

प्रथम पत्र (Paper – I)

Banking and Organizational Management

Section – A (50 Marks)

1 Banking and Related Institutions

- 1.1 The Central Bank: Nepal Rastra Bank
- 1.2 Commercial Banking in Nepal: Evolution and Status
- 1.3 Rastriya Banijya Bank: Role, Contribution, Challenges and Prospects
- 1.4 Banks and Financial Institutions in Nepal: Role, Financial Indicators
- 1.5 Non-Banking Financial Institutions in Nepal: Role, Performance
- 1.6 Credit Information Center Ltd (CICL)
- 1.7 Nepal Clearing House Ltd (NCHL)
- 1.8 Credit Rating Agencies

2 Banking Related Laws and Directives

- 2.1 Nepal Rastra Bank Act, 2058
- 2.2 Bank and Financial Institution Act, 2073
- 2.3 Payment and Settlement Act, 2075
- 2.4 Money Laundering Prevention Act, 2064
- 2.5 Banking Offence and Punishment Act, 2064
- 2.6 Foreign Exchange (Regulation) Act, 2019
- 2.7 Electronic Transaction Act, 2063
- 2.8 Negotiable Instruments Act, 2034
- 2.9 The Act on Recovery of Debts of Banks and Financial Institutions, 2058
- 2.10 Unified Directives and Circulars issued by Nepal Rastra Bank for Banks and Financial Institutions in Nepal

3 Other Related Laws and Bylaws

- 3.1 Company Act, 2063
- 3.2 Income Tax Act, 2058
- 3.3 Labor Act, 2074
- 3.4 Public Procurement Act, 2063
- 3.5 Bonus Act, 2030
- 3.6 National Information and Communication Technology Policy, 2015 (2072 BS)
- 3.7 National Cyber Security Policy, 2023 (2080 BS)
- 3.8 Right to Information Act, 2064
- 3.9 राष्ट्रिय वाणिज्य बैंक, कर्मचारी सेवा विनियमावली, २०७०

राष्ट्रीय वाणिज्य बैंक लिमिटेड
तह ढ, प्रबन्धक (सूचना प्रविधि) (प्रशासन सेवा, सूचना प्रविधि समूह)
खुला प्रतियोगितात्मक लिखित परिक्षाको पाठ्यक्रम

Section – B (50 Marks)

4 Financial Markets and Banking Operation

- 4.1 Basic Understanding of Financial Markets
- 4.2 Interest Rates Determination
- 4.3 Interest Rates Structures, Yield Curves
- 4.4 Commercial Banking Operations
 - 4.4.1 Sources and Uses of Funds by Banks
 - 4.4.2 Off-Balance Sheet Activities
 - 4.4.3 Payment, Settlement and Clearing
 - 4.4.4 International Banking

5 Organizational Management and Planning

- 5.1 Human Resource Management, Succession Planning, Knowledge Management
- 5.2 Stress Management, Conflict Management, Time Management
- 5.3 Strategic Management
- 5.4 Risk Management
- 5.5 Business Intelligence
- 5.6 Business Continuity Plan (BCP)
- 5.7 Project Appraisal, Financial Statement Analysis and Break-even Analysis
- 5.8 Sources and Uses of Funds
- 5.9 Principles and Utility of Budget

6 Organizational Behavior and Development

- 6.1 Employee Motivation
- 6.2 Performance Monitoring and Evaluation
- 6.3 Management Information System
- 6.4 Communication: Skill, Approach, Issues and Challenges
- 6.5 Decision Making: Process, Effectiveness and Efficiency
- 6.6 Managing Organizational Changes and Innovations
- 6.7 Leadership Development
- 6.8 Entrepreneurship Skills and Development
- 6.9 Emotional Intelligence, Empathy
- 6.10 Grievance Handling

Subject	Section	Marks	Unit	Question Model
Banking and Organizational Management	A	50	1	5 Questions × 10 Marks
			2	
			3	
	B	50	4	5 Questions × 10 Marks
			5	
			6	

द्वितीय पत्र (Paper – II) :

**Information Technology Networking, System Security and Management
Section – A (50 Marks)**

1. Computer Network

- 1.1. Introduction of Computer Network, Network Architecture, LAN architecture, Error Detection and Correction Techniques
- 1.2. OSI and TCP reference model, network topologies, Network components: Repeaters, Hub, Switch and Router, Client Server and Peer2Peer model
- 1.3. Email and Internet Technology, Common TCP and UDP ports, protocols, and their purpose
- 1.4. Application of Network utilities (e.g. IPCONFIG, PING, TRACERT, NSLOOKUP), IP Addressing, subnet mask, gateway, DNS, WINS, static and automatic address assignment
- 1.5. Switching and Routing Techniques, Multiplexing and de-multiplexing, UDP, TCP, flow control, principles of congestion control, TCP congestion control
- 1.6. Remote Networking: Remote Access Protocols, VPN Technologies, VLAN, WAN Transmission Technologies
- 1.7. Security and Privacy: Privacy and Security issues in Network, Distributed System, Firewalls, Advanced storage techniques: NAS and SAN, Disaster Recovery Mechanism

2. Cybersecurity /Information Security

- 2.1. Introduction of Information Security: C.I.A., Non-repudiation, Cybersecurity and Information Security, Hacking, Cybercrime, common Cyber threats in financial sector
- 2.2. Cryptography: Symmetric and Asymmetric Key Cryptography, Data Encryption Standard, Digital Signature and Digital Certificate, authentication protocols, Network and Application Security: Fundamental of Network Security, IPS, IDS, Firewall, WAF, VPN, DMZ, NAT, Proxy Firewall, Wireless Security, Remote Access Security, SSL/TLS, SET, Email Security, Security Principle in Software Design
- 2.3. Information Security and IT Risk Management: Threats, Vulnerabilities and IT Risk, Access Control Mechanism, Authentication and Authorization, Password Security
- 2.4. Concept of IS Audit, VAPT, Incident Handling, IT Risk Management, Disaster Recovery

3. Operating System

- 3.1. Introduction of Operating System (OS): Development and Functions of Operating System, Functional Architecture of OS, Types of OS, Network and Distributed OS
- 3.2. Processes and Threads: Symmetric Multiprocessing, Micro-kernels, Concurrency, Mutual Exclusion and Synchronization, Inter Process Communications, Semaphores. Features of Process Scheduling; List of the features of Inter-Process Communication and Deadlock scheduling
- 3.3. Disk Allocation and Scheduling Methods, Basic Memory Management strategies, Virtual Memory Management Techniques, Definition of a Process and Features of the Process Management System
- 3.4. Concepts of Parallel and Distributed Processing, Security Threats to Operating Systems, authentication and access authorization, system flaws and attacks, trusted system
- 3.5. 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, Interrupt handling

4. Emerging Technology

- 4.1. Basics of Cloud Computing, Edge Computing, AI and Machine Learning
- 4.2. Cloud Technology: IaaS, Paas, SaaS, Types of Cloud Services, Virtualization
- 4.3. Introduction of Fintech, API, Big Data, Machine Learning, IoT, DLT, QR Code and its application

Section – B (50 Marks)

5. Data Structure and Database Management System

- 5.1. Introduction of Data Structures, Abstract Data types, Linear Data Structure
- 5.2. Trees: General and Binary Trees, Traversal, Implementations, Binary Search Trees, Balanced Search Trees, AVL Trees, 2-3 Trees, Red-black Trees
- 5.3. Indexing Methods, Hashing Trees, Suffix Trees, Time and space complexity, Bog O' Notation, Analysis of Simple Recursive and Non-recursive Algorithms
- 5.4. Searching, Merging and Sorting, Divide-and-Conquer, Dynamic Programming, Greedy Methods, Backtracking, Graph algorithms: DFS, BFS, Shortest Path Problems, Minimum Spanning Trees, Directed Acyclic Graphs
- 5.5. Introduction of DBMS: Relational Database Model, Functional dependency, Integrity, RDBMS, Data Mining and Data Warehousing
- 5.6. SQL and Embedded SQL: Writing SQL Queries, Restricting and Sorting Data, Sub Queries, Manipulating Data and Creating & Managing Tables, Creating Views and Controlling User Access, Using Set Operators, Date time Function
- 5.7. Relational Database Design, ER Diagram, Data Flow diagram (DFD), Keys, Normalizations (1NF, 2NF, 3NF, BCNF, 4NF) and functional dependencies, Basic Concept of major RDBMS products (MSSQL, Oracle, PostgreSQL etc.)
- 5.8. Introduction of functions, procedures, triggers and rules in DBMS, Transaction Management and Concurrency Control techniques, Crash Recovery: Types of Failure, Recovery Techniques
- 5.9. Query Processing and Optimization

6. E-business and Information System

- 6.1. Introduction to E-Commerce and M-Commerce, E-Commerce Strategies, Applications
- 6.2. E-Commerce Security Issues, Success Models of E-Commerce
- 6.3. E-Business and underlying technology: B2B, B2C, B2E, C2C, G2G, G2C
- 6.4. Principles of Electronic Payment, Strategies & Systems
- 6.5. Electronic funds transfer, e-payment gateways, Electronic Payment System (EPS), Mobile Banking, E-Banking, Internet Banking, EDI Methods, SWIFT, RTGS, IPS, connectIPS, ECC
- 6.6. Information System Fundamentals, Information System Development, DSS, ERP, CRM, SRM, Application of MIS and social impact of IS

7. Software Engineering and Software Architecture

- 7.1. System Designers and system Builders, System Analysts, System development life Cycle
- 7.2. Prototyping, Spiral, Waterfall, Rapid Application Development (RAD), Joint Application Development (JAD), DevOps, Agile development, Object oriented system development
- 7.3. Requirements analysis: Representing System Analysis Model, Requirement Model, Design Model
- 7.4. Introduction of Object-oriented system analysis and design, E-R Diagram, Context Diagram, DFD, UML diagrams
- 7.5. Software Architecture: physical vs logical architecture, module viewpoints and styles, architecture pattern and framework
- 7.6. Application Architecture: Centralized, Distributed, Client Server, peer to peer and Push, web-based architecture: Java Beans, Ms. Dot Net, SOA
- 7.7. Tools and Environment for software engineering, roles of programming paradigm, ISO standards, Software Cost Estimation: COCOMO model

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8. IT adoption in Nepal

- 8.1. Technology Adoption by Banking Sector of Nepal
- 8.2. Ethics and professionalism in IT
- 8.3. Fundamental of Licenses, Agreements and Intellectual Property Right, Copyright, Trademark, Patent
- 8.4. NRB IT Guidelines 2012
- 8.5. NRB IT Resilience Guideline, 2023

Syllabus Division

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Information Technology Networking, System Security and Management	A	50	1	3 Question x 10 Marks 1 Question x 20 Marks
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	B	50	5	3 Question x 10 Marks 1 Question x 20 Marks
			6	
			7	
			8	