



सञ्चालक समितिको बैठक नं. १५४४ मिति २०७५/११/१६ बाट स्वीकृत

कर्मचारी सञ्चय कोष  
पुल्चोक, ललितपुर

## आन्तरिक तथा खुल्ला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

### १. पाठ्यक्रमको परिचय :

(क) तह र पद : तह ८, प्रबन्धक (सिस्टम)

(ख) सेवा/समुह : प्राविधिक / कम्प्युटर

(ग) परीक्षाको किसिम :

लिखित : २०० पूर्णाङ्क

अन्तर्वार्ता : ३० पूर्णाङ्क

(घ) आवश्यक न्यूनतम शैक्षिक योग्यता : मान्यता प्राप्त शिक्षण संस्थाबाट कम्प्युटर विज्ञान (Computer Science), वा BSc CSIT वा कम्प्युटर इन्जिनियरिङ (Computer Engineering) विषयमा स्नातक उपाधि प्राप्त गरेको ।

(ङ) पाठ्यक्रमको उद्देश्य :

कोषको तह ८, प्रबन्धक (सिस्टम) पदका लागि निर्धारित कार्यविवरणलाई दृष्टिगत गरी तोकिएको आवश्यक न्यूनतम शैक्षिक योग्यता पुगेका योग्य उमेदवारहरूबाट व्यवस्थापन, कानून, कम्प्युटर, सूचना प्रविधि, Database, System Analysis and Design, Programming Languages तथा Networking जस्ता सान्दर्भिक विषयमा उम्मेदवारहरूको सैद्धान्तिक र व्यावहारिक ज्ञानको परीक्षण गर्नु ।

### २. परीक्षा योजना (Examination Scheme)

पत्र	विषय	परीक्षाको किसिम	पश्न संख्या	अंक भार	पूर्णाङ्क	उत्तीर्णाङ्क	समय
प्रथम	Front end Programming language and general management	सैद्धान्तिक तथा व्यावहारिक ज्ञान	प्रत्येक खण्डबाट समानुपातिक रूपमा पर्ने गरी १० अङ्का ८ प्रश्न	१०X८	१००	४०	३ घण्टा
		प्रयोगात्मक समस्याको समाधान	समुह ५ बाट पर्नेगरी २० अंकको एउटा व्यवस्थापकिय समस्या	२०X१			
द्वितीय	Back end/ Database सम्बन्धी सैद्धान्तिक तथा व्यावहारिक ज्ञान	सैद्धान्तिक तथा व्यावहारिक ज्ञान	प्रत्येक खण्डबाट समानुपातिक रूपमा पर्ने गरी १० अङ्का ८ प्रश्न	१०X८	१००	४०	३ घण्टा
		प्रयोगात्मक समस्याको समाधान	प्रयोगात्मक समस्याका ४ अंकको ५ प्रश्न	४X५			

#### द्रष्टव्य:

(क) प्रश्न पत्र अंग्रेजी भाषामा तयार हुनेछ ।

(ख) लिखित परीक्षाको भाषा नेपाली वा अंग्रेजी वा दुवै हुन सक्नेछ ।

(ग) प्रथम पत्रको समुह ५ बाट व्यवहारिक पक्ष समेटिएको कुनै एक समस्या दिइनेछ । समस्याको समाधान देहायको ढाँचामा प्रस्तुत गर्नु पर्नेछ :

समस्याको पहिचान र विश्लेषण	-	अङ्कभार ५
समस्यासंग सम्बन्धित नीतिगत तथा कानूनी व्यवस्था	-	अङ्कभार ४
समस्या समाधानका उपायहरू	-	अङ्कभार ७
समस्या समाधानका लागि कार्ययोजनाको तयारी	-	अङ्कभार ४

(घ) दोस्रो पत्रमा विषयवस्तुसंग सम्बन्धित चार वटा समस्या दिइने छ । ती समस्याहरूको Programming language प्रयोग गरी Module लेख्नु पर्नेछ ।

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## Course Syllabus

First Paper : Front end Programming Language and General management

Full mark 100

Time 3 hours

**1 Introduction****10**

1. Systems Analysis and Design
2. Process modeling (Flow Charts etc.)
3. Database Management Systems (DBMS) and Relational Database Management Systems (RDBMS)
4. Three-Schema Architecture of Databases
5. Data Independence
6. Logical Data Modeling, E-R Diagram
7. Converting E-R diagrams to Relations
8. Normalization
9. CASE Tools
10. Middleware technologies

**2. JAVA****20**

1. Generic Programming
2. Sequential Collections
3. Associative Collections
4. Classic Data Structures
5. Sorting And Searching Algorithms
6. Exception Handling
7. Database Programming With JDBC
8. Network Programming
9. Multithread Programming
10. Build and deploy RESTful Service in Java
11. Java Applets
12. Java Web Applications
13. JavaBean Programming
14. Advanced Java Input/Output (NIO)
15. Strings And StringBuilder Class
16. Regular Expressions

**3. PHP****10**

1. Basic Scripting and Looping Constructs
2. Conditional Constructs
3. PHP Operators
4. PHP Functions
5. Working with Databases and Forms
6. Arrays in PHP
7. OOP in PHP
8. Working with Data Files in PHP
9. Enabling E-Commerce
10. Configuring
11. Using Cookies with PHP
12. Implementing RESTful Servers with PHP

**4 ASP.Net with C# Programming Languages -****20**

1. Microsoft .Net framework
2. Web services
3. Object oriented programming concept using c#
4. ADO and ADO.Net.
5. Database programming with c# for ASP.Net
6. Working with SQL, Stored procedures and other database objects
7. ASP.Net technology and its related components
8. Developing and maintaining web applications
9. Developing ASP.Net forms and components
10. Developing and using parameterized crystal reports
11. Deploying web forms to web server and porting
12. Managing IIS and working with websites
13. Concept of emerging technologies (Mobile, SMS & distributed architecture)

**5 General management and Others****20+20=40**

1. Introduction to Management
2. Emerging concepts in management
3. Change Management and organizational development
4. Concept of Strategic Management
5. Human Resource Management - concept and challenges
6. Concept of corporate governance
7. Leadership - concept and theories
8. Motivation - concept and theories
9. IT policy and strategy
10. Management information system - concept and tools
11. Knowledge management
12. Artificial intelligence
13. Electronic Transaction Act 2063
14. Constitution of Nepal (Provision related to social security)
15. Constitutional and legal provision related to Corruption, Abuse of authority and Money Laundering
16. Bank and Financial institution act 2063
17. Social security act 2074
18. Employee provident Fund Act, 2019
19. Karmachari Sanchaya Kosh, Employee service bylaw.

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## Course Syllabus

Second Paper: Backend/database	Full mark 100	Time 3 hours
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**1. Network & Hardware 20**

1. Sound knowledge to Client/Server architecture
2. Working knowledge of Virtual Private Network
3. Operation and working with networking (LAN, MAN, WAN etc.)
4. Local Area Networking (physical media, protocols, applications etc.)
5. Working knowledge of TCP/IP
6. Connecting different resources using computer network
7. Computer Networking (Windows environment)
8. Connecting different resources using computer network
9. Peripherals (Printers, Optical drives, etc)
10. Troubleshooting and maintenance of Computers, network and peripheral device.
11. Concept of Wireless network and Virtual private network
12. backup and recovery

**2. IT & E-commerce in Nepal 20**

1. Overview of IT Sector of Nepal and its History
2. IT Policy of Nepal
3. Cyber law of Nepal (Electronic Transaction Act)
4. Nepali Unicode, Nepali Fonts
5. Licensing Issues
6. Introduction to E-Commerce
7. Electronic Commerce Strategies
8. Electronic Commerce Security Issues
9. Success Models of E-Governance
10. E-Business: B2B, B2C, B2E, C2C, G2G, G2C
11. Principles of Electronic Payment, Strategies & Systems.
12. E-marketing, Reverse Engineering
13. E-Banking, EDI Methods, SWIFT
14. Encryption and Decryption Methods, XML, Layout Managers, Event Model.

**3. BACK END 30**

1. Introduction to SQL, SQL Command Classifications (Query Command, DDL, DML, DCL)
1. Writing Basic SQL Statement
2. Restricting & Sorting Data
3. Single Row Functions
4. Displaying Data From Multiple Tables (JOINS, Inner JOINS, Outer JOINS, Equi -JOINS, Non-equi JOINS)
5. Aggregating Data Using Group Functions
6. Sub-Queries
7. Advanced Sub Queries

8. Enhancements to the Group BY Clause
9. DDL, DML, DCL commands
10. Manipulating Data, Creating and Managing Tables
11. Including Constraints
12. Creating Views
13. Synonyms
14. Creating Other Database Objects, Controlling User Access
15. Extensions to DML and DDL Statements
16. Handling Exceptions, Creating Procedures
17. Creating Functions, Creating Procedures
18. Creating Database Triggers
19. Creating and Maintaining Sequences
20. Cursors
21. Creating and maintaining users
22. Granting and Revoking user/object rights
23. PL SQL
24. Declaring Variables
25. PL/SQL Program Construct
26. Connecting to multiple databases
27. Connecting to multiple RDBMS

**4. Database Administration (DBA) 30**

1. Installation and the creation of new databases.
2. Database architecture.
3. Management of database files.
4. Database performance of enterprise-scale transactional applications, shared SQL and PL/SQL cache, the result cache, the database buffer cache.
5. Management of security policies and procedures, including administration of user accounts, roles, privileges and profiles.
6. Utilization of advanced self-tuning and self-management capabilities, including the use of Managed Files, database Advisors and other components of the Management Framework.
7. Performance monitoring, problem troubleshooting, and resolving lock and conflict issues.
8. Using the Enterprise Manager and SQL interfaces for administration tasks.
9. Control over database support services, including the Database Control.
10. A primer on backup and recovery structures and strategies.
11. Operating system-specific considerations for various platforms, especially Linux and MS Windows Server.

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