

CDS and Clearing Limited
Thapathali, Kathmandu
7th Level (Technical)
Syllabus

Modality of Examination:

The examination comprises of two papers, each carrying 100 marks. The first paper is General Overview and second paper is on specialized subject matter on Database, System and Network Administration. Candidates may opt for any of the specialized subject matter.

The nature of questions will require objective type and essay type questions. 40 percent weight will be given for Paper I General Paper and 60 percent weight will be given for Paper II specialization Paper.

The detail syllabus of paper I is given below:

Paper I: General

- 1. Computer Basics (Hardware and Software)**
 - i. General Components of Computers e.g. CPU, Monitor, Keyboard, Mouse, Printers, Printers, Hard disk, Floppy Drive, CD drives etc.
 - ii. Software Types (System, Utility and Application)
 - iii. Troubleshooting methods
 - iv. Identifying problems
 - v. General precautions
- 2. Operating Systems**
 - i. History & concepts of operating system
 - ii. Computer System Structures
 - iii. File Systems
 - iv. Distributed Systems
 - v. Microsoft Windows Operating System, Control Panel (Fonts, Add/Remove Programs, Printers etc.)
 - vi. Hands-on with Microsoft Windows 2008, UNIX and Linux.
- 3. Computer Networks**
 - i. History and Evolution
 - ii. Computer communication architecture
 - iii. Network Topologies
 - iv. Communication Media
 - v. LAN/WAN/MAN
 - vi. Internet & Intranet
 - vii. Network Protocols

- viii. IP addressing & Routing
- ix. Standards Related to data communication
- 4. Document and Spreadsheet**
 - a. MS Word
 - i. Creating and Editing Document
 - ii. Formatting Text
 - iii. Working with List and Tables
 - iv. Producing a mass mailing document.
 - b. MS Excel
 - i. Creating and working with single/ multiple workbooks and worksheets.
 - ii. Creating Formulas
 - iii. Working with charts
 - iv. Managing Worksheet data
 - v. Analyzing data
 - vi. Working with Functions
- 5. Database Management System**
 - i. Introduction to RDBMS and file system.
 - ii. SQL
 - iii. Normalization
 - iv. Data Concept & Recovery
 - v. Hands-on with Microsoft SQL Database Management System, Oracle Database Management System.
- 6. Internet , e-mail and Viruses**
 - i. Basic Concept of Internet and e-mail
 - ii. Dial-up and Direct connection
 - iii. Concept of WWW, IP address, URL
 - iv. Basic knowledge of virus, worms and spy-wares.
- 7. IT Policy**
 - i. Basic concept of IT policy in Nepal
 - ii. Electronic Transaction Act
 - iii. E-Commerce
 - iv. Software Piracy, cyber crime
- 8. Security**
 - i. Concepts of Cryptography, Symmetric / Asymmetric key encryption
 - ii. Information Security
 - iii. Firewall & Design Principles
 - iv. Intruders & Virus Related Threats
 - v. Attackers and attacks
 - vi. Virus/worms/Spyware
- 9. Software Engineering**
 - i. Project Management & software project planning.
 - ii. Software quality assurance & risk analysis.
 - iii. Software Testing Techniques
 - iv. Object Oriented software engineering
 - v. Client/Server software engineering
 - vi. web engineering, reengineering

10. Computer Architecture

- i. Bus Structures
- ii. Basic I/O Operations
- iii. Execution of a complete Instruction
- iv. CPU & Memory structures
- v. Virtual Machines

11. Client Server Computing

- i. Client Server Concepts and Architecture
- ii. Network Operating System, Server Operating Systems.
- iii. Network protection devices
- iv. LAN and network management Issues.
- v. Web Security

12. Stock Exchange and Central Depository Concepts

- i. History of Nepal Stock Exchange Limited, Basic functions of Nepal Stock Exchange Limited
- ii. Roles and Duties of a Stock Broker, Concept of Central Depository System
- iii. Electronic Transaction Act, Central Depository Services Regulation, Securities Act.
- iv. Basic functions of a stock exchange (Listing, Trading, and Clearing & Settlement).
- v. Transfer of securities.
- vi. Roles and Duties of a Stock Broker.
- vii. Brief overview of Nepal Stock Exchange, Market Halt Rules, NEPSE Index, Group A classification.
- viii. Brief overview of Central Depository System, Role and Duties of a Depository Participants.

13. Acts & Regulations

- i. Securities Act - 2063, Central Depository Service Regulation-2067

The detail syllabus of paper II is given below:

Paper II: Specialization

Database

1. Database Concepts

- Relational Database Management Systems
- SQL and PL/SQL
- Oracle Architecture
- Managing Tablespaces
- Schema Management
- Transaction Management

2. Database Implementation

- Planning

- Software Installation
- Database Creation
- User management and Data Loading
- 3. Connectivity and User Management**
 - Connectivity and Networking
 - User Management and Database Security
- 4. Database Support**
 - Taking Control
 - Monitoring
 - Fixing Problems
 - Backups
 - Recovery
 - Database Maintenance
- 5. Database Tuning**
 - Instance Tuning
 - SQL Tuning

Networks

- 1. Networking Fundamentals**
 - History of Networking
 - Network Topologies
 - LAN Technologies
 - WAN Technologies
 - Wireless Networks
- 2. Network Models**
 - OSI and TCP/IP models
 - Cisco Hierarchical model
 - Telnet, FTP, SSH, CDP, DHCP etc.
- 3. IP addressing & Subnetting**
 - IP address components
 - Subnetting
 - VLSM
 - IPv6
- 4. Switch Operation and Configuration**
 - Bridging and Switching
 - Spanning Tree Protocol
 - VLAN Concepts
 - Trunking

- VTP modes
- L3 Switch
- Cisco Switch Configuration Techniques

5. Routing

- Routing & Routed Protocols
- Static & Dynamic Routing
- IGRP, EIGRP, OSPF
- Cisco Router Configuration Techniques

6. Security

- Threats and Vulnerabilities
- Access Control Lists
- Network Address Translation (NAT)
- Port Address Translation (PAT)
- Intrusion Prevention Mechanism

System Administrator

1. Introduction Operating Systems

- Operating System structure and capability overview
- History
 - Linux/ UNIX and Microsoft Windows Server 2008
- Standards
 - Linux /UNIX and Microsoft Windows Server 2008

2. File Systems

- File system layout and concept
- Directory Structure
- Managing Files
- File Characteristics
- File Permissions
- Linux/Unix and Windows File Systems Concepts and Management

3. Process and Memory Management

- Process overview
- Job and Processer Scheduling
- Process control and Management
- Signal, forks and pipes
- Memory Management
- Deadlocks
- Linux/Unix and Windows Process Management Techniques

4. Shell Programming

- Shell Features and Types
- Shell Scripting

- Shell Security
- Basic Linux/Unix Shell Programming

5. Storage Management

- Linux/Unix and Windows Storage Management Techniques

6. Operating Systems Security

- Linux/Unix and Windows Security Management
- Users Management

7. Network Services

- Network Management
- Hostnames, Testing Connectivity
- SSH, FTP, SCP, Telnet etc.