नेपाल नागरिक उड्डयन प्राधिकरण
प्राबिधिक सेवा, सूचना प्रविधि समूह,
प्रवन्धक (इन्फरमेशन टेक्नोलोजि, नवौं तहको खुला तथा आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

लिखित परीक्षाको विषय, पूर्णाङ्क, परीक्षा प्रणाली, प्रश्नसंख्या, अंकभार र समय निम्नानुसार हुनेछ ।

पत्र	विषय	पूर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या	अंक भार	समय
प्रथम	प्रशासन तथा व्यवस्थापन र ऐन नियम	१००	तर्कयुक्त समस्या समाधान	२ x २०	४०	३ घण्टा
			छोटो उत्तर	६ x १०	६०	
द्वितीय	सेवा सम्वन्धी	१००	तर्कयुक्त समस्या समाधान	२ x २०	४०	३ घण्टा
			छोटो उत्तर	६ x १०	६०	

द्रष्टव्य :

१. प्रथमपत्र र द्वितीयपत्रको परीक्षा २ दिनमा हुनेछ ।

२. परीक्षाको माध्यम नेपाली वा अंग्रेजी वा दुवै हुनसक्ने छ ।

३. प्रत्येक पत्रको उत्तिर्णाङ्क ४०% (चालिस प्रतिशत) हुनेछ । दुवै पत्रमा न्यूनतम उत्तिर्णाङ्क प्राप्त नगर्ने उम्मेदवारहरु अन्तर्वार्तामा सम्मिलित हुन योग्य हुनेछैनन् ।

४. अन्तर्वार्ता र शैक्षिक योग्यता

क) अन्तर्वार्ताको अङ्क भार - ३०

ख) शैक्षिक योग्यताको अङ्कभार - ३

शैक्षिक योग्यता वापतको अङ्क : न्यूनतम शैक्षिक योग्यता वापत प्रथम श्रेणीलाई ३, द्वितीय श्रेणीलाई २ र तृतीय श्रेणीलाई १ अङ्क प्रदान गरिनेछ ।

५. यस पाठ्यक्रममा जेसुकै विषयवस्तु समावेश गरिएको भएतापनि पाठ्यक्रममा परेका कानुन, ऐन, नियम तथा नीतिहरु परीक्षाको मितिभन्दा ३ महिना अगाडि संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई कायम रहेकालाई यस पाठ्यक्रममा परेको संझनुपर्दछ ।

६. यस पाठ्यक्रममा उल्लेख भएका विषयहरुका अतिरिक्त समसामयिक घट्ना तथा विषयवस्तुहरुका सम्वन्धमा समेत प्रश्न सोध्न सकिनेछ ।

प्रथमपत्रः प्रशासन तथा व्यवस्थापन र ऐन नियम

क) प्रशासन तथा व्यवस्थापन

१. सार्वजनिक प्रशासनको अवधारणा, सिद्धान्तहरु एवं कार्यहरु
२. संगठनको परिचय, विभिन्न स्वरुप (Flat, Vertical, Matrix, Dome bell) आदि ।
३. प्रशासनिक विधिहरु :- कार्य विश्लेषण, कार्य विवरण, संगठन तथा व्यवस्थापन, छरितो व्यवस्थापन, कार्य मूल्यांकन
४. कर्मचारी प्रशासनको परिचय, उद्देश्य र कार्य
५. संगठनात्मक व्यवहार, समूहगत गतिशीलता र समूहगत कार्य
६. जनशक्ति योजना, महत्व र चुनौतीहरु
७. प्रशासनिक उत्तरदायित्व निर्वाह गर्नमा भएका प्रयास, किसिम र चुनौती
८. प्रशासनमा संचारको महत्व, भूमिका, प्रयोगमा देखिने समस्या तिनको समाधान र जनसम्पर्कको महत्व
९. प्रभावकारी सेवा प्रदान गर्नमा समन्वय, सुपरिवेक्षण, अभिलेख व्यवस्थापन
१०. प्रशासनमा मनोवल, बृत्तिविकास, उत्प्रेरणा, नेतृत्व, निर्णय प्रक्रिया र संगठनात्मक सुधारका प्रभाव
११. अधिकार प्रत्यायोजन, निक्षेपण र विकेन्द्रीकरण
१२. व्यवस्थापन सूचना प्रणाली, महत्व, आवश्यकता र प्रयोगका चुनौती
१३. समय व्यवस्थापन, संकट व्यवस्थापन, परिवर्तन व्यवस्थापन, द्वन्द व्यवस्थापन
१४. अम्बुडस्म्यानको अवधारणा, नेपालको सन्दर्भमा अख्तियार दुरुपयोग अनुसन्धान आयोगको भूमिका
१५. सम्पूर्ण गुण व्यवस्थापन (Total Quality Management)
१६. आयोजना तर्जुमा, कार्यान्वयन, अनुगमन र मूल्यांकनका चरणमा देखा पर्ने चुनौतीहरुको विश्लेषण
१७ नेपाल सरकारको राष्ट्रिय हवाई तथा पर्यटन नीति

ख) ऐन नियम नीति

१. नेपालको अन्तरिम संविधान, २०६३
२. नेपाल नागरिक उड्डयन प्राधिकरण ऐन, २०५३
३ नेपाल नागरिक उड्डयन प्राधिकरण कर्मचारीहरुको सेवाका सर्त र सुविधा सम्वन्धी नियमावली, २०५६
४. नेपाल नागरिक उड्डयन प्राधिकरण आर्थिक प्रशासन सम्वन्धी नियमावली, २०५७
५ नागरिक उड्डयन नियमवाली, २०५८
६. नेपाल नागरिक उड्डयन प्राधिकरण विमानस्थल सेवा शुल्क नियमावली, २०६७
७. हवाई सुरक्षा व्यवस्था नियमावली, २०४६
८. भ्रष्टाचार निवारण ऐन, २०५९
९. गैह्र सैनिक हवाई उडान ऐन, २०१५
१०. सार्वजनिक खरिद ऐन, २०६३ र नियमावली २०६४
११. करार ऐन, २०५६

ग) नीति तथा नियम

1 IT Policy of Nepal, 2057 B.S.

2. Electronic Transaction Act, 2063 B.S.

3. Copy right Act, 2059 B.S.

4. Copy-right and licensing issues in IT

5. Understanding organizations and functions of ICAO, COSCAP, IATA etc & their relationship with CAAN

द्वितीयपत्रः सेवा सम्वन्धी

1. Computer Architecture and Networks

1.1 Architecture, Programming and I/O, Computer Structure and typical processor architecture, Processing unit and controller design, hardware and micro program control

1.2 CPU and memory organization, buses, characteristics of I/O and storage devices, Instruction sets and addressing modes, assembly language programming, I.O and interrupt servicing

1.3 Multiple processor architectures, highly parallel machines, systolic arrays, Neural networks, multitasking machines, real time systems, interconnection of multiple processor systems.

1.4 Architectures for specialized purposes, array processors, vector processors, and virtual machines.

1.5 Very large scale integrated circuits.

1.6 Link Layer : services and protocols

1.7 Network Layer : services and protocols

1.8 Transport Layer : Principles, multiplexing and de-multiplexing, UDP, TCP, flow control, principles of congestion control, TCP congestion control

1.9 Application Layer : Web and Web caching, FTP (File Transfer Protocol), Electronic mail, DNS (Domain Name Service), Socket Programming

2. Computer Communications

2.1 Digital networks : ADSL, Wi-Fi, ISDN, frame relay, ATM, MPLS etc

2.2 Protocols : the ISO/OSI reference model X.25

2.3 Internetworking and router-based networks : the TCP/IP suite of protocols, routing and flow control, Internet addressing ad domain names.

3. Distributed Systems

3.1 Characteristics of distributed systems, Fundamental concepts and mechanisms.

3.2 Networked vs. centralized systems

3.3 Client Server Systems

3.4 Process synchronization and inter process communications.

3.5 Principles of fault tolerance

3.6 Transaction processing techniques

3.7 Distributed file systems

3.8 Operating systems for distributed architectures.

4. Operating Systems

4.1 Operating system principles, components and usage, Design and implementation of operating systems

4.2 Synchronization of concurrent processes, resource allocation, scheduling, protection and privacy. Data, task and job management : loading, linking I/O control.

4.3 Multitasking and multiprocessing Real time aspects

4.4 Basic characteristics of modern operating systems: Unix, Linux, Windows.

5. Software Engineering

5.1 Programming language syntax and semantics

5.2 Design of structured and modular programs in a high level language (C, C++)

5.3 Basics of object-oriented programming, Non-numerical processing, Design and construction of programs involving structured data : arrays, stacks, queues, lists,trees and records.

5.4 Software cycles and requirements analysis, Design, Implementation text, verification and validation, documentation, quality assurance, control and life-cycle management of correct, reliable, maintainable and cost effective software.

5.5 Object Oriented design, Graphical design tools, design in high level languages and data flow driven designs.

5.6 Planning and management of software projects

5.7 Software maintenance and configuration management and source code management

6. Databases and File Systems

6.1 Data models, data normalization, data description languages, query facilities, data integrity and reliability, concurrency

6.2 Databases : hierarchical, network and relational databases; data organization

6.3 Relational query languages : relational algebra and calculus, SQL

6.4 Relational database design

6.5 Transaction processing, query processing, reports, Security nd integrity; concurrency control

6.6 File organization : sequential indexed and direct access, multiple key and hashing

6.7 File processing : records, files, compaction, Sorting, merging and updating files

6.8 Algorithms for inverted lists, multi list, indexed sequential and hierarchical structures, File I/O: control, utility, space allocation and cataloguing, Index organization

7. Client Server Computing

7.1 Client server computing concepts : Building blocks, the state of client server infrastructure

7.2 SQL database services : fundamentals of database servers, functions, procedures, triggers and rules

7.3 SQL middleware basics : SQL API, Open SQL Gateway

7.4 Concept of Data Warehouses and Data Mining

7.5 Client Server Transaction Processing : Transaction Concepts, Transaction Models, Transaction Processing Monitors, Transaction Management Standards

8. *Database Management System*

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

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

9.3 Crash Recovery: types of failure, Recovery techniques

9.4 Query Processing and Optimization

9.5 Indexing: Hash based indexing, Tree based indexing

9.6 Distributed Database Systems and Object oriented database system

9.7 Data Mining and Data Warehousing

9.8 Security Management System

9. Internet Programming

9.1 Common Gateway Interface (CGI) Application, Input to CGI : environmental variables, accessing from input, Output from CGI : CGI and response headers, Forms and CGI: Sending data to the server using HTML tags and Executing External Program and Executing external program ad CGI program.

9.2 Hypermedia Documents : Creating dynamic pages using CGI, PHP

9.3 Introduction to JAVA : JAVA evolution, JAVA history, JAVA features, Difference between JAVA and C / C++

9.4 Simple JAVA program, JAVA program structure, JAVA Statements, JAVA virtual machine – Introduction and Implementation basics.

10. Cryptography and Network Security

10.1 Introduction to Cryptography : Security Attacks, Conventional Encryption Model, Simplified DES, Block Cypher Principle.

10.2 Principles of Public Key, Crypto Systems : RSA algorithm, Diffie-Hellman Key exchange, Number Theory – Prime and Relatively Prime Numbers

10.3 Message Authentication and Hash Function

10.4 Digital Signature and authentication Protocols : Digital Signatures, Digital Signature Standards, Authentication protocols

10.5 Network Security : Authentication Applications – Kerberos, Electronic Mail Security

10.6 Web Security : Web Security Requirements, Secure Sockets Layers and Transport Layer Security, Secure Electronic Transaction

10.7 Intruders and malware related Threats

10.8 Firewall Design Principles

10.9 Introduction to Trusted Systems

11. Management Information Systems

11.1 Organizations and Information Systems

11.2 How information system impact organizations and business firms

11.3 The impact of IT on management decision making

11.4 Organization and Information, Information: Classification and value, Information requirements,

11.5 Development and Implementation of MIS

11.6 Management of quality in MIS

11.7 Decision support systems

12. Technology and its recent trends

12.1 Technology behind E-commerce, E-government, E-payment and E-transaction, ATM, Point to Sales, Internet, Digital Signature etc.

12.2 GIS

12.3 Advanced data storage techniques: Enterprise data storage, clustering, network attached storage (NAS), storage area networks (SAN)

13. E-commerce and E-government

13.1 E-commerce and its business applications

13.2 Electronic payment systems

13.3 Security issues in E-commerce: PKI and digital signature

13.4 Managing public data

13.5 E-government strategy and emerging issues

14. Project management

14.1 Requirement engineering

14.2 PERT/CPM network

14.3 Investment analysis and breakeven analysis

14.4 Time value of money

14.5 Financial analysis

14.6 Software estimation

14.7 Configuration management

14.8 Team building approach

14.9 Issue tracking and management

14.10 Verification and validation

14.11 Business process reengineering