop manhole, lamp hole)
  - 9.4.2 Street inlet, catch drains
  - 9.4.3 Grease traps
- 9.5 Sewerage disposal and treatment
- 9.5.1 Excreta disposal in unsewered area
  - 9.5.2 Pit latrine
  - 9.5.3 Design of septic tank
- 10 Estimating and Costing (2x2=4)
- 10.1 General
- 10.1.1 Main items of work
  - 10.1.2 Units of measurement and payment of various items of work and material

  
केत कुमार पोखरेल  
गासकीय अधिकृत

  
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- 10.1.3 Standard estimate formats of government offices
- 10.2 Rate Analysis
  - 10.2.1 Basic general knowledge on the use of rate analysis norms prepared by Ministry of Physical Planning and Works and the districts rates prescribed
- 10.3 Specifications
  - 10.3.1 Interpretation of specification
- 10.4 Valuation
  - 10.4.1 Methods of validation
  - 10.4.2 Basic general knowledge of standard formats used by commercial banks for valuation.
- 11 Construction Management (3X2=6)
  - 11.1 Organization
    - 11.1.1 Need of for organization
    - 11.1.2 Responsibilities of an civil overseer
    - 11.1.3 Relation between Owner, contractor
  - 11.2 Site Management
    - 11.2.1 Preparation of site plan
    - 11.2.2 Organizing labor
    - 11.2.3 Measure to improve labor efficiency
    - 11.2.4 Accident prevention
  - 11.3 Contract Procedure
    - 11.3.1 Contracts
    - 11.3.2 Departmental works and day works
    - 11.3.3 Types of contracts
    - 11.3.4 Tender and tender notice
    - 11.3.5 Earnest money and security deposit
    - 11.3.6 Preparation before inviting tender
    - 11.3.7 Agreement
    - 11.3.8 Conditions of contract
    - 11.3.9 Construction supervision
  - 11.4 Account
    - 11.4.1 Administrative approval and technical sanction


  
नेन कुमार गोखरेल  
मुख्य पञ्चायकीय अधिकृत



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- 11.4.2 Familiarity with standard account keeping formats used in government organizations
- 11.4.3 Muster roll
- 11.4.4 Completion report
- 11.5 Planning and control
  - 11.5.1 Construction schedule
  - 11.5.2 Equipment and materials schedules
  - 11.5.3 Construction stages and operations
  - 11.5.4 Bar Chart

  
बैत कुमार पोखरेल  
प्रमुख प्रशासकीय अधिकारी