

गोलबजार नगरपालिका  
नगर कार्यपालिकाको कार्यालय  
गोलबजार, सिरहा  
लिखित परीक्षाको पाठ्यक्रम

सेवा /समुह : विविध

पद : सूचना प्रविधि अधिकृत

तह: छैठौं

परीक्षा योजना (Examination Scheme)

क. प्रथम चरण: लिखित परीक्षा

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्न सङ्ख्या × अङ्क	समय
प्रथम	कम्प्युटर सम्बन्धी	४०	१६	वस्तुगत	बहुवैकल्पिक प्रश्न	४० प्रश्न × १ = ४० अङ्क	४० मिनेट
द्वितीय	कम्प्युटर सम्बन्धी	१०	८	विषयगत	छोटो उत्तर	५ प्रश्न × २ = १० अङ्क	४० मिनेट
	कम्प्युटर सम्बन्धी	१०		विषयगत	लामो प्रश्न	२ प्रश्न × ५ = १० अङ्क	
जम्मा		६०	२४				८० मिनेट

ख. द्वितीय चरण: प्रयोगात्मक चरण

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	समय
द्वितीय	प्रयोगात्मक परीक्षा	२०	८	प्रयोगात्मक	३० मिनेट

ग. तृतीय चरण: मौखिक अन्तरवार्ता

पत्र/विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	समय
मौखिक अन्तरवार्ता	२०	-	अन्तरवार्ता समिति	-

द्रष्टव्यः

- प्रश्नपत्र नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै भाषामा हुनेछ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- बहुवैकल्पिक वस्तुगत (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा अङ्क कट्टा गरिने छैन ।
- परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- लिखित परीक्षामा वस्तुगत प्रश्नको उत्तर कुञ्जिका बुझाएपछि विषयगत प्रश्नपत्र उपलब्ध गराइनेछ ।
- वस्तुगत प्रश्नको उत्तर कुञ्जिका उपलब्ध गराइनेछ ।
- विषयगत प्रश्नको प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तर पुस्तिकाहरू उपलब्ध गराइनेछ । परीक्षार्थीलाई उपलब्ध गराइएको उत्तर पुस्तिकामा सम्बन्धित खण्डको प्रश्नको उत्तर लेख्नुपर्नेछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई द्वितीय चरणको प्रयोगात्मक र तृतीय चरणको मौखिक अन्तरवार्तामा सामेल गराइनेछ ।
- लिखित परीक्षामा यथासम्भव दिइएको पाठ्यक्रमबाट प्रश्नहरू सोधिनेछ ।
- पाठ्यक्रम लागू हुने : मिति २०८०/०५/२४ गते जारी “सेवा करारमा खरिद गर्ने सूचना” सम्बन्धमा ।

# विविध सेवा, सूचना प्रविधि अधिकृत पद, छैठौं तहको प्रथम र द्वितीय पत्र: लिखित परीक्षाको सेवा सम्बन्धी विषयवस्तुहरु

## 1. Computer Fundamentals

- 1.1 Computers, Kinds of Computers in respect of size and function,
- 1.2 Generation of Computers,
- 1.3 Components and Architecture of Computers, Connecting the Components,
- 1.4 Getting started: Orientation to personal computers, System unit, Starting the computers
- 1.5 Input Devices: keyboard, mouse, other input devices
- 1.6 Processing: CPU, Memory
- 1.7 Storage devices: Overview of Storage Devices, Floppy Disk Drive, Hard Drive, Universal Serial Bus (USB) Devices and Other Storage Devices
- 1.8 Output devices: Monitors, Printers, Modems, Soundboards
- 1.9 Dos survival guide: Using Command Prompt, Creating and using AUTOEXEC.BAT and CONFIG.SYS
- 1.10 Windows survival guide: Windows Desktop, Program Manager, Organizing the Desktop, File Manager
- 1.11 Application software: Using Application Software
- 1.12 Windows Explorer, E-mails, Internet, Intranet, Extranets, Ethernet, HTTP
- 1.13 Computer Viruses, Antivirus

## 2. Data Structure and Algorithms

- 2.1 Fundamental of Data Structures, Abstract Data types,
- 2.2 Lists, Linked Lists, Stacks,
- 2.3 Queues, Priority Queue,
- 2.4 Trees: Traversal, Implementations, Binary Trees, Binary Search Trees, Balanced Search Trees, AVL Trees.
- 2.5 Indexing Methods. Hashing Trees, Suffix Trees
- 2.6 Worst-Case and Expected time Complexity.
- 2.7 Analysis of Simple Recursive and Nonrecursive Algorithms.
- 2.8 Searching, Merging and Sorting.
- 2.9 Introductory Notions of algorithm design: Divide-and-Conquer, Dynamic Programming, Greedy Methods, Backtracking
- 2.10 Graph algorithms: Depth-first Search and Breadth-first Search, Shortest Path Problems, Minimum Spanning Trees, Directed Acyclic Graphs.

## 3. System Analysis and Design

- 3.1 Defining the System, System Owner, System User, System Designers and system Builders, System Analysts, Variations on the System Analyst title, System life Cycle,
- 3.2 Joint Application Development (JAD): JAD definition, JAD purpose, JAD Philosophy, JAD Scope,
- 3.3 Involved in a JAD: Sponsor, Business Users, System Analyst
- 3.4 Roles of JAD Group Member: Project Leader, Record Keeper, Time Keeper
- 3.5 System Design Environment: Development Process, Management Process, System Structure, Basic Component of Computer based Information System, Personal/ Centralized/Distribution System.
- 3.6 Concept formations: Introduction, Finding the Problem, Evaluating the Proposal, Technical Feasibility, Operational Feasibility, Economic Feasibility.
- 3.7 Requirements analysis: Representing System Analysis Model, Requirement Model, Design Model,
- 3.8 Development Process: Design Method
- 3.9 Entity Relationship Diagram (E-R Diagram): Notations, Entities: Strong Entities, Weak Entities, Attributes: Simple and Composite, Single Valued and Multiple Valued, Null and Derived Attribute.
- 3.10 Relationship Sets: Degree of Relationship and Cardinality Relationship, Specialization, Generalization, Aggregation.
- 3.11 Data Flow Diagrams (DFDs): Introductions, Data flow Diagram, Symbol, Files or data store, External entities, Data flows,
- 3.12 Describing System by Data Flow Diagram: Context diagram, Top level DFD, Expansion Level DFD, Conversions of Data.
- 3.13 Object Modeling: Object -Oriented Concept, Object Structure, Object Feature, Class and Object.
- 3.14 Representation: Association and Composition, Inheritance, Multiple Inheritances
- 3.15 Modeling: Use Case Diagram, State Diagram, Event Flow Diagram
- 3.16 Documentation: Automatic and Manual System

## 4. Operating Systems

- 4.1 Definition, Developments and Functions of Operating Systems,
- 4.2 Basic components of the Operating Systems, Understand Information Storage and Management Systems,
- 4.3 Disk Allocation and Scheduling Methods, Basic Memory Management strategies, Virtual Memory Management Techniques, Define a Process and the features of the Process Management System
- 4.4 Features of Process Scheduling; Features of Inter-Process Communication and Deadlocks,
- 4.5 Concepts of Parallel and Distributed Processing, Security Threats to Operating Systems
- 4.6 Overview of the MS-DOS Operating System

- 4.7 Introduction to the Windows Family of Products, Unix Family of Products, Linux Family of Products
- 4.8 Introduction to Windows Networking
- 4.9 Windows Architecture, Linux Architecture
- 4.10 Troubleshooting Windows, & Linux
- 4.11 Managing Network Printing
- 4.12 Managing Hard Disks and Partitions
- 4.13 Monitoring and Troubleshooting Windows
- 4.14 Users, Groups and Permission Linux and Windows
- 5. Database Management System and Design**
  - 5.1 Introduction, Database Model, Relational Database Model, Integrity, RDBMS
  - 5.2 SQL and Embedded SQL
  - 5.3 Writing Basic SQL SELECT Statements
  - 5.4 Restricting and Sorting data
  - 5.5 Single Row Functions
  - 5.6 Displaying Data from Multiple Tables
  - 5.7 Aggregation Data Using Group Functions
  - 5.8 Sub Queries, Manipulating Data and Creating & Managing Tables
  - 5.9 Creating Views and Controlling User Access
  - 5.10 Using Set Operators, Date-time Function
  - 5.11 Database Design: Logical Design, Conceptual Design, Mapping Conceptual to Logical, Pragmatic issues, Physical Design, Integrity and Correctness, Relational Algebra, Relational Calculus.
  - 5.12 Normalization: 1NF, 2NF, 3NF, BCNF, 4NF,5NF, DKNF
  - 5.13 Architecture of DBMS: Client-server, Open Architectures, Transaction Processing, Multi-User & Concurrency, and Backup & Recovery Database.
  - 5.14 Basic Concept of major RDBMS products: Oracle, Sybase, DB2, SQL Server and other Databases.
- 6. Programming Language**
  - 6.1 Overview of Programming Language: History, Programming Paradigms, The role of Language translates in the Programming Process
  - 6.2 Fundamental Issues in Language Design
  - 6.3 Virtual Machines, Code Generation, Loop Optimization
  - 6.4 Concept of Procedural Programming, Structural Programming, Object-Oriented Programming
  - 6.5 Concept of C programming, C++ Programming.
  - 6.6 Java Programming for Declaration, Modularity and Storage Management Software Development
- 7. Networking**
  - 7.1 Basic Network Theory: Network Definition, Network Models, Connectivity, Network Addressing
  - 7.2 Network Connectivity: The Data Package, Establishing a Connection, Reliable Delivery, Network Connectivity, Noise Control, Building Codes, Connection Devices
  - 7.3 Advanced Network Theory: The OSI model, Ethernet, Network Resources, Token ring, FDDI, Wireless Networking.
  - 7.4 Common Network Protocols: Families of Protocols, NetBEUI, Bridge and Switches, TCP/IP Protocol, Building TCP/IP Network, TCP/IP Suite
  - 7.5 TCP/IP Services: Dynamic Host Configuration Protocol, DNS Name Resolution, NetBIOS support, SNMP, TCP/IP Utilities, FTP
  - 7.6 Network LAN Infrastructure: LAN Protocols on a Network, IP Routing, IP Routing Tables, Router Discovery Protocols, Data Movement in a Routed Network, Virtual LANs (VLANS)
  - 7.7 Network WAN Infrastructure: WAN Environment, Wan Transmission Technologies, Wan Connectivity Devices, Voice Over Data Services
  - 7.8 Remote Networking: Remote Networking, Remote Access protocols, VPN Technologies
  - 7.9 Computer Security: Computer Virus, Worm, Trojan Horse
  - 7.10 Network Security: Introduction, Virus Protection, Local Security, Network Access, Internet Security.
  - 7.11 Disaster Recovery: Need for Disaster Recovery, Disaster Recovery plan, Data backup, Fault Tolerance
  - 7.12 Advanced Data Storage Techniques: Enterprise Data Storage, Clustering, Network Attached Storage, Storage Area Networks
  - 7.13 Network Troubleshooting: Using Systematic Approach to Troubleshooting
  - 7.14 Network Support Tools: Utilities, Network Baseline
  - 7.15 Network Access Points (NAP), Common Network Component, Common Peripheral Ports
- 8. Computer Architecture & Organization**
  - 8.1 Evaluation of Computers, Design Methodology, Set Architecture, MIPS ISA, ALU Design
  - 8.2 Datapath Design: Single and Multiple Cycle Implementations, Pipelining, Memory Hierarchy, Input / Output System: Bus & Role of Operating System
- 9. Compiler Design**
  - 9.1 Introduction to Compiling,

9.2 Logical Analysis, Syntax Analysis, Semantic Analysis,

9.3 Run Time environment,

9.4 Intermediate Code Generation, Code Optimization,

9.5 Compiler Generation Tools.

## 10. E-Commerce Technology

10.1 Introduction to E-Commerce

10.2 Electronic Commerce Strategies

10.3 Electronic Commerce Security Issues

10.4 Success Models of E-Governance

10.5 E-Business: b2b, b2c, b2e, c2c, g2g, g2c

10.6 Principles of Electronic Payment, Strategies & Systems

10.7 E-marketing, Reverse Engineering

10.8 E-Banking, EDI Methods, SWIFT

10.9 Encryption and Decryption Methods, XML, Layout Managers, Event Model

## 11. MIS and Web Engineering

11.1 Information Systems, Client-Server Computing.

11.2 Information Systems and Decision Making.

11.3 Database Design issues, Data Mining, Data Warehousing

11.4 Knowledge Management, The strategic use of Information Technology.

11.5 Work Process Redesign (Reengineering) with Information Technology, Enterprise Resources Planning Systems, Information Systems Security, Information Privacy, and Global Information Technology issues.

11.6 Software Supported Demonstrations including advanced Spreadsheet topics, Software Component Based Systems (CBSE),

11.7 Multimedia

11.8 Object-Oriented Programming with COMS & DECOMS,

11.9 Group Decision Support Systems

11.10 Basics of Website Design

## 12. Legislations and IT in Nepal

12.1 The Constitution of Nepal (From Part 1 to 5, 13, 14, 15, 16, 17, 18, 19 & 20; and Schedules)

12.2 History of IT in Nepal,

12.3 IT Policy of Nepal, 2072 B.S.

12.4 Electronic Transaction Act, 2063 B.S.

12.5 Copyright Act, 2059 B.S.

12.6 Uses of Computers and Software Development

12.7 Nepali Unicode, Nepali Fonts

12.8 Licensing Issues

12.9 Local Government Operation Act, 2074 (Provisions related to ICT)

### प्रयोगात्मक परीक्षाको प्रश्नसंख्या र अंकभार निम्नानुसार हुनेछन ।

सि.नं.	शिर्षक	प्रश्नको संख्या	अंकभार	समय
१	देवनागरी टाईपिङ्ग	१	५	५
२	अंग्रेजी टाईपिङ्ग	१	५	५
३	MS-Word	५	५	१०
४	Excel	५	५	१०

### अंग्रेजी वा देवनागरी **Typing Skill Test** को लागि निर्देशन:-

१. देवनागरी Typing Skill Test को लागि २०० शब्दहरूको एउटा Text दिइनेछ र देहाय अनुसार अंक प्रदान गरिनेछ:-

शुद्ध शब्द प्रति मिनेट ( <b>Correct Words/Minute</b> )	पाउने अंक
३.५ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	० अंक
३.५ वा सो भन्दा बढी र ७ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	०.५० अंक
७ वा सो भन्दा बढी र १०.५ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	१.०० अंक
१०.५ वा सो भन्दा बढी र १४ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	१.५० अंक
१४ वा सो भन्दा बढी र १७.५ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	२.०० अंक
१७.५ वा सो भन्दा बढी र २१ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	२.५० अंक
२१ वा सो भन्दा बढी र २४.५ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	३.०० अंक

२४.५ वा सोभन्दा बढी र २८ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	३.५० अंक
२८ वा सोभन्दा बढी र ३१.५ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	४.०० अंक
३१.५ वा सोभन्दा बढी र ३५ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	४.५० अंक
३५ वा सोभन्दा बढी शुद्ध शब्द प्रति मिनेट बापत	५.०० अंक

२. English Typing Skill Test को लागि २२५ शब्दहरुको एउटा Text दिइनेछ र देहाय अनुसार अंक प्रदान गरिनेछ:-

शुद्ध शब्द प्रति मिनेट (Correct Words/Minute)	पाउने अंक
४ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	० अंक
४ वा सो भन्दा बढी र ८ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	०.५० अंक
८ वा सो भन्दा बढी र १२ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	१.०० अंक
१२ वा सो भन्दा बढी र १६ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	१.५० अंक
१६ वा सो भन्दा बढी र २० भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	२.०० अंक
२० वा सो भन्दा बढी र २४ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	२.५० अंक
२४ वा सो भन्दा बढी र २८ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	३.०० अंक
२८ वा सो भन्दा बढी र ३२ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	३.५० अंक
३२ वा सो भन्दा बढी र ३६ भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	४.०० अंक
३६ वा सोभन्दा बढी र ४० भन्दा कम शुद्ध शब्द प्रति मिनेट बापत	४.५० अंक
४० वा सोभन्दा बढी शुद्ध शब्द प्रति मिनेट बापत	५.०० अंक

**Formula:-**

Correct words/minute = (Total words typed - wrong words)/5 (for Devanagari typing)

Correct words/minute = (Total words typed - wrong words)/5 (for English typing)

**Note:-** अंग्रेजी वा देवनागरी Typing मा दिइएको Text लाई आधार मानी टाइप गरेको Text सँग भिडाई चेक गरिनेछ । दिइएको अंग्रेजी वा देवनागरी Text मा उल्लेखित स्थान बमोजिम परीक्षार्थीहरुले आफ्नो Text मा Punctuation टाइप नगरेको पाइएमा त्यसको शब्दमा गणना गरिने छैन । तत्पश्चात निम्न Formula प्रयोग गरी शुद्ध शब्द प्रति मिनेट(Correct words/minute) निकालिनेछ ।

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