

सिडिएस एण्ड क्लियरिङ लिमिटेड
प्राविधिक समूह, तह ७, बरिष्ठ आई.टी.अधिकृत पदको खुल्ला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
एवं परीक्षा योजना

यस पाठ्यक्रम योजनालाई निम्नानुसारका दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा

पूर्णाङ्क :- २००

द्वितीय चरण :- (क) प्रयोगात्मक परीक्षा

पूर्णाङ्क :- ५०

(ख) अन्तर्वार्ता

पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : – लिखित परीक्षा							पूर्णाङ्क :- २००
पत्र	विषय/खण्ड	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या x अङ्क	समय
प्रथम	Information Technology & Related Legislations	१००	४०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQs)	५० प्रश्न x २ अङ्क	४५ मिनेट
द्वितीय		१००	४०	विषयगत	छोटो उत्तर लामो उत्तर	८ प्रश्न x ५ अङ्क ६ प्रश्न x १० अङ्क	३ घण्टा
२. द्वितीय चरण : – प्रयोगात्मक परीक्षा र अन्तर्वार्ता							पूर्णाङ्क :- ८०
विषय		पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		समय	
प्रयोगात्मक परीक्षा		५०	२५	प्रयोगात्मक		१ घण्टा	
अन्तर्वार्ता		३०	-	मौखिक			

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी वा दुवै हुनेछ ।
- प्रथम र द्वितीय पत्रको विषयवस्तु एउटै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कटौत गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कटौत पनि गरिने छैन ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नहरूको हकमा तोकिएको अङ्कमा एउटा लामो वा एउटा 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 ।
- विषयगत प्रश्नमा प्रत्येक पत्र/विषयका प्रत्येक भाग/खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक भाग/खण्डका प्रश्नहरूको उत्तर सोही भाग/खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम 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 ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :- २०७५/१०/०३ गते

प्रथम र द्वितीय पत्र :- **Information Technology & Related Legislations**

खण्ड (क) २१(४०%) अङ्कभार
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1. **Introduction of Computer and Architecture**
 - 1.1 Computer System and Types of Computer
 - 1.2 Components and Architecture of Computers
 - 1.3 Input Devices: Keyboard, Mouse, other input devices
 - 1.4 Processor: ALU, CU, Registers
 - 1.5 Memory : Primary and Secondary Memory
 - 1.6 Storages devices: Hard Drive, USB Devices and other Storage Devices
 - 1.7 Output devices: Monitors, Printers
2. **Digital Logic and Number System**
 - 2.1 Digital and Analog Systems
 - 2.2 Binary, Octal, Decimal and Hexadecimal Number System
 - 2.3 Logic gates
 - 2.4 Combinational Logic Circuits
 - 2.5 Sequential Logic Circuits
3. **Programming concept and Data structure**
 - 3.1 Concept of Procedural Programming, Declarative Programming, Structural Programming and Object-Oriented Programming
 - 3.2 Concept of Algorithm, Flowchart and Pseudo code
 - 3.3 Concept of C programming, C++ Programming, JAVA Programming
 - 3.4 Basic Concept of control, loop, array and function
 - 3.5 Introduction of Data structure and Abstract data Type
 - 3.6 Linear data structures, Lists, Linked Lists, Stacks, Queues
 - 3.7 Trees: General and binary trees, Traversal, Implementations, Binary Trees, Binary Search Trees, AVL Trees
 - 3.8 Exhaustive search, Divide-and-Conquer, Dynamic Programming, Greedy Methods, Backtracking , Recursive Algorithms
 - 3.9 Sorting Algorithms
 - 3.10 Worst-Case and Expected time Complexity
 - 3.11 Graph algorithms: Depth-first Search and Breadth-first Search, Shortest Path Problems, Minimum Spanning Tree
4. **Operating system**
 - 4.1 Function of Operating System
 - 4.2 CPU scheduling and scheduling algorithm, Inter-Process Communication and Deadlocks
 - 4.3 Deadlock detection and prevention
 - 4.4 Memory Management
 - 4.5 Virtual memory management
 - 4.6 Windows and Linux based networking architecture
 - 4.7 Monitoring and Troubleshooting Windows and Linux network
 - 4.8 Users, Groups and Permission on Linux and Windows
5. **Database Management System**
 - 5.1 Introduction of Database,

- 5.2 Database Model: Relational Database Model, E-R Model
- 5.3 Database Design: Logical Design, Conceptual Design, Mapping Conceptual to Logical, Logical to Physical
- 5.4 Normalization: 1NF, 2NF, 3NF, BCNF
- 5.5 The relational algebra
- 5.6 Architecture of DBMS: Client-server, Open Architectures.
- 5.7 Transaction Processing, Multi-User & Concurrency, and Backup & Recovery Database.
- 5.8 Basic SQL statement: DDL, DML, DCL
- 5.9 Restricting and Sorting data,
- 5.10 Displaying Data from Multiple Tables
- 5.11 Creating Views and Controlling User Access
- 5.12 Creating Views and Controlling User Access
- 5.13 Basic Concept of major RDBMS products: Oracle, Sybase, DB2, SQL Server and MYSQL
- 5.14 Introduction of Big Data

खण्ड (ख) - (४०%) अङ्कभार

6. Management Information System

- 6.1 Information Technology and Organization
- 6.2 Information Systems and Decision Making
- 6.3 Data Mining, Data Warehousing
- 6.4 OLAP and OLTP

7. Software Engineering

- 7.1 Software and Software Engineering
- 7.2 Software development Model: Waterfall, RAD, JAD, Spiral, RUP, Agile
- 7.3 System Requirement Specification (SRS)
- 7.4 Feasibility Analysis
- 7.5 System Design: DFD, E-R Diagram, Use case, Class Diagram, Sequence Diagram, Gantt Chart
- 7.6 Software Testing, Validation and Verification
- 7.7 Configuration Management
- 7.8 Reengineering, Reverse Engineering and Data reengineering

8. Computer Network

- 8.1 Network Definition, Network Models, Network Topology, Network Addressing
- 8.2 Network Connectivity: Data Communication Media
- 8.3 The Data Package, Establishing a Connection, Reliable Delivery, Network Connectivity, Noise Control, Building Codes, Connection Devices
- 8.4 The OSI reference model
- 8.5 Common Network Protocols
- 8.6 TCP/IP Protocol
- 8.7 Network LAN Infrastructure
- 8.8 Remote Networking: Remote Networking, Remote Access protocols, VPN Technologies
- 8.9 Network Security: Introduction, Virus Protection, Local Security, Network Access, Internet Security

- 8.10 Disaster Recovery: The need for Disaster Recovery, Disaster Recovery plan, Data backup, Fault Tolerance
- 8.11 Network Troubleshooting: Using Systematic Approach to Troubleshooting
- 8.12 Network Support Tools: Utilities, the Network Baseline
9. **Emerging Technology and Security Threat**
- 9.1 Artificial Intelligence: Expert system, Neural Network
- 9.2 E-commerce: EDI, E-Business: b2b, b2c, b2e, c2c, g2g, g2c, Cryptography
- 9.3 GIS, Remote sensing and GPS
- 9.4 Web 2.0 and Virtual meeting
- 9.5 Mobile computing
- 9.6 Security and privacy
- 9.7 Computer Virus
- 9.8 Cyber Crime
- 9.9 Social Media Threat
- 9.10 Computer Ethics
10. **Theory of Computation**
- 10.1 BNF, Languages, Grammars
- 10.2 DFA, NDFA, regular expressions, regular grammars
- 10.3 Closure, Pigeonhole principle
- 10.4 CFGs, Pushdown Automata
- 10.5 Turing Machines
- 10.6 The Chomsky hierarchy, Undecidable problems
- 10.7 Complexity Theory, P and NP
- खण्ड (ग) - (२०%) अङ्कभार**
11. **IT in Nepal**
- 11.1 History of IT in Nepal,
- 11.2 IT Policy of Nepal, 2067 B.S.
- 11.3 Electronic Transaction Act, 2063 B.S.
- 11.4 Copyright Act, 2059 B.S.
- 11.5 Uses of Computers and Software Development
- 11.6 Nepali Unicode, Nepali Fonts
- 11.7 Licensing Issues
12. **Capital market, law and policy**
- 12.1 Concept of Capital Market
- 12.2 Role of CDSC, NEPSE, SEBON in Capital Market
- 12.3 Calculation of NEPSE Index
- 12.4 Securities Act, 2063
- 12.5 Securities Central Depository Services Regulation, 2067
- 12.6 CDSC Bylaws, 2068
- 12.7 Clearing and Settlement Byelaws, 2069
- 12.8 C-ASBA

सिडिएस एण्ड क्लियरिंग लिमिटेड
प्राविधिक समूह, तह ७, वरिष्ठ आई.टी. अधिकृत पदको खुल्ला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
प्रयोगात्मक परीक्षा - ५० अङ्कभार

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Practical Examination

1. Linux or Window sever Configuration
2. Web server Concept
3. LAN Network troubleshoot
4. DBMS configuration and Data Handling