

# कृषि तथा वन विज्ञान विश्वविद्यालय

## सेवा आयोगको कार्यालय

चितवन, नेपाल

आईटी सहायक पदको खुल्ला/आन्तरिक प्रतियोगितात्मक लिखित तथा प्रयोगात्मक परीक्षाको पाठ्यक्रम

कुल पूर्णाङ्क: १००

समय: ३ घण्टा

### प्रथम पत्र

बस्तुगत प्रश्न

(पूर्णाङ्क: ५० समय: ५० मिनेट)

(क) सामान्य ज्ञान तथा विषयगत ज्ञान

(नेपालको भौगोलिक, ऐतिहासिक/राजनैतिक, प्रशासनिक, आर्थिक, सामाजिक, सांस्कृतिक शैक्षिक अवस्था सम्बन्धी सामान्य ज्ञान, विश्वका विविध पक्ष/ महत्वपूर्ण समसामयिक घटनाहरु सम्बन्धी सामान्य जानकारी एवम् पद अनुसारको विषयसँग सम्बन्धित सामान्य ज्ञान)

### द्वितीय पत्र

विषयगत प्रश्न

(ख) द्वितीय पत्र सेवा समूह/पदसँग सम्बन्धित/ विश्वविद्यालय ऐन,नियम/संगठन सम्बन्धी ज्ञान

पूर्णाङ्क: ५०

समय: २ घण्टा १० मिनेट

## Course Contents

### 1. Computer Fundamentals

- 1.1. Introduction to computer systems:
- 1.2. Hardware: Definition of Hardware, Input devices: keyboard, mouse, Scanner, etc., CPU: Arithmetic logical unit (ALU), Control Unit (CU), Memory unit (MU), Output devices: Monitor, Printer etc., Storage devices: Primary and Auxiliary Memory, Others: Network card, Modem, Sound card etc.
- 1.3. Software: Introduction to computer software, Operating system and Application software.
- 1.4. BIOS, Firmware and cache memory concept
- 1.5. Concept of computer viruses and remedies
- 1.6. Concept of Multimedia, Hypermedia

## 1.7. Troubleshooting methods

## **2. Programming Languages**

- 2.1. Procedural Programming Language: Procedures and Modularity, Control Statements, Looping, Array, Functions, Pointers, Structure and Union, File Handling
- 2.2. Object Oriented Programming Language: Object and Classes, Method, Inheritance, Polymorphism, Modularity, Encapsulation, Abstraction, Operator Overloading, Virtual Function
- 2.3. Programming with C and C++

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

- 3.1. Word Processor: Basic terms of word processing, Creating Document and environment, Formatting Text and Paragraphs, Spelling grammar, thesaurus, comments, Managing Lists and Tables, Inserting Graphic Objects, Controlling Page Appearance, Performing a Mail Merge, Preparing to publish a document, Levels and table of contents, Export documents: PDF
- 3.2. Basic fundamentals of Spread Sheet: Entering Data, Cell Manage, Concept of cell references, Formatting a Worksheet, Creating and Working with Charts, Managing Workbooks, General Functions and Formulas, Data Filter and sorting, Pivot tables and Pivot chart, Working with Other objects, Printing Worksheets
- 3.3. Presentation: Basic fundamental of Presentation, Create Presentation slides, Design and Formatting Presentation, Animation and Custom Animation, Transition of Presentation, Working with Tables, Graphics and WordArt, Working with Graphs and Organization Charts, Working with Multimedia

## **Web Technology**

- 3.4. Introduction to Web Page and Content Management System
- 3.5. Introduction to HTML, HTML document and HTML Tags
- 3.6. Working with Text, Hyperlinks, Images, Lists, Forms, Tables, Frames, etc.
- 3.7. Cascading Style Sheet
- 3.8. JavaScript, XML
- 3.9. Concept of MySQL and PHP

## **4. Operating System**

- 4.1. History & concepts of operating system
- 4.2. Resources and Sharing, Resource Management and Spooling
- 4.3. Single Task, Multi-Tasking and Multi User
- 4.4. Multiprocessing and Batch Processing
- 4.5. Processes and Threads, Parallel and Distributed Processing
- 4.6. Scheduling and Deadlock Management
- 4.7. Memory Management and Virtual Memory
- 4.8. Disk, File system and I/O systems

- 4.9. Security: Authentication and Access Authorization,
- 4.10. Common Operating Systems: MS-DOS, Windows Family of Products, Linux Family of Products, 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.

## **5. Database Management System**

- 5.1. Introduction: Database Model, Relational Database Model
- 5.2. Integrity and Constraints
- 5.3. SQL: DDL and DML Statements
- 5.4. Database Design: Logical Design, Conceptual Design, Database schema, ER model
- 5.5. Normalization: 1NF, 2NF and 3NF
- 5.6. Architecture of DBMS: Client-server and Open Architectures
- 5.7. Transaction Processing & Concurrency Control
- 6.8. Backup, Recovery and Database Security.
- 6.9. Basic Concept of RDBMS products: Oracle, MySQL, SQL Server, PostgreSQL

## **6. Computer Organization and Architecture**

- 6.1. Basic Computer Organization and Design
- 6.2. Machine Instructions and Addressing Modes
- 6.3. ALU and Data Path
- 6.4. CPU Control Design
- 6.5. Memory interface
- 6.6. I/O interface
- 6.7. Instruction Pipelining
- 6.8. Cache Memory and Mapping Techniques
- 6.9. Memory: Primary and Secondary Memory

## **7. Computer Networks and Security**

- 7.1. Network Definition, Network Models, Connectivity, Network Addressing
- 7.2. The Data Package, Establishing a Connection, Reliable Delivery, Network Connectivity, Noise Control, Building Codes, Connection Devices
- 7.3. ISO/OSI Model
- 7.4. LAN technologies (Ethernet, Token Ring)
- 7.5. Flow and Error Control Techniques
- 7.6. Routing Algorithms, Congestion Control
- 7.7. TCP/IP, UDP, Sockets
- 7.8. IP (v4), IP (v6),
- 7.9. Dynamic Host Configuration Protocol
- 7.10. Application Layer Protocols (ICMP, DNS, SMTP, POP, FTP, http)
- 8.11. Basic concepts of Hubs, Switches, Gateways, and Routers LAN

- 8.12. Protocols on a Network, IP Routing, IP Routing Tables, Router Discovery Protocols, Data Movement in a Routed Network, Virtual LANs (VLANs)
- 8.13. The WAN Environment, Wan Transmission Technologies, Wan Connectivity Devices, Voice Over Data Services
- 8.14. Internetworking, E-mail, Internet and Intranet, Extranet
- 8.15. Remote Networking: Remote Networking, Remote Access protocols, VPN Technologies.
- 8.16. Network Security: Introduction, Virus Protection, Local Security, Network Access, Internet Security.
- 8.17. Firewalls, Proxies, Intrusion Detection and Protection System
- 8.18. Security- Confidentiality, Integrity and Authentication
- 8.19. Disaster Recovery: The need for Disaster Recovery, Disaster Recovery plan, Data backup, Fault Tolerance.
- 8.20. Advanced Data Storage Techniques: Network Attached Storage, Storage Area Networks.
- 8.21. Network Troubleshooting: Using Systematic Approach to Troubleshooting.
- 8.22. Network Support Tools: Utilities, The Network Baseline.
- 8.23. Network Access Points (NAP), Common Network Component, Common Peripheral Ports.

## **9. Introduction to Emerging Technologies**

- 9.1. Digital Signature
- 9.2. Artificial Intelligence
- 9.3. E-commerce, e-Governance
- 9.4. Multimedia
- 9.5. Cloud Computing
- 9.6. Internet of Things (IoT)

## **10. IT Policy and AFU Rules and Regulations**

- 10.1. IT Policy: ICT Policy, 2072 B.S.  
Electronic Transaction Act, 2063 B.S. (कसुर र दण्ड सजाय)
- 11 कृषि तथा वन विज्ञान विश्वविद्यालय ऐन २०६७
- 11.1 कृषि तथा वन विज्ञान विश्वविद्यालय संगठन/शैक्षिक प्रशासन नियमावली २०६९
- 11.2 कृषि तथा वन विज्ञान विश्वविद्यालय शिक्षक कर्मचारी/सेवा नियमावली २०६९
- 11.3 कृषि तथा वन विज्ञान विश्वविद्यालय आर्थिक प्रशासन नियमावली २०६९
- 12. कर्मचारी प्रशासन र सार्वजनिक प्रशासनको अन्तरसम्बन्ध र यसका सिद्धान्तहरू
- 12.1 कर्मचारी प्रशासनको विविध पक्षहरू
- 12.2 सार्वजनिक प्रशासनको परिभाषा, उद्देश्य र कार्यक्षेत्र

## प्रयोगात्मक परीक्षा

S.N.	Topics
1	English/Nepali Typing
2	Computer Networks (Troubleshooting)
3	Web Technology (HTML, CSS and JavaScript)
4	RDBMS (DDL and DML SQL Statements)
5	Word Processor
6	Spreadsheet
7	Presentation
	Total

**The End**