कृषि विकास बैंक लि.

तह-६, MIS (व्यवस्थापन सूचना प्रणाली) अधिकृत, (प्रशासन) पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पदको बिवरण

सेवा	:-	प्रशासन	समूह	:-	प्रशासन	उपसमूह	:- प्रशासन
तह	:-	६ (छ)	पद	:-	MIS (व्यवस्थापन सूचना प्रणाली) अधिकृत	किसिम	:- खुला

पाठ्यक्रम योजनालाई निम्नानुसार दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण	:-	लिखित परीक्षा	पूर्णाङ्क :- २००
द्वितीय चरण	:-	अन्तर्वार्ता	पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination) **पूर्णाङ्क :- २००**

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
प्रथम	व्यवस्थापन (Management)	१००	४०	विषयगत	लामो उत्तर आउने प्रश्न	३ प्रश्न x १० अङ्क	३ घण्टा
	बैकिङ्ग (Banking)				छोटो उत्तर आउने प्रश्न	२ प्रश्न x ५ अङ्क	
					लामो उत्तर आउने प्रश्न	२ प्रश्न x १० अङ्क	
	कृषि विकास बैंक लि. (Agricultural Development Bank Ltd.)				छोटो उत्तर आउने प्रश्न	२ प्रश्न x ५ अङ्क	
					लामो उत्तर आउने प्रश्न	१ प्रश्न x १० अङ्क	
	संविधान तथा कानून (Constitution & Laws)				लामो उत्तर आउने प्रश्न	२ प्रश्न x १० अङ्क	
द्वितीय	Core Computer Science Concepts	१००	४०	विषयगत	छोटो उत्तर आउने पश्न	२ प्रश्न x ५ अङ्क	३ घण्टा
					लामो उत्तर आउने प्रश्न	४ प्रश्न x १० अङ्क	
	Databases, OS, Computation, Compilers, Graphics				छोटो उत्तर आउने पश्न	२ प्रश्न x ५ अङ्क	
					लामो उत्तर आउने प्रश्न	४ प्रश्न x १० अङ्क	

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	**३०**	**मौखिक**

द्रष्टव्य:

१) लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।

२) प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

३) लिखित परीक्षामा सोधिने प्रश्नसंख्या र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा दिईए अनुसार हुनेछ ।

४) विषयगत प्रश्नहरूको हकमा 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 ।

५) विषयगत प्रश्न हुने पत्र/विषयका प्रत्येक भाग/खण्ड/एकाइ/प्रश्नका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परिक्षार्थीले प्रत्येक भाग/खण्ड/एकाइ/प्रश्नका प्रश्नको उत्तर सोही भाग/खण्ड/एकाई/प्रश्नको उत्तरपुस्तिकामा लेख्नुपर्नेछ ।

६) यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जुन सुकै कुरा लेखिएको भए तापनि पाठ्यक्रममा परेका ऐन, कानून, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।

७) प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

८) पाठ्यक्रम स्वीकृत मिति :- २०८१/१२/१४

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प्रथम पत्र : Management, Banking, ADBL and Laws

Section (A) Management and Human Resource 30 Marks (3x10=30)

1. Management

1.1. Concept, Principles and Functions of Management
1.2. Difference between Management and Administration
1.3. Emerging Concepts and Issues of Management
1.4. Controlling, Coordination and Supervision
1.5. Managerial Quality and Skills
1.6. Different Levels of Management and Role of Manager
1.7. Leadership: Concept, Types, Qualities and Contemporary Issues
1.8. Knowledge Management, Time Management, Stress Management, Conflict Management
1.9. Reporting, Monitoring, Supervision and Inspection

2. Human Resource Management

2.1. Concept and Process of Human Resource Management
2.2. Mindsets, Attitude and Aptitude Management
2.3. Performance Appraisal, Recognition, Reward and Punishment System
2.4. Job satisfaction, Job Rotation and Transfer
2.5. Employee Motivation: Concept, Types, Theories, Tools and Techniques
2.6. Career Path and Succession Plan
2.7. Training, Learning and Development, Capacity Building, Skill Enhancement
2.8. Recruitment, Socialization and Retirement
2.9. Contemporary Challenge, Issues and HR Practices
2.10. Human Resource Information System (HRIS)

3. Quality Management

3.1. Total Quality Management (TQM) Techniques
3.2. Quality Circle
3.3. Six Sigma
3.4. International Organization for Standardization (ISO)
3.5. Factors affecting Quality
3.6. Benchmarking and Quality Assurance Techniques

4. Strategic Management

4.1. Strategic Planning Framework
4.2. Environmental Scanning
4.3. Strategy Implementation
4.4. Strategy Evaluation
4.5. SWOT Analysis

5. Decision Making and Problem Solving

5.1. Decision Making: Concept, Types, Processes, Issues and Challenges
5.2. Emotional Intelligence and Decision Making
5.3. Quantitative Tools for Decision Making
5.4. Techniques for Stimulating Creativity
5.5. Intuition/Hunch Driven Decision vs. Data/Logic Driven Decision

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Section (B) Banking 30 Marks (2x5+2x10=30)

1. Banking

1.1. History, Development and Present Scenario of Banking System in Nepal
1.2. Achievements, Issues and Opportunities of Banking Industry in Nepal
1.3. Types and Classification of Banks and Financial Institutions (BFIs)
1.4. Role and Functions of Central Bank and Commercial Banks
1.5. FinTech and Digital Banking: Types, Opportunities, Challenges and Risk
1.6. Financial Access, Digital/Financial Literacy and Financial Inclusion
1.7. Alternative Delivery Channel (ADCs) in Banking: Concept, Types and Issues
1.8. Shadow Banking and its Impact to Economy
1.9. Bank Marketing: Concept, Banking Products and Services, Target Customer Segments and Strategic Marketing Approaches
1.10. Banking Crimes, Fraud and Prevention

2. Modern Banking Services

2.1. Letter of Credit: Concept, Types, Process, Risk and Issues
2.2. Bank Guarantee: Concept, Types, Process, Risk and Issues
2.3. Treasury and Cash Management; Concept, instruments, associated risk and opportunities
2.4. Remittance: Concept and Economic Impact
2.5. e-Banking: Types and Importance
2.6. Any Branch Banking System (ABBS)
2.7. Mobile Banking, Internet Banking
2.8. Digital Wallet
2.9. Paperless Banking
2.10. ATM, Debit Card, Credit Card, Visa Card, Dolar Card, Prepaid Card
2.11. POS, QR based payment
2.12. C-ASBA, DEMAT
2.13. e-Commerce

Section (C) Agricultural Development Bank Ltd. (ADBL) 20 Marks (2x5+1x10=20)

1. Institutional framework and overview of Agriculture Development Bank Ltd. (ADBL)

1.1. Agricultural Development Bank Ltd.: Historical Development, Achievement, Vision, Mission, Objectives, Working Culture and Nature
1.2. ADBL: Strengths and Weaknesses, Opportunities, and Threats
1.3. Existing organizational structure of ADBL
1.4. Contribution, Role, Potentialities and Challenges of the ADBL in the Development of Nepal's Economic (Agriculture, Rural, and Banking) Sector
1.5. Current Status and progress of ADBL
1.6. Core Banking System (CBS)
1.7. ADBL Agriculture-lead Bank: Agricultural Financing, Scope, Issues, Challenges and Opportunities
1.8. Institutional linkage of ADBL (National and International)

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Section (D) Constitution and Laws 20 Marks (2x10=20)

1. Constitution and Laws

1.1. The Constitution of Nepal
1.2. Company Act, 2063
1.3. Bank and Financial Institutions Act, 2073
1.4. Nepal Rastra Bank Act, 2058
1.5. Banking Offence and Punishment Act, 2064
1.6. Asset (Money) Laundering Prevention Act, 2064 and Regulation 2073
1.7. The Act on Recovery of Debts of Banks and Financial Institutions, 2058 and Regulation 2059
1.8. Electronic Transactions Act, 2063
1.9. ADBL Employee Bylaws, 2062

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द्वितीय पत्र : Core Computer Concepts & Databases, OS, Compilers & Graphics

Section (A) Core Computer Science Concepts 50 Marks (2x5+4x10=50)

1. Computer Networks

1.1. Protocol stack, switching

1.2. Link Layer: services, error detection and correction, multiple access protocols, LAN addressing and ARP (Address Resolution Protocol), Ethernet, CSMS/CD multiple access protocol, Hubs, Bridges, and Switches, Wireless LANs, PPP (Point to Point Protocol), Wide area protocols

1.3. Network Layer: services, datagram and virtual circuits, routing principles and algorithms, Internet Protocol (IP), IP addressing, IP transport, fragmentation and assembly, ICMP (Internet Control Message Protocol), routing on the internet, RIP (Routing Information Protocol), OSPF (Open Shortest Path First), router internals, IPv6

1.4. Transport Layer: principles, multiplexing and de-multiplexing, UDP, TCP, flow control, principles of congestion control, TCP congestion control

1.5. Application Layer: Web and Web caching, FTP (File Transfer Protocol), Electronic mail, DNS (Domain Name Service), socket programming

1.6. Distributed system, Clusters, Network Security, Disaster Recovery, Data Storage Techniques: Clustering, NAS, SAN

2. Structured and Object-Oriented Programming

2.1. Data types, ADT

2.2. Operators, variables and assignments, control structures, Procedure/function

2.3. Class definitions, encapsulation, inheritance, object composition, Polymorphism

2.4. Pattern and framework

2.5. Programming with C, C++, Java

3. Artificial Intelligence

3.1. Search

3.2. Natural Language Processing

3.3. Game Playing

3.4. Learning

3.5. Automated reasoning

3.6. Planning

3.7. Vision and Robotics

4. Data Structures and Algorithms

4.1. General concepts: Abstract data types, Time and space analysis of algorithms, Big Oh and theta notations, Average, best and worst case analysis

4.2. Linear data structures: Lists, Linked Lists, Stacks, Queues, Priority Queue

4.3. Trees: General and binary trees, Representations and traversals, Binary search trees, balancing trees, AVL trees, 2-3 trees, red-black trees, self-adjusting trees, Splay Trees

4.4. Algorithm design techniques: Greedy methods, Priority queue search, Exhaustive search, Divide and conquer, Dynamic programming, Backtracking and Recursion

4.5. Indexing Methods: Hashing Trees, Suffix Trees

4.6. Graph algorithms: Depth-first Search and Breadth-first Search, Shortest Path Problems, Minimum Spanning Trees, Directed Acyclic Graphs

4.7. Searching, Merging and Sorting

5. Computer Architecture and Organization and Micro-Processors

5.1. Basic Structures: sequential circuits, design procedure, state table and state diagram, Von Neumann / Harvard architecture, RISC/CISC architecture
5.2. Addressing Methods and Programs, representation of data, arithmetic operations, basic operational concepts, bus structures, instruction cycle and excitation cycle
5.3. Processing Unit: instruction formats, arithmetic and logical instruction
5.4. Addressing modes
5.5. Input Output Organization: I/O programming, memory mapped I/O, basic interrupt system, DMA
5.6. Memory Systems
5.7. 808X and Intel microprocessors: programming and interfacing

6. Digital Design

6.1. Number Systems, Digital and Analog Systems
6.2. Logic Elements
6.3. Combinational Logic Circuits
6.4. Sequential Logic
6.5. Arithmetic Circuits
6.6. MSI Logic Circuits
6.7. Counters and Registers
6.8. IC logic families
6.9. Interfacing with Analog Devices
6.10. Memory Devices

7. Software Engineering Principles (System Analysis and Design)

7.1. Software process: Software Process models, risk-driven approaches
7.2. Software Project Management: Relationship to lifecycle, project planning, project control, project organization, risk management, cost models, configuration management, version control, quality assurance, metrics
7.3. Software requirements: Requirements analysis, requirements solicitation, analysis tools, requirements definition, requirements specification, static and dynamic specifications, requirements review
7.4. Software design: Design for reuse, design for change, design notations, design evaluation and validation, Software Architecture, Context diagram and DFD, Object Modeling: Object-Oriented Concept, Object Structure, Object Feature, Class and Object, Use Case Diagram, State Diagram, Event Flow Diagram
7.5. Implementation: Programming standards and procedures, modularity, data abstraction, static analysis, unit testing, integration testing, regression testing, tools for testing, fault tolerance.
7.6. Maintenance: The maintenance problem, the nature of maintenance, planning for maintenance
7.7. SE issues: Formal methods, tools and environments for software engineering, role of programming paradigm, process maturity and Improvement, ISO standards, SEI-CMM, CASE tools

8. Management Information System (MIS)

8.1. Concept, Types, Objectives and Implementation of MIS
8.2. Components of MIS
8.3. Role and Importance of MIS in Banking Sector
8.4. MIS and Decision-Making
8.5. Emerging Trends in MIS
8.6. Ethics, Security, and Privacy in MIS

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Section (B) Databases, OS, Computation, Compilers, Graphics 50 Marks (2x5+4x10=50)

1 Database Management System and Database Design

1.1 Introduction: The relational model, ER model, SQL, Functional dependency and relational database design, File structure

1.2 Transaction Management and Concurrency Control: Concurrent execution of the user programs, transactions, Concurrency control techniques

1.3 Crash Recovery: Types of failure, Recovery techniques

1.4 Query Processing and Optimization

1.5 Indexing: Hash based indexing, Tree based indexing

1.6 Distributed Database Systems and Object oriented database system

1.7 Data Mining and Data Warehousing

1.8 Security Management System

1.9 SQL and Embedded SQL, Writing Basic SQL SELECT Statements, Restricting and Sorting data, Single Row Functions, Displaying Data from Multiple Tables, Aggregation of Data Using Group Functions, Sub Queries, Manipulating Data and Creating & Managing Tables, Creating Views and Controlling User Access

1.10 Database Design: Logical Design, Conceptual Design, Mapping Conceptual to Logical, Pragmatic issues, Physical Design, Integrity and Correctness, Relational Algebra, Relational Calculus. Normalization: 1NF, 2NF, 3NF, BCNF, 4NF, 5NF, DKNF, Database Design with major RDBMS products: Oracle, Sybase, DB2, SQL Server

2 Operating System

2.1. Processing and Threads: Symmetric Multiprocessing, Micro-kernels, Concurrency, Mutual Exclusion and Synchronization, Deadlock

2.2. Scheduling

2.3. Memory Management

2.4. Input Output and Files: I/O devices and its organization, Principles of I/O software and hardware, Disks, Files and directories organization, File System Implementation

2.5. Distributed Systems: Distributed Message passing, RPC, Client/Server Computing, Clusters

2.6. Security: Authentication and Access Authorization, System Flaws and Attacks, Trusted System

2.7. Common Operating Systems: MS-DOS, Windows Family of Products, Unix Family of Products, Linux Family of Products, Windows Networking, Windows Architecture, Linux Architecture, Troubleshooting Windows, & Linux, Managing Network Printing, Managing Hard Disks and Partitions, Monitoring and Troubleshooting Windows, Users, Groups and Permission on Linux and Windows

3 Theory of Computation

3.1. BNF, Languages, Grammars

3.2. DFA and NDFA, regular expressions, regular grammars

3.3. Closure, homomorphism

3.4. Pigeonhole principle, pumping lemma

3.5. CFGs, Parsing and ambiguity, Pushdown automata, NPDAs & CFGs

3.6. Pumping lemma

3.7. Turing machines

3.8. Recursively enumerable languages, unrestricted grammars

3.9. The Chomsky hierarchy, Undecidable problems, Church's Thesis

3.10. Complexity Theory, P and NP

4 Compiler Design

4.1 The Structure of a Compiler

4.2 Lexical Analyzer

4.3 Top down Parsing/Bottom up Parsing
4.4 Syntax Directed Translation
4.5 Types and Type Checking
4.6 Run-Time Storage Administration
4.7 Intermediate Code Generation
4.8 Data-Flow Analysis and Code Optimizations
4.9 Architecture and recent development on compilers

5 Computer Graphics
5.1 Graphics Concepts
5.2 Input devices and techniques
5.3 Basic raster graphics algorithms and primitives
5.4 Scan conversion
5.5 Graphics hardware
5.6 2D geometrical transformations and viewing
5.7 3D geometry and viewing
5.8 Hierarchical modeling
5.9 Projections
5.10 Hidden surface removal
5.11 Shading and rendering

6 Principles of Electronics Communications
6.1 Block Diagram of analog/digital communication system
6.2 Analog and Digital modulation techniques
6.3 Fundamentals of Error Detection and Correction
6.4 Performance evaluation of analog and digital communication systems: SNR and BER

7 IT in Nepal and Emerging Technologies
7.1 History of IT in Nepal
7.2 ICT Policy, 2072
7.3 NRB's Information Technology Policy & Guidelines 2012
7.4 Simulation and Modeling
7.5 Cryptography, Digital Signature
7.6 Artificial neural network and computer vision
7.7 Speech signal processing
7.8 Adaptive web technology
7.9 E-commerce, e-Governance
7.10 Multimedia, Image processing
7.11 GIS, Remote sensing, GPS

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