



मनमोहन प्राविधिक विश्वविद्यालय
सेवा आयोग

शिक्षण सेवा, सिभिल इन्जिनियरिङ्ग समूह, पाँचौं तहको ल्याब टेक्सिसियन पदको
खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पदको विवरण

सेवा : प्राविधिक	समूह : सिभिल इन्जिनियरिङ्ग
पद : ल्याब टेक्सिसियन	तह : पाँचौं

पाठ्यक्रमको रूपरेखा

यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिइनेछः

प्रथम चरण : लिखित परीक्षा

पूर्णाङ्क : १५०

द्वितीय चरण : (क) कम्प्युटर सीप परीक्षण

पूर्णाङ्क : ३०

(ख) अन्तर्वार्ता

पूर्णाङ्क : २५

तालिका (१)

प्रथम चरण : लिखित परीक्षा

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या	समय
प्रथम	खण्ड (क) विश्वविद्यालय सेवासम्बन्धी कानुनी व्यवस्था	७५	३०	वस्तुगत बहुवैकल्पिक प्रश्न	२५ प्रश्न X १ अंक = २५	२५ मिनेट
	खण्ड (ख) सेवासम्बन्धी विषय			वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न X १ अंक = ५०	५० मिनेट
द्वितीय	सेवासम्बन्धी विषय	७५	३०	विषयगत छोटो उत्तर आउने प्रश्न	९ प्रश्न X ५ अंक = ४५	२ घण्टा ३० मिनेट
				विषयगत लामो उत्तर आउने प्रश्न	३ प्रश्न X १० अंक = ३०	

तालिका (२)

द्वितीय चरण : कम्प्युटर सीप परीक्षण र अन्तर्वार्ता

विषय	पूर्णाङ्क	परीक्षा प्रणाली	समय
कम्प्युटर सीप परीक्षण	३०	प्रयोगात्मक	३० मिनेट
अन्तर्वार्ता	२५	मौखिक	

द्रष्टव्य :

१. यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई भागमा विभाजन गरिएको छ ।
२. माथि उल्लेखित सेवा/समूह, तह र पदको खुला/आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम उपर्युक्तबमोजिम हुनेछ ।
३. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
४. वस्तुगत बहुवैकल्पिक प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तरवापत सही उत्तर दिँदा पाउने अंकको २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा अङ्क कट्टा गरिने छैन ।
५. वस्तुगत बहुउत्तर हुने परीक्षामा परीक्षार्थीले चार वटा उत्तरमध्ये एउटा मात्र उत्तरको नम्बर लेख्नुपर्नेछ ।
६. विषयगत प्रश्नका हकमा तोकिएको अंकका लागि एउटा प्रश्न वा एउटै प्रश्नका दुई वा दुईभन्दा बढी भाग वा दुई वा बढी प्रश्नहरू सोध्न सकिनेछ ।
७. परीक्षामा सोधिने प्रश्नसंख्या, अंक र अङ्कभार सम्बन्धित पत्र /विषयमा दिइएअनुसार हुनेछ ।
८. परीक्षामा परीक्षार्थीले मोबाइल, प्रोग्रामेबल क्यालकुलेटर, स्मार्ट-वाच वा यस्तै प्रकारका विद्युतीय उपकरण परीक्षा हलमा लैजान पाइने छैन ।
९. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
१०. प्रथम चरणको लिखित परीक्षामा छनौट भएका उम्मेदवारहरूको प्राप्तङ्क र द्वितीय चरणको प्रयोगात्मक परीक्षा तथा अन्तर्वार्ताको अंकको कूल योगका आधारमा अन्तिम परीक्षाफल प्रकाशित गरिनेछ ।
११. यो पाठ्यक्रम मिति: २०७९/०९/०७ देखि लागु हुनेछ ।

लिखित परीक्षाका विषयवस्तु

प्रथमपत्र

- खण्ड (क): सेवासम्बन्धी कानुनी व्यवस्था (बहुवैकल्पिक प्रश्न) २५ X १ = २५
- (क) नेपालको संविधान (भाग १, ३, ५ र अनुसूचीहरू)
- (ख) मनमोहन प्राविधिक विश्वविद्यालय ऐन २०७६
- (ग) मनमोहन प्राविधिक विश्वविद्यालय शिक्षक तथा कर्मचारी सेवाका सर्त र सुविधासम्बन्धी नियमावली, २०७८
- (घ) मनमोहन प्राविधिक विश्वविद्यालय आर्थिक प्रशासनसम्बन्धी नियमावली, २०७८
- (ङ) मनमोहन प्राविधिक विश्वविद्यालय सेवा आयोगसम्बन्धी नियमावली, २०७८
- (च) मनमोहन प्राविधिक विश्वविद्यालय संरक्षण समितिसम्बन्धी नियमावली, २०७८
- (छ) मनमोहन प्राविधिक विश्वविद्यालय शैक्षिक प्रशासनसम्बन्धी नियमावली, २०७८
- (ज) भ्रष्टचार निवारण ऐन, २०५९ (परिच्छेद २: कसूर र सजायसम्बन्धी व्यवस्था)
- खण्ड (ख): सेवासम्बन्धी विषय (बहुवैकल्पिक प्रश्न) ५० X १ = ५०

द्वितीय पत्रको सेवासम्बन्धी विषयको पाठ्यक्रम नै पहिलो पत्रको खण्ड “ख” को पाठ्यक्रम हुनेछ ।

Model Question

Multiple choice questions (each question carries 1 mark)

1. The quickest compound in cement to react with water is
 - a) Tricalcium aluminate
 - b) Tetra-calcium alumino -ferrite
 - c) Tricalcium silicate
 - d) Dicalcium silicate.
2. If distance is measured with a 30m chain, which is 1cm too short, the resulting error is
 - a) Positive compensating error
 - b) Negative compensating error
 - c) Positive cumulative error
 - d) Negative cumulative error.
3. The weight of a pycnometer containing 400 g sand and water full to the top is 2150 g. The weight of pycnometer full of clean water is 1950 g. If specific gravity of the soil is 2.5, the water content is
 - a) 5%
 - b) 10%
 - c) 15%
 - d) 20%
4. Turbidity of raw water is a measure of
 - a) Suspended solids
 - b) Acidity of water
 - c) BOD
 - d) Alkalinity of water

द्वितीय पत्र : सेवासम्बन्धी विषय

पूर्णाङ्क : ७५

1. Workshop Practices

15

- 1.1. Bricklaying tools and materials.
- 1.2. Bonds and their properties.
- 1.3. Plastering, Pointing and curing.
- 1.4. Plumbing tools; Pipes and pipe fittings; Filing and threading of pipe.
- 1.5. Wood and timber; Carpentry and joinery work, Tools for carpentry & Joinery work; Activities of saw along slicing and shaping works.
- 1.6. Basic knowledge of electricity and electrical circuits; Different sign and symbols of electrical safety; Source of Power and Voltage; Voltmeter and Multi-meter.

- 1.7. Different kinds of switches, and wiring; Distribution Box, main switch and earthing.
- 1.8. Maintenance of tools and equipments for Brick laying, Plumbing, Carpentry and Electrical works.
- 2. Engineering Materials** 10
- 2.1 Clay and clay products: Brick and Tile.
- 2.2 Stones: Types of building stone, availability of building stone in Nepal.
- 2.3 Cement and lime: Types, property and use in engineering purpose.
- 2.4 Sand and Aggregate: Types, property and use of sand & aggregate.
- 2.5 Timber: types and property
- 2.6 Tests on material:
- a. Brick: Water absorption, specific gravity, Compressive strength, efflorescence & size .
 - b. Cement: Consistency test, setting time test, fineness test, soundness test and tensile strength test of cement.
 - c. Bulking of Sand; Clay content on sand; Fineness modulus of sand and aggregate.
- 3. Engineering Survey** 10
- 3.1 Difference between plan and map; Scales, their types and use; Conventional symbols & legends.
- 3.2 Methods of distance measurement on horizontal and sloping ground; Tape correction; Principles of chain surveying; Perpendicular offset and Oblique offset.
- 3.3 Compass Survey: Meridian, Bearing, Magnetic declination, Whole circle bearing system, Quadrantal bearing system, Fore bearing and Back bearing; Calculation of angles from bearing and bearing from angles.
- 3.4 Leveling: Methods for booking and reducing of level; Fly leveling; Profile leveling and Cross sectioning; Reciprocal leveling; Errors in leveling and adjustment in closed circuit.
- 3.5 Contouring: Contour interval, Characteristics of contours; Methods of interpolation of contour.
- 3.6 Theodolite: Traverse, Traverse correction.
- 4. Basic Hydraulics** 5
- 4.1 Flow measurement through rectangular, triangular and trapezoidal weir and notch.
- 4.2 Area-velocity method for the discharge measurement in open channel (using float).
- 4.3 Verification of Bernoulli's theorem using venture-meter; Measurement of flow through orifice (Large and small)

- 5. Building Construction** 10
- 5.1 Building materials characteristic: - Brick, Stone, Cement, Aggregate, Sand and Steel-reinforcement.
 - 5.2 Building and their types; Foundation adopted for building.
 - 5.3 Types of Masonry wall; Brick masonry, Stone masonry, Partition and Cavity wall; RCC and PCC work; Formwork and scaffolding; Floor and their types.
 - 5.4 Gradation and Properties of aggregate; Test of concrete cubes & cylinders; Non-destructive test of hardened concrete; Slump test and Water cement ratio.
- 6. Water Supply and Sanitary Engineering** 10
- 6.1 Sources of water- Surface source and ground source, Quality of water, quantity of water requirement for various purposes.
 - 6.2 System of sanitation for Isolated and Unsewered building; Pit privy; Ventilation Improved Pit (VIP) latrine; Compost latrine; Septic tank and soak-pit
 - 6.3 Testing of water: Turbidity, pH , color, total solid suspended solid, Jar-test.
- 7. Soil Mechanics** 5
- 7.1 Sieve analysis of coarse and fine grained soil; Density by In-situ method; Sand replacement method and Core cutter method; Optimum moisture content and dry density.
 - 7.2 Unconfined compression test; Direct shear test; Constant head permeability test; Triaxial Test; Field identification of soil.
 - 7.3 Soil classification: Textural and AASHTO soil classification system.
 - 7.4 Determine specific gravity by Pycnometer method; Determine liquid limit and plastic limit; Compaction test: Standard proctor test, Direct shear test, Unconfined compression test.
- 8. Highway Engineering** 5
- 8.1 Flexible and Rigid pavement.
 - 8.2 Test on Aggregate: Los Angeles Abrasion value Test; Crushing Value test.
 - 8.3 Tests on Bitumen: Penetration test; Viscosity; Softening Point and Ductility test of Bitumen.
 - 8.4 Skid Resistance test on road surface; Marshall stability test and Asphalt mix design; CBR test.
- 9. Laboratory safety rules & code of conduct** 5
- 9.1 Safety in laboratory; Causes of accidents; Safety measures in Lab.
 - 9.2 Handling of equipment in Laboratory and workshop.
 - 9.3 Materials management: Demand form, Inventory, Procurement, Store keeping.
 - 9.4 Role of a lab assistant.
 - 9.5 Estimation of repair works for labrutary.

प्रयोगात्मक परीक्षा

समय : ३० मिनेट

प्रश्न संख्या : ६

पूर्णाङ्क : ३०

उत्तीर्णाङ्क : १२

कम्प्युटर सीप परीक्षणसम्बन्धी प्रयोगात्मक परीक्षा योजना

विषयवस्तु शीर्षक	प्रयोगात्मक अंक	समय
English Typing	३	४ मिनेट
Devanagari Typing	३	४ मिनेट
Windows Basic, Email and Internet	३	३ मिनेट
Word Processing	८	७ मिनेट
Electronics Spreadsheet	८	७ मिनेट
Presentation System	५	५ मिनेट
Total	३०	३० मिनेट

प्रयोगात्मक परीक्षाका विषयवस्तु

1. Windows basic, Email and Internet

- Introduction to Graphical User Interface
- Use & Update of Antivirus Concept of virus, worm, spam etc.
- Starting and shutting down Windows
- Basic Windows elements - Desktop, Taskbar, My Computer, Recycle Bin etc
- Concept of file, folder, menu, toolbar
- Searching files and folders
- Internet browsing& searching the content in the web
- Creating Email ID, Using email and mail client tools
- Basic Network troubleshooting (checking network& internet connectivity)

2. Word Processing

- Creating, saving and opening documents
- Typing in Devanagari and English
- Copying, Moving, Deleting and Formatting Text
- Paragraph formatting (alignment, indentation, spacing etc.)
- Creating lists with Bullets and Numbering

- Creating and Manipulating Tables
- Borders and Shading
- Creating Newspaper Style Documents Using Column
- Security Techniques of Document
- Inserting header, footer, page number, Graphics, Pictures, Symbols
- Page setting, previewing and printing of documents
- Mail merge

3. Presentation System

- Introduction to presentation application
- Creating, Opening & Saving Slides
- Formatting Slides, Slide design, Inserting header & footer
- Slide Show
- Animation
- Inserting Built-in picture, Picture, Table, Chart, Graphs, and Organization Chart etc

4. Electronic Spreadsheet

- Organization of Electronic Spreadsheet applications (Cells, Rows, Columns, Worksheet, Workbook and Workspace)
- Creating, Opening and Saving Work Book
- Editing, Copying, Moving, Deleting Cell Contents
- Formatting Cells (Font, Border, Pattern, Alignment, Number , Protection, Margins and text wrap)
- Formatting Rows, Column and Sheets
- Using Formula with Relative and Absolute Cell Reference
- Using Basic Functions (IF, SUM, MAX, MIN, AVERAGE etc)
- Sorting and Filtering Data
- Inserting Header and Footer
- Page Setting, Previewing and Printing

Model Question

Short Answer questions (each question carries 5 marks)

1. Estimate the quantity of brick masonry required for construction of a room of 4mX 3m internal dimensions. Thickness of wall shall be 250 mm. Two windows of 2m X 1.5 m and one door of 1.5 m X 2.2 m is to be provided to the room. Height between top of plinth beam and bottom of slab beam shall be 4 m.
[5]
2. What is contour? What are the factors for deciding contour interval? Explain the characteristics of contours. [1+1+3]
3. List out the various sources of water for water supply system. Explain impounded reservoir in brief. [2+3]

Long Answer questions (each question carries 10 marks)

1. The following consecutive readings were taken with level machine and 5 m levelling staff on continuously slopping ground at a common interval of 25 meters: 0.450,1.120,1.870,2.950,3.650,4.5,0.5,2.150,3.250 and 4.5. The RL of change point is 200 m.
Prepare a page of level field book, enter these values and calculate the reduced levels of these points by rise and fall method. Also find the gradient of the line joining the first and last point. [3+5+2]

☆☆☆