

## खुला प्रतियोगिता लिखित परीक्षाको पाठ्यक्रम

### मुख्य सहायकस्तर मुख्य सहायक (कम्प्युटर) प्रथम पत्र (वस्तुगत)

पूर्णाङ्क: १×१००=१००  
समय: ३:०० घण्टा

१. नेपालको भूगोल
२. नेपालको इतिहास, संस्कृति तथा सामाजिक व्यवस्था
३. क्षेत्रीय तथा अन्तर्राष्ट्रिय संघ संस्थाहरू
४. नेपालको संवैधानिक निकायहरू
५. नेपालको आर्थिक तथा राजनैतिक नवीनतम घटनाक्रमहरू
६. पूर्वाञ्चल विश्वविद्यालयको ऐन तथा नियमावलीहरू
७. कर्मचारी प्रशासन, शैक्षिक प्रशासन तथा अन्य प्रशासन सम्बन्धी ज्ञान
८. कार्यालय व्यवस्थापन, सार्वजनिक खरिद ऐन, लेखा जिन्सी सम्बन्धी ज्ञान
९. नेपालको शैक्षिक इतिहास
१०. नेपालमा विश्वविद्यालयहरूको स्थापना तथा विश्वविद्यालय अनुदान आयोग (UGC) सम्बन्धी ज्ञान

### मुख्य सहायकस्तर मुख्य सहायक (कम्प्युटर) द्वितीय पत्र (विषयगत)

पूर्णाङ्क: १००  
समय: ३:०० घण्टा

#### 1. Computer Fundamentals:

- 1.1 Introduction to computer and computer system; History of computers
- 1.2 Types of computer based on size and purpose; Computer generations
- 1.3 Introduction to hardware;  
Input devices: keyboard, mouse, scanner, microphone, etc.  
Output devices: monitor, printer, speaker, etc.  
Storage devices: primary and secondary storage devices  
CPU: Arithmetic Logic Unit (ALU), Control Unit (CU), Registers  
Other devices: network card, modem, sound card, etc.
- 1.4 Introduction to software;  
Types of software: system software, application software, utility software  
Operating system and its roles; Web-based software and Mobile Apps
- 1.5 Motherboard; BIOS; Cache memory

- 1.6 Computer viruses and remedies
- 1.7 Software installation and troubleshooting methods

## **2. Number System and Digital Logic:**

- 2.1 Introduction to Decimal, Binary, Octal and Hexadecimal number system
- 2.2 Number from one number system to another
- 2.3 Binary addition and subtraction; 1's and 2's complement methods of binary subtraction
- 2.4 Boolean Algebra: Introduction to Boolean values, truth table, Boolean expression and Boolean function
- 2.5 Logic Gates: Introduction to AND, OR, NOT, NAND, NOR, XOR and XNOR logic gates; Truth table, Symbol and Logic function of logic gates
- 2.6 Laws of Boolean Algebra: Identity, Complement, Commutative, Associative and Distributive Laws; De Morgan's Theorem

## **3. Programming Languages:**

- 3.1 Procedural Programming Language: Introduction to C; Data types; Variables and constants; Operators and expressions; Control statements; Looping; Arrays; Functions; Pointers; Structure and Union; File handling
- 3.2 Object Oriented Programming Language: Class and Object; Abstraction; Encapsulation; Function overloading; Constructor and destructor; Inheritance; Polymorphism, operator overloading and virtual function
- 3.3 Programming with C and C++

## **4. Application Package (Word Processor, Spreadsheet and Presentation):**

- 4.1 Word Processor: Creating document; Formatting text and paragraphs; Spelling and grammar checking; Managing lists and tables; Inserting objects and pictures; Controlling page appearance; Mail merge; Publishing a document; Exporting documents; Creating PDF; Printing documents
- 4.2 Spreadsheet: Entering data; Managing and formatting cell; Creating and formatting a worksheet; Creating and working with Graphs and Charts; Working with general functions and formulas; Data filter and sorting; Working with other objects; Printing worksheets
- 4.3 Presentation: Creating, designing and formatting presentation slides; Animation and custom animation; Slide transition; Graphics and WordArt; Graphs and Charts; Printing slides

## **5. Web Technology:**

- 5.1 Introduction to web page; Static and dynamic web page; Web browser and web server; Tier technology
- 5.2 Introduction to HTML and HTML tags
- 5.3 Working with texts and images; Creating hyperlinks, lists, tables, forms and frames; Working with tables
- 5.4 Applying styles in HTML page using Cascading Style Sheet (CSS)
- 5.5 Using JavaScript with HTML; Using XML

## **6. Operating System:**

- 6.1 Concept and history of operating system; Types and functions of operating system

- 6.2 Introduction to process; Process states; Process scheduling algorithms
- 6.3 Memory management; Partitioning; Swapping; Paging and Page replacement algorithms
- 6.4 Introduction to files and directories; File system implementation; Disks and disk scheduling algorithms
- 6.5 Deadlock and its conditions; Detection, prevention, recovery and avoidance of deadlock
- 6.6 File protection; Security mechanisms; Authentication and access authorization
- 6.7 Features and commands of MS-DOS; Introduction to Windows and Linux family

#### **7. Database Management System:**

- 7.1 Introduction to database and DBMS; Concepts of Relational data model; ER Modeling and ER Diagram
- 7.2 Introduction to SQL: Basic query structure
- 7.3 DDL and DML: Basic operations; Creating tables; Aggregate and grouping; Updates and joins; Nested sub-queries and sets
- 7.4 Database Normalization; Functional dependencies: 1NF, 2NF and 3NF

#### **8. Computer Networks and Network Security:**

- 8.1 Introduction to Networking; Types of network, network topologies and networking media
- 8.2 Networking devices: Basic concepts of hubs, switches, gateways and routers
- 8.3 Networking standards and Networking protocols
- 8.4 Networking technologies: Ethernet, Token bus and Token ring, WANs and Remote Connectivity, Wireless Networking; Video Conferencing and VOIP
- 8.5 OSI/ISO Model; TCP/IP; UDP; IPv4 and IPv6
- 8.6 Internetworking, Intranet and Extranet
- 8.7 Introduction to Network Security; Virus protection; LAN security; Internet security
- 8.8 Firewalls; Intrusion Detection and Protection System

#### **9. Emerging Technologies:**

- 9.1 Virtual Reality
- 9.2 Artificial Intelligence and Expert System
- 9.3 E-commerce; M-commerce; E-governance
- 9.4 Big Data; Cloud Computing
- 9.5 Internet of Things (IoT)

#### **10. IT Policy:**

- 10.1 IT Policy:
  - ICT Policy, 2012 B. S.
  - Electronic Transaction Act, 2008 B. S. (कशुर र दण्ड, सजाय)

#### **11. पूर्वानुचल विश्वविद्यालय ऐन र नियमावली सम्बन्धी**

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