

देवदह नगरपालिका
सूचना प्रविधि अधिकृत पदको

परीक्षा योजना (Examination Scheme)

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

प्रथम चरण:- छोटो सूची (Short Listing)

द्वितीय चरण:- लिखित परीक्षा

अन्तिम चरण:- (क) प्रयोगात्मक परीक्षा

(ख) अन्तर्वार्ता

प्रथम चरण

प्रथम चरणको सूचना प्रविधि अधिकृत पदको छोटो सूची (Short List) देहायको मापदण्डका आधारमा प्राप्त आवेदन फारमहरूको जाँच गरी प्रकाशन गर्ने । छोटो सूची तयारीको लागि निम्नानुसार १०० पूर्णाङ्क कायम गरी कम्तिमा ५० अंक प्राप्त गर्ने आवेदनकर्तालाई मात्र छोटो सूची (Short list) मा समावेश गर्ने ।

क्र.स.	सूचकहरू	पूर्णाङ्क
१	शैक्षिक योग्यता (सूचना अनुसारको न्यूनतम शैक्षिक योग्यताको आधार	३०
१.१	अंक अंकित स्तर निर्धारण पद्धति भएका विश्व विद्यालयको हकमा	
१.१.१	८०% वा सो भन्दा माथि प्राप्ताङ्क भएको वा सम्बन्धित विषयमा तोकिएभन्दा माथिल्लो शैक्षिक उपाधी भएको ।	३०
	६५% देखि ७९.९९% सम्म प्राप्ताङ्क भएको	२४
	५५% देखि ६४.९९% सम्म प्राप्ताङ्क भएको	१८
	५५% भन्दा कम प्राप्ताङ्क भएको	१२
१.२	अक्षर अंकित स्तर निर्धारण पद्धति (Letter Grading System) भएका विश्व विद्यालयको हकमा	
१.२.१	Cumulative Grading Point Average (३.५ देखि ४ सम्म) वा सम्बन्धित विषयमा तोकिएभन्दा माथिल्लो शैक्षिक उपाधी भएको ।	३०
१.२.२	Cumulative Grading Point Average (३ देखि ३.५ भन्दा कम)	२४
१.२.३	Cumulative Grading Point Average (२.५ देखि ३ भन्दा कम)	१८
१.२.४	अन्य	१२
२	कार्य अनुभव (सूचना अनुसारको न्यूनतम शैक्षिक योग्यता हासिल गरे पश्चात	४०
२.१	२ वर्ष भन्दा माथि सरकारी निकायमा IT क्षेत्रमा कार्य अनुभव भएको	४०
२.२	१ वर्ष भन्दा माथि	३०
२.३	१ वर्ष सम्म	२०
२.४	कार्य अनुभव नभएको	१२
३	उम्मेदवारको स्थायी ठेगाना सम्बन्धि	२०
३.१	स्थायी ठेगाना सम्बन्धीत स्थानीय तहमा भएमा	२०
३.२	स्थायी ठेगाना सम्बन्धीत स्थानीय तहको जिल्लामा भएमा	१६
३.३	स्थायी ठेगाना सम्बन्धीत स्थानीय तहको प्रदेशमा भएमा	१२
३.४	अन्य	८

४	२ वर्ष भन्दा माथि स्थानीय शासन तथा सामुदायिक विकास कार्यक्रममा ICT Volunteer वा Expert वा अन्य कुनै सामुदायिक विकास कार्यक्रममा सूचना प्रविधि अधिकृतको रूपमा कार्य गरेको भएमा	१०
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नोट:- स्थायी ठेगाना भन्नाले नागरिकतामा उल्लेख भएको ठेगाना वा विवाह दर्ता प्रमाण पत्रमा उल्लेख भएको ठेगाना वा बसाइसराई प्रमाणपत्र भएको ठेगाना वा शैक्षिक योग्यताको प्रमाणपत्रमा भएको ठेगाना वा अन्य कागजातबाट स्थायी ठेगाना खुल्ने कागज पत्र वा अन्य प्रमाण पत्रलाई समेत बुझिनेछ ।

द्वितीय चरण:- लिखित परीक्षा योजना

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्न संख्या × अङ्क	समय
कम्प्युटर सम्बन्धी	५०	२०	वस्तुगत (Objective)	बहुवैकल्पिक (Multiple Choice)	५०×१	४५ मिनेट

अन्तिम चरण:- प्रयोगात्मक परीक्षा तथा अन्तर्वार्ता

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	समय
प्रयोगात्मक परीक्षा	३०	१५	प्रयोगात्मक (Practical) ५ प्रश्न × ६ अंक	१ घण्टा
अन्तरवार्ता (Interview)	२०	-	मौखिक (Oral)	-

द्रष्टव्य:-

- यो पाठ्यक्रम योजनालाई छोटो सूची (प्रथम चरण), लिखित परीक्षा (द्वितीय चरण), र प्रयोगात्मक तथा अन्तरवार्ता (अन्तिम चरण) गरी तीन भागमा विभाजन गरिएको छ ।
- प्रश्नपत्र अंग्रेजी भाषामा हुन सक्नेछ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- 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 ।
- परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- प्रथम चरणको छोटो सूची (Short List) मा ५० अंक प्राप्त गर्ने उम्मेदवारलाई मात्र द्वितीय चरणको लिखित परीक्षामा सम्मिलित गराइनेछ ।
- लिखित परीक्षामा सोधिने प्रश्न संख्या द्वितीय चरणको लागि यथासम्भव देहाय बमोजिम हुनेछ ।

प्रथम पत्र एकाई	१	२	३	४	५	६	७	८	९	१०	११	१२
प्रश्न संख्या	५	४	५	५	७	३	५	१	१	३	५	६

- द्वितीय चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र अन्तिम चरणको प्रयोगात्मक तथा अन्तर्वार्तामा सम्मिलित गराइने छ ।
- परीक्षामा परीक्षार्थीले मोबाइल वा यस्तै प्रकारका विद्युतीय उपकरण परीक्षा हलमा लैजान पाइने छैन ।
- प्रयोगात्मक परीक्षाका प्रश्न संख्या निम्नानुसार हुनेछन् ।

प्रयोगात्मक परीक्षाको एकाई	४	५	६	७
प्रश्न संख्या	१	२	१	१

- लिखित परीक्षा र अन्तिम चरणको प्रयोगात्मक परीक्षा तथा अन्तरवार्ताको कुल अङ्क योगका आधारमा प्रयोगात्मक परीक्षामा उत्तीर्ण हुने परीक्षार्थीलाई मात्र योग्यताक्रम सूचीमा समावेश गरी अन्तिम परीक्षाफल प्रकाशित गरिनेछ ।

देवदह नगरपालिका

सूचना प्रविधि अधिकृत पदको लिखित परीक्षाको द्वितीय चरणको पाठ्यक्रम

कम्प्युटर सम्बन्धी विषय

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)