नेपाल राष्ट्र बैंक
केन्द्रीय कार्यालय

प्राविधिक सेवा, सूचना प्रविधि समूह तर्फको सहायक (सहायक द्वितीय) पदको लागि लिईने लिखित तथा प्रयोगात्मक परीक्षाको पाठ्यक्रम तथा परीक्षा योजना ।

प्रथम चरण : लिखित परीक्षा				पूर्णाङ्क २००
पत्र	विषय	पूर्णाङ्क	समय	परीक्षा प्रणाली
प्रथम	वस्तुगत बहुवैकल्पिक प्रश्न	५०	४५ मिनेट	वस्तुगत बहुवैकल्पिक प्रश्न (५० प्रश्न × १ अंक)
द्वितीय	विषयगत	१००	२:३० घण्टा	विषयगत (२० प्रश्न × ५ अंक)
द्वितीय चरण : प्रयोगात्मक परीक्षा				पूर्णाङ्क ५०
प्रयोगात्मक परीक्षा		५०	१:१५ घण्टा	१० वटा समस्या कम्प्युटरमा समाधान गर्ने
तृतीय चरण : अन्तर्वार्ता				पूर्णाङ्क ३०

लिखित परीक्षाको पाठ्यक्रमको विवरण निम्नानुसार रहेको छ ।

1. **Computer Fundamentals**
    1.1. Computer :- Introduction, Characteristics, Types and Applications of Computer
    1.2. Overview of a computer system:-
        1.2.1. Input Unit: Keyboard, Mouse and Scanner
        1.2.2. CPU: Arithmetic Logic Unit, Control Unit, Memory Unit
        1.2.3. Output Unit: Monitor, Printer, etc.
        1.2.4. Storage devices: Primary Memory (RAM, ROM, Cache, Register) & Auxiliary Memory (Floppy Disk, Hard Disk, Compact Disk, DVD, Flash disk)
        1.2.5. Others: Network card, Modem, Sound card, etc.
    1.3. Software:- Definition, Types of Software and Programming Language
    1.4. Introduction to ASCII, Unicode standards and font types
    1.5. Security
        1.5.1. Physical Security of Information Technology Infrastructure
        1.5.2. Digital security: Antivirus, Firewalls, Antispyware, User authentication types, IPS/IDS
        1.5.3. Common security threats: Social engineering, Malware, Phishing, Spyware, Viruses, Worms, Trojans, Distributed Denial of Services
2. **Hardware Maintenance and Troubleshooting**
    2.1. Configure Power Supply, Motherboard and System Devices, BIOS settings, Mouse, Keyboard, Scanner, Speaker, Storage Devices, Monitors (CRT, LCD, LED), Printers (Laser, Inkjet and Bubble jet), UPS
    2.2. Motherboard components, their properties and purposes (RAM slots, Chipsets, Jumpers, CPU sockets, etc)
    2.3. Installing and configuring expansion cards (Sound cards, Network cards, Graphics cards, etc)

2.4. Installing and configuring storage devices, Management of Hard Disk (Partition and Formatting, Shrinking),

2.5. Types and features of display devices (CRT, LCD, LED, Plasma)

2.6. Connector types (BNC, RJ45, HDMI) and associated cables

2.7. Troubleshooting of computer and its peripherals (keyboard, mouse, printer, scanner, speaker)

2.8. Troubleshooting of connectivity (cables, network, etc)

2.9. Troubleshooting of memory, processor, storage, display

2.10. Installation and Troubleshooting of operating system (Windows, Linux etc.)

2.11. Installation of Device Drivers, Configuration and Installation of Application Programs and System Restore.

2.12. Backup and Disaster Recovery: Finding Risk of Data Loss, Backup Methods, Backup Devices and Media, Backup Scheduling, Recovery of Data.

3. **Basic electronics**

3.1. Difference between vacuum tube and semiconductor

3.2. Working principal and use of:- P-N junction diode, LED, Zener diode, light emitting diode, Resisters, Bipolar junction transistor

3.3. Forward and reverse biasing of PN junction diode, Effects of Temperature and Junction Capacitance

3.4. Basic concept of integrated circuits and its use

3.5. Transistors (npn and pnp) - Types, Construction, Working principle as an amplifier and characteristics.

3.6. Field Effect Transistor (JFET and MOSFETS) - Types, construction, working principles as an amplifier and characteristics.

4. **Computer Architecture**

4.1. Basic computer architecture, Registers, Memory Hierarchy, Cache Memory, External Memory, Memory Management, Direct & Indirect addressing

4.2. Organization of hard disk, RAID, Interrupt, Auxiliary Memory, Virtual Memory-Address Space, Paging

4.3. CPU Architecture, Parallel Processing, , CISC, RISC, Control Unit

4.4. I/O Management, I/O Interface, I/O Requests Handling, I/O Devices

5. **Operating System**

5.1. Introduction, Types and Functions of operating systems,

5.2. 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

5.3. Common Operating Systems:

5.3.1. Installation, backup, recovery and optimization of operating systems: MS-DOS, Windows Family of Products, Unix Family of Products, Linux Family of Products,

5.3.2. 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. Sharing file, folder, printer, application, etc.

5.3.3. Identifying and managing Security Threats to Operating Systems

6. **Computer Networks**

6.1. Introduction to computer network, Network architecture (LAN, MAN, WAN), Client server and peer-to-peer model, LAN architecture/standards (Bus, Ring, Star).

6.2. Connectivity and media: Network cables and connectors

6.3. OSI Reference model, TCP/IP Reference model,

6.4. Network Hardware (NIC, Repeater, Hub, Bridge, Access Points, Switch, Router, Gateway), their functions, features and configuration.

6.5. Common TCP and UDP ports, protocols, and their purpose

6.6. Application of Network utilities (e.g. IPCONFIG, PING, TRACERT, NSLOOKUP)

6.7. Network cabling and cable testing

6.8. IP Addressing, subnet mask, gateway, DNS, WINS, static and automatic address assignment

6.9. Basic Switching and Routing Techniques

6.10. multiplexing and de-multiplexing, UDP, TCP, flow control, principles of congestion control, TCP congestion control

6.11. Web and Web caching, FTP (File Transfer Protocol), Electronic mail, DNS (Domain Name Service),

6.12. Network security: Cryptography, Digital Signature, Firewalls, Virtual Private Network (VPN), Data Encryption Standard, Disaster Recovery, Data Storage Techniques: Clustering, NAS, SAN

7. Multimedia Technology

7.1. Sound / Audio System, Image and Graphics, Video and Animation, Data Compression, Teleconference, Data Synchronization

8. Word Processing:

8.1. Concept of word processing

8.2. Familiarity with the MS-Word: Starting Word, Show Or Hide Tool bars, Move Toolbar and Menu Bar, Use Shortcut Menu Using Right mouse Click, Use Shortcut key, Creating, Opening, Saving and closing the documents, Inserting and Overtyping Text, Viewing a Document, Selection Techniques, Moving and Copying Text, Deleting Text, Using UNDO/REDO, Getting help: Use of Office Assistant Help, Contents Help

8.3. Formatting font: Changing the Font and Font Size, Character Formatting, Using Font Dialog Box, using Format Painter, Changing Case, Using Drop Caps, Using Text Animation Effects

8.4. Formatting paragraph: Aligning Text In A Document, Indenting, Creating Bulleted and Numbered Lists, Adjusting Line Or Paragraph Spacing, Adding Border And Shading To Paragraph, Using Tab

8.5. Formatting Page: Setting Page Margins, Paper Size and Page Orientation, Creating Page Break, Creating Section   Break, Creating Headers,   Footers and Page Numbers

8.6. Proofing your document, previewing and printing your document

8.7. Working with tables: Creating, Selecting, resizing a Tables, Adding and Deleting Columns and Row, Formatting Tables, Performing Calculation

8.8. Working with styles: Creating Styles, Applying A Different Style. Managing Styles

8.9. Working with graphics: Inserting And Formatting Text Boxes, Adding Auto Shape, Inserting Pictures And Word Art, Creating Watermark

8.10. Creating mail merge and labels: Creating Mail Merge, Selecting Specific Records To Merge, Creating Lables

8.11. Working with columns: Creating Columns, Formatting Columns

8.12. Using templates and macros, Working with outlines and long documents

8.13. Creating Footnotes And Endnotes, Creating a Table of Contents

8.14. Organizing a Document in Outline View

8.15. Working with object linking and embedding (ole): Creating Linked And Embedded Object, Editing Linked And Embedded Object

8.16. Working with online forms, Creating web pages with word

9. **Spreadsheet**
    9.1. Concept of electronic spreadsheet
    9.2. Organization of Excel Spreadsheet (Cell, Rows, Columns, Worksheet, Workbook and Workspace), Getting Familiar with the Excel Screen and help, Moving Around Your Cursor, Selecting Range In Workbook, Entering Data into Worksheet
    9.3. Performing calculations: Using Simple Formula and Simple functions, Using Auto Calculate and Labels.
    9.4. Managing worksheet and workbook information
    9.5. Managing Worksheet Information: Cut and Paste, 'Drag And Drop, Copy And Paste, Drag And Drop, Insert A New Row, Insert Multiple Rows, Delete Rows, Insert A New Column, Insert Multiple Columns, Delete Columns, Insert A Cell
    9.6. Formatting worksheet: Adjusting Column Width/ Row Height, Formatting Cell Using Toolbar; Formatting Cell Using Menu Options
    9.7. Creating chart: Change Chart Title, X axis and Y axis Title, Change Gridlines Change Legend Options; Change Data Labels; Add Data Table Delete Data Series; Add Data Series Using Mouse, Delete Chart; Formatting Chart
    9.8. Setting up page and print: Setting Up Page, Change Page Orientation, Change Scaling, Change Paper Size, Change Page Margin, Align To Center of Page, Add Header! Footer previewing and Printing, Print preview, Print Active Sheets, Print Selected Cells, Print Chart
    9.9. Validating and protecting worksheet and workbook: Protecting Worksheet Style And Content, Protecting Your Workbook From Unauthorized Users Access
    9.10. Using workgroup features: Add Comment into a Cell, Show/Hide Comment Indicators, Edit And Delete Comments Sharing Workbooks: Enable Workbook Sharing, Disable Workbook Sharing, Copies of Shared Workbook, Track Changes in Shared Workbook, Accept or Reject Changes
    9.11. Creating pivot table and analyzing data: Creating Pivot Table, Updating pivot Table, Modifying Calculated Field in pivot Table, Creating Chart From Pivot Table

10. **Presentation System**
    10.1. Introduction to MS-Power Point
    10.2. Creating, Opening & saving presentation
    10.3. Formatting Slides
    10.4. Slide Show and Animation
    10.5. Inserting Clip Art, Picture, Tables. Chart, Graphs, Organization Chart, Etc.
    10.6. Exporting and printing slides

11. **Database Management System**
    11.1. Introduction to Database and Database Management System
    11.2. Database design and Normalization
    11.3. Basic concept of Tables, Fields, Records, Relationships and Indexing
    11.4. Introduction to database applications
    11.5. Common data types
    11.6. Familiarity with Structured Query Language statements for manipulating database objects and information from database
    11.7. Creating, modifying and deleting Query/forms/reports

12. **Web Technology**
    12.1. Introduction to Web Page and Content Management System
    12.2. HTML: Understanding Browsers, HTML Page Structure, Defining Web Layout, HTML Tags, Working with text/images/Tables/list/Links/frames, forms and its controls (Radio

button, Check box, Text box, Drop-down list etc), knowing get and post action, Use attribute Size/Max-length/Name attributes, Add/Submit/Reset Button;

12.3. Script: Introduction to various types of script, working with variables & functions, Working with alert, confirm and prompt, Understanding loop, arrays, Creating rollover image, Working with operators;

12.4. Style sheet : Introduction to Cascading Style Sheets, Types of Style Sheets (Inline, Internal and External), Class Selector, ID Selector Absolute Relative Positioning, Inline menu, CSS Layout Design, PSD to CSS Conversion

12.5. Familiarity XML

12.6. Concept of Web server and Proxy server

12.7. Social media in governance

13. Banking and Relevant Laws

13.1. Nepal Rastra Bank Act, 2058

13.2. Bank And Financial Institutions Act, 2073

13.3. Electronic Transaction Act, 2063

13.4. NRB Employees Bylaws, 2068

13.5. ICT Policy, 2072

13.6. Nepal Rastra Bank- IT Guidelines and IT code of conduct.

13.7. Nepal Rastra Bank- history, organizational structure, objectives, functions, duties and rights

13.8. Nepalese Banking and Financial System : History, Development and Structure

लिखित परीक्षामा सफल हुने उम्मेदवारहरुको लागि लिईने प्रयोगात्मक परीक्षाको पाठ्यक्रम ।

<u>प्रयोगात्मक परीक्षा</u>   पूर्णाङ्कः ५०   उत्तीर्णाङ्क : २५   समयः १ घण्टा १५ मिनेट

प्रयोगात्मक परीक्षाको पाठ्क्रमको विस्तृत विवरण निम्नानुसार रहेको छ ।

S. No.	Topics	No. of questions	Marks
1.	Devnagari Typing*	1	5
2.	English Typing	1	5
3.	Hardware Maintenance and Troubleshooting	1	5
4.	Operating System	1	5
5.	Networking	1	5
6.	Word Processing	1	8
7.	Electronic Spreadsheet	1	5
8.	Database Management System	1	5
9.	Presentation System	1	2
10.	Web Technology	1	5
Total			50

The End