



मस्युडदी गाउँपालिका

गाउँ कार्यपालिकाको कार्यालय

भुलभुले, लमजुङ

२०७३

मस्युडदी गाउँपालिकाको मिति २०८०/०४/०४ गते प्रकाशित विज्ञापन नं. ०१/२०८०/८१ सूचना प्रविधि अधिकृत (अधिकृतस्तर छैठौं) पदको परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छः-

प्रथम चरण	लिखित परीक्षा (Written Examination)	पूर्णाङ्कः-	१००
द्वितीय चरण	क) प्रयोगात्मक परीक्षा (Practical Test)	पूर्णाङ्कः-	५०
	ख) अन्तर्वार्ता (Interview)	पूर्णाङ्कः-	२०

परीक्षा योजना (Examination Scheme)

प्रथम चरणः लिखित परीक्षा (Written Examination) पूर्णाङ्कः- १००

पत्र	विषय	खण्ड	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या x अङ्क	समय
प्रथम	General Subject	General Technical Subject	५०	२०	वस्तुगत (Objective)	बहुवैकल्पिक प्रश्न (MCQs)	५० प्रश्न x १ अङ्क ४५ मिनेट
द्वितीय	Technical Subject		५०	२०	विषयगत (Subjective)	छोटो उत्तर लामो उत्तर	२ प्रश्न x १ अङ्क ५ प्रश्न x ३० अङ्क १० अङ्क १ घण्टा ३० मिनेट

द्वितीय चरणः प्रयोगात्मक परीक्षा र अन्तर्वार्ता

पत्र/विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	समय
प्रयोगात्मक परीक्षा (Practical Test)	५०	२५	५ प्रश्न x १० अङ्क	१ घण्टा ३० मिनेट
अन्तर्वार्ता (Interview Test)	२०		बोर्ड अन्तर्वार्ता (Interview Test)	-

द्रष्टव्यः-

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- प्रथमपत्र र द्वितीयपत्रको लिखित परीक्षा छुट्टाछुट्टै 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 ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नहरूको हकमा तोकिएको अंकको एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।



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- ६) 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 सम्झनु पर्दछ ।
- ७) प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- ८) प्रयोगात्मक परीक्षाका प्रश्न संख्या निम्नानुसार हुनेछन् ।

प्रयोगात्मक परीक्षाको एकाई	प्रश्न संख्या
Operating System	1
Database Management System and Design	2
Programming Language	1
Networking	1

- ९) मस्युड्दी गाउँपालिकामा करारमा कर्मचारी व्यवस्थापन गर्ने सम्बन्धी कार्यविधि, २०७४ बमोजिम मूल्याङ्कन तथा परीक्षा र अन्तर्वार्तिको कुल अङ्क योगका आधारमा प्रयोगात्मक परीक्षामा उत्तीर्ण हुने परीक्षार्थीहरूलाई मात्र योग्यताक्रम सूचीमा समावेश गरी अन्तिम परीक्षाफल प्रकाशित गरिनेछ ।



मस्युड्दी गलुडुडललकल

गलुडुड कलरुडुडललकलकु कलरुडुडललडु

डुलडुलु, लडुडुड

२०ॡ३

डुलडुडुडुडु गलुडुडललकलकु डुडुडु २०ॡ०/०ॡ/०ॡ गते डुडुडुडुडु डुडुडुडुडु नं. ०ॡ/२०ॡ०/ॡॡ डुडुडुडु डुडुडुडुडु डुडुडुडुडु (डुडुडुडुडुडुडु डुडुडुडुडु) डुडुडुडु डुडुडुडुडुडु डुडुडुडुडुडु

Paper(I) : - General Technical Subject (50 Marks)

1. **Computer Fundamentals (10%)**
 - 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 **Storages 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 (8%)**
 - 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 (10%)**
 - 3.1 Definition of 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 **The System Design Environment:** Development Process, Management Process, System Structure, Basic Component of Computer based Information System, Personal/ Centralized/Distribution System



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- 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, 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 (10%)

- 4.1 Definition, Development and Functions of Operating Systems
- 4.2 Basic components of the Operating Systems, Information Storage and Management Systems
- 4.3 Disk Allocation and Scheduling Methods, Basic Memory Management strategies, Virtual Memory Management Techniques, Define a Process and features of the Process Management System
- 4.4 Features of Process Scheduling; List the features of Inter-Process Communication and Deadlocks
- 4.5 Concepts of Parallel and Distributed Processing, Identify 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 (14%)

- 5.1 Introduction, A 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



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- 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, Datetime 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** (8%)
 - 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** (10%)
 - 7.1 **Basic Network Theory:** Network Definition, Network Models, Connectivity, Network Addressing.
 - 7.2 **Network Connectivity:** Data Package, Establishing a Connection, Reliable Delivery, Network Connectivity, Noise Control, Building Codes, Connection Devices
 - 7.3 **Advanced Network Theory:** 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



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- 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, Common Network Component, Common Peripheral Ports
- 8. Computer Architecture & Organization (4%)**
 - 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 (2%)**
 - 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 (4%)**
 - 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 (10%)**
 - 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. IT in Nepal (10%)**



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अधिकृत (अधिकृतस्तर छैँठौँ) पदको परीक्षाको पाठ्यक्रम

- 12.1 History of IT in Nepal
- 12.2 IT Policy of Nepal
- 12.3 Electronic Transaction Act
- 12.4 Copyright Act
- 12.5 Uses of Computers and Software Development
- 12.6 Nepali Unicode, Nepali Fonts
- 12.3 Licensing Issues

मस्यन्डी गाउँपालिका



मस्युडदी गलुडडललकल
गलुड कलरुडडललकलकु कलरुडलड
शुलशुले, लडकुडु
२०७३

मस्युडदी गलुडडललकलकु डलतल २०ॡ०/०ॡ/०ॡ गते डुरकलशलत वलरुडडन नं. ०१/२०ॡ०/ॡ१ सूकनल डुरवलधल
अधलकृत (अधलकृतस्तर ऐठुठु) डदकु डरलकुशलकु डलठुडकुरड

(Paper II): Technical Subject (50 Marks)

Section A– 15 Marks

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 Storages devices: Overview of Storage Devices, Floppy Disk Drive, Hard Drive, Universal Serial Bus (USB) Devices and Other Storage Devices
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- 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. Programming Language

- 3.1 Overview of Programming Language: History, Programming Paradigms, The role of Language translates in the Programming Process.
- 3.2 Fundamental Issues in Language Design.
- 3.3 Virtual Machines, Code Generation, Loop Optimization.
- 3.4 Concept of Procedural Programming, Structural Programming, Object-Oriented Programming.
- 3.5 Concept of C programming, C++ Programming,
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गाउँ कार्यपालिकाको कार्यालय
भुलभुले, लमजुङ
२०७३

मस्युङ्दी गाउँपालिकाको मिति २०८०/०४/०४ गते प्रकाशित विज्ञापन नं. ०१/२०८०/८१ सूचना प्रविधि
अधिकृत (अधिकृतस्तर छैठौं) पदको परीक्षाको पाठ्यक्रम

Section B– 10 Marks

4. System Analysis and Design

- 4.1 Definition of the System, System Owner, System User, System Designers and system Builders, System Analysts, Variations on the System Analyst title, System life Cycle
- 4.2 Joint Application Development (JAD): JAD definition, JAD purpose, JAD Philosophy, JAD Scope
- 4.3 Involved in a JAD: Sponsor, Business Users, System Analyst
- 4.4 Roles of JAD Group Member: Project Leader, Record Keeper, Time Keeper.
- 4.5 System Design Environment: Development Process, Management Process, System Structure, Basic Component of Computer based Information System, Personal/ Centralized/Distribution System
- 4.6 Concept formations: Introduction, Finding the Problem, Evaluating the Proposal, Technical Feasibility, Operational Feasibility, Economic Feasibility.
- 4.7 Requirements analysis: Representing System Analysis Model, Requirement Model, Design Model
- 4.8 Development Process: Design Method
- 4.9 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
- 4.10 Relationship Sets: Degree of Relationship and Cardinality Relationship, Specialization, Generalization, Aggregation
- 4.11 Data Flow Diagrams (DFDs): Introductions, Data flow Diagram, Symbol, Files or data store, External entities, Data flows
- 4.12 Describing System by Data Flow Diagram: Context diagram, Top level DFD, Expansion Level DFD, Conversions of Data
- 4.13 Object Modeling: Object -Oriented Concept, Object Structure, Object Feature, Class and Object
- 4.14 Representation: Association, Composition, Inheritance, Multiple Inheritances
- 4.15 Modeling: Use Case Diagram, State Diagram, Event Flow Diagram.
- 4.16 Documentation: Automatic and Manual System

Section C– 10 Marks

5. Operating Systems

- 5.1 Definition, Development and Functions of Operating Systems
- 5.2 Basic components of the Operating Systems, Information Storage and Management Systems
- 5.3 Disk Allocation and Scheduling Methods, Basic Memory Management strategies, Virtual Memory Management Techniques, Define a Process and features of the Process Management System
- 5.4 Features of Process Scheduling; List the features of Inter-Process Communication and Deadlocks
- 5.5 Concepts of Parallel and Distributed Processing, Identify Security Threats to Operating Systems
- 5.6 Overview of the MS-DOS Operating System
- 5.7 Introduction to the Windows Family of Products, Unix Family of Products, Linux Family of Products
- 5.8 Introduction to Windows Networking
- 5.9 Windows Architecture, Linux Architecture



मस्युड्दी गलुडुडलकल
गलुडुड कलरुडुडलकलकुकु कलरुडुडलड
डुलडुले, लडडुड
२०७३

डस्युड्दी गलुडुडलकलकुकु डलतल २०ॡ०/०ॡ/०ॡ गते डुरकलशलत वलडुडलडन नं. ०१/२०ॡ०/ॡ१ सूकनल डुरवलधल
अधलकृत (अधलकृतसुतर कुैठुँ) डदकु डुरलकुलकुकु डलठुडकुरड

- 5.10 Troubleshooting Windows & Linux
- 5.11 Managing Network Printing
- 5.12 Managing Hard Disks and Partitions
- 5.13 Monitoring and Troubleshooting Windows
- 5.14 Users, Groups and Permission Linux and Windows

6. **Database Management System and Design**

- 6.1 Introduction, A Database Model, Relational Database Model, Integrity, RDBMS
- 6.2 SQL and Embedded SQL
- 6.3 Writing Basic SQL SELECT Statements
- 6.4 Restricting and Sorting data
- 6.5 Single Row Functions
- 6.6 Displaying Data from Multiple Tables
- 6.7 Aggregation Data Using Group Functions
- 6.8 Sub Queries, Manipulating Data and Creating & Managing Tables
- 6.9 Creating Views and Controlling User Access
- 6.10 Using Set Operators, Datetime Function
- 6.11 Database Design: Logical Design, Conceptual Design, Mapping Conceptual to Logical, Pragmatic issues, Physical Design, Integrity and Correctness, Relational Algebra, Relational Calculus
- 6.12 Normalization: 1NF, 2NF, 3NF, BCNF, 4NF, 5NF, DKNF
- 6.13 Architecture of DBMS: Client-server, Open Architectures, Transaction Processing, Multi-User & Concurrency, and Backup & Recovery Database
- 6.14 Basic Concept of major RDBMS products: Oracle, Sybase, DB2, SQL Server and other Databases

Section D– 15 Marks

7. **Networking**

- 7.1 Basic Network Theory: Network Definition, Network Models, Connectivity, Network Addressing.
- 7.2 Network Connectivity: Data Package, establishing a Connection, Reliable Delivery, Network Connectivity, Noise Control, Building Codes, Connection Devices
- 7.3 Advanced Network Theory: 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



मस्य्याइदी गाउँपालिका
गाउँ कार्यपालिकाको कार्यालय
भुलभुले, लमजुङ
२०७३

मस्य्याइदी गाउँपालिकाको मिति २०८०/०४/०४ गते प्रकाशित विज्ञापन नं. ०१/२०८०/८१ सूचना प्रविधि
अधिकृत (अधिकृतस्तर छैठौं) पदको परीक्षाको पाठ्यक्रम

- 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, 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. IT in Nepal**
 - 12.1 History of IT in Nepal
 - 12.2 IT Policy of Nepal
 - 12.3 Electronic Transaction Act
 - 12.4 Copyright Act
 - 12.5 Uses of Computers and Software Development



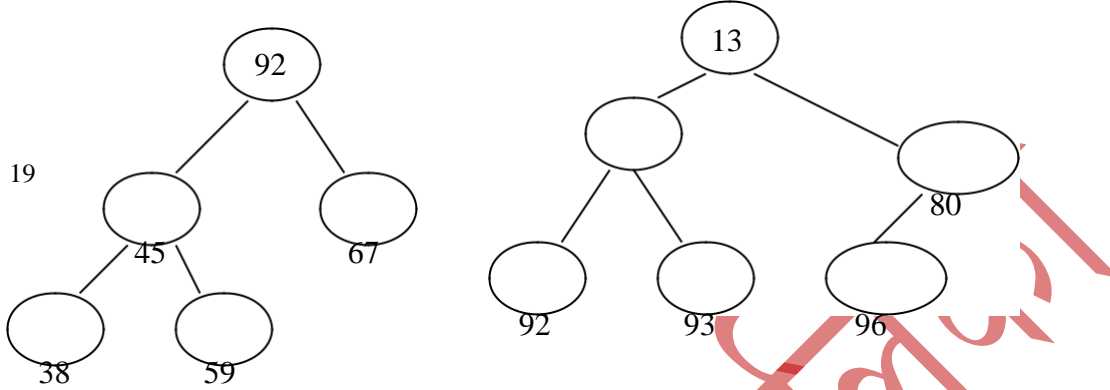
मस्यार्इदी गाउँपालिका
गाउँ कार्यपालिकाको कार्यालय
भुलभुले, लमजुङ
२०७३

मस्यार्इदी गाउँपालिकाको मिति २०८०/०४/०४ गते प्रकाशित विज्ञापन नं. ०१/२०८०/८१ सूचना प्रविधि
अधिकृत (अधिकृतस्तर छैठौं) पदको परीक्षाको पाठ्यक्रम

- 12.6 Nepali Unicode, Nepali Fonts
12.3 Licensing Issues

विषयगत नमूना प्रश्नहरू Sample questions)

- 1) Merge operation between two heap trees



H1: A max Heap

H2: A min Heap

- 2) Preorder and postorder traversals of a binary tree given as below:

Preorder: u1 u2 u3 u4 u10 u8 u5 u9 u6 u11 u7

Postorder: u4 u10 u3 u8 u2 u9 u11 u7 u6 u5 u1

Obtained a binary tree, which resembles with traversals?

- 3) Use the do-while loops in nested form and produces the following output in Java.

Multiple Tables

1 2 3

2 4 6

3 6 9

- 4) Using C program Draw Result

1 2

2 3

3 4

4 5

- 5) Consider the following schema:

Suppliers (sid:integer, sname:string, address:string)

Parts(pid: integer, pname: string, color: string)

Catalog (sid: integer, pid:integer, cost: real)

The key fields are underline, and the domain of each field is listed after the field name. Thus sid is the key for suppliers, pid is the key for parts, and sid and pid together form the key Catalog. The catalog relation list the prices charged for parts by suppliers. Write the following queries in relational algebra, SQL

- Find the Name of the suppliers who supply red part. Solution:

a. Relational algebra

$\Pi_{sname}(\Pi_{sid}((\Pi_{pid} \sigma_{color='red'} Parts) \bowtie Catalog) \bowtie Suppliers)$



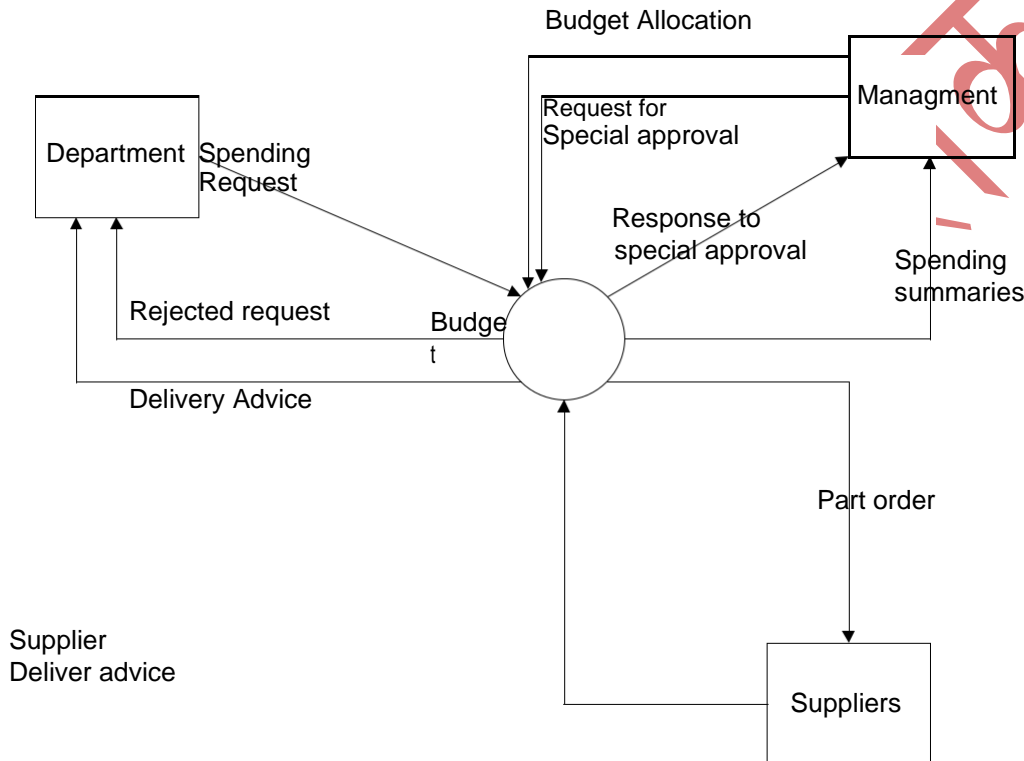
मस्युडिदी गलुडडललकल
गलुडु कलरुडडललकलकु कलरुडडललड
डुलडुले, लडडुडु
२०ॡ३

डसुडुडिदी गलुडुडललकलकु डलतल २०ॡ०/०ॡ/०ॡ गते डुरकलशलत वलडुडडन नं. ०१/२०ॡ०/ॡ१ सुकनल डुरवलधल
अधलकृत (अधलकृतसुतर कुडुठुँ) डदकु डुरलकुडलकु डलठुडकुरड

b. SQL SELECT

S.sname
FROM Suppliers S, Parts P, Catalog C
WHERE P.color='red' AND C.pid=P.pid AND C.sid=S.sid

6) Develop Top level DFD from Context Diagram



डुरडुगलतुडक डुरलकुडलकल नडुनल डुरशुतुरहुरु

1. Get IP address from given computers which are Network.
 - a. Give privileged share only database administration.
 - b. Determine if the following address are on local or remote network.
Node 1: 192.255.16.8
Node 2: 192.225.14.8
Mask: 255.255.255.0
2. Create tables Student, Teacher, Course is SQL .
Student (Sid, Sname, subject, level)



मस्यन्डी गाउँपालिका
गाउँ कार्यपालिकाको कार्यालय
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२०७३

मस्यन्डी गाउँपालिकाको मिति २०८०/०४/०४ गते प्रकाशित विज्ञापन नं. ०१/२०८०/८१ सूचना प्रविधि
अधिकृत (अधिकृतस्तर छैठौं) पदको परीक्षाको पाठ्यक्रम

Teacher (Tid, Tname, subject,) Course
(Cid, Cnumber, Tname, level)

- a. Insert 10 values
 - b. Delete first two values.
3. Given a string
String S("123456789")
Write a program in C++ that displays the following:

1
232
34543
4567654
567898765

मस्यन्डी गाउँपालिका