Government of Nepal

Teachers Services Commission

Lower Secondary Level Curriculum of Subjective Examination-2081

Subject: Computer Science **Full Marks: 100** **Time: 3 Hours**

Section: A

Unit 1: Computer Applications and Office Packages

1.1 Introduction to Office Packages: An Overview of Office Packages (Microsoft Office, Google Office Workspace, LibreOffice), Installation and Setup or Subscription process.

1.2 Word Processor: create and edit documents, formating documents, use styles, headers and footers, set page numbers, create section breaks, collaborating with documents (track changes, leave comments and share).

1.3 Spreadsheet: creat and format spreadsheets, entering and editing data, basic Formulas and functions, data visualisation (charts and graphs).

1.4 Presentation Design: creating a presentation, slide transitions and animations, presentation techniques in classroom.

1.5 Mobile Apps for Teachers: Classroom Management Apps such as Google Classroom, Educational Content Creation (video/audio recording), Assessment and Grading (Quiz, Assignment).

Unit 2: Programming Concepts and Practices

2.1 Programming Concepts: Types of Programming Language, Compiler, and Assembler Concepts of Algorithms and Flowcharts.

2.2 Variables and Data Types: Definition, Variables Declaration and Initialization, Data Types, Type Conversion, Operators (logical, arithmetical, and relational)

2.3 Control Structures and Logic: Conditional Statements (if. Else if, else).

2.4 Loops: Loops (for, while, and do-while loops).

2.5 Arrays: Definition, declaration, and initialization, array operations, multi-dimensional arrays.

2.6 Concepts of Object-Oriented Programming (OOP): Concept of OOP, defining classes and objects, understanding the concept of inheritance, and understanding polymorphism.

Note: QBASIC/C/C++/Java/

Python programming languages can be used to explain the concept of programming.

Unit 3: Internet Email, Social Media

3.1 Concepts of internet and its common protocols.

3.2 Concepts of digital citizenship.

3.3 Emails and collaboration practices with teaching and learning.

3.4 Application of social media platforms in education such as Facebook, X, LinkedIn, and Youtube.

3.5 Web browsers and browsing techniques

3.6 Exploring popular educational websites

Unit 4: Multimedia and emerging trends technology

4.1 Concept to Multimedia

4.2 Creat and Use Text and Graphics in Education

4.3 Create and use audio and podcasting in education

4.4 Create video and interactive learning resources for teaching

4.5 Use of simulation and animation in education.

4.6 Use of virtual learning environments such as Google Classroom, MS Teams, etc.

4.7 Use of emerging technologies in education, such as AI, the cloud, IoT, and VR

Unit 5: ICT in Education

5.1 ICT Education in IT Policy Nepal

5.2 Digital Nepal Framework and SDG Education 2030

5.3 Concepts of Online and Blended Teaching and Learning

5.4 Concept of digital classrooms and learning environments

5.5 Concept of a digital library and open educational resources

5.6 Challanages of ICT in Education in Nepal

Section: B

Unit 6: Computer Fundamentals

6.1 Introduction to Computers: Definition, Evolution, and Category

6.2 Central Processing Unit (CPU): Functions, Components, and Performance Factors

6.3 Primary Memory: Types of Memory, Memory Hierarchy, and Functions of RAM and ROM.

6.4 Common input and output devices, along with their respective functions, include I/O ports.

6.5 Secondary Storage Devices: Hard disc drives (HDD), solid-state drives (SSD), optical discs (CD/DVD), and flash drives.

6.6 Operating System: Types of Operating Systems, Functions of Operating Systems, and Key Features of GUI-Based Operating Systems

Unit 7: Number System and Boolean Logic

7.1 Introduction to Number Systems: Decimal, Binary, Octal, and Hexadecimal Systems, Applications of Number Systems, and Positional Notation

7.2 Number Conversion: Binary to decimal, decimal to binary, binary to octal, octal to binary, and binary to hexadecimal, hexadecimal to binary.

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7.3 Binary Arithmetic: Basic arithmetic operations (addition, subtraction, multiplication, and division).

7.4 Boolean Algebra Fundamentals: Fundamental Concepts (AND, OR, NOT), Boolean Expressions, Formulating and Simplifying Boolean Expressions, and Boolean Algebra Laws (Commutative, Associative, Distributive, Identity, and De Morgan's Laws).

7.5 Logic Gates and Circuits: Basic gates such as AND, OR, NOT, NAND, and NOR, along with their truthtables and symbols.

Unit 8: Computer Networking

8.1 Concepts of Computer Networks and Topologies.

8.2 Communication cables and connectors.

8.3 OSI Model and Its Layers.

8.4 Types of Computer Networks.

8.5 Common network devices and their functions.

8.6 Common troubleshooting practices .

Unit 9: Web Technology

9.1 Introduction to Web Technologies

9.2 HTML: Concept of tags, use HTML tag for web page design (formatting tags, images, anchors, tables, and forms)

9.3 Cascading Style Sheet (CSS): Concept and use, use of inline CSS.

9.4 Concpet of Web Hosting and Domain Naming System

9.5 Explore Web Design and Development Tools

Unit 10: Cyber Security and Ethical Issues

10.1 Concept of Cybercrime and information security

10.2 Types of cyber threats and attacks

10.3 Techniques for securing computing systems

10.4 Concept of Data Protection and Encryption

10.5 Ethical Issues in Computing Systems

10.6 Cyber law in Nepal and Practices

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नेपाल सरकार
शिक्षक सेवा आयोग
सानोठिमी, भक्तपुर

Specification Grid

Subject: Computer Science Level: Lower Secondary

Units	Contents Area	Questions	Marks
1	Computer Applications and Office Packages	1	10
2	Programming Concepts and Practices	1	10
3	Internet Email, Social Media	1	10
4	Multimedia and emerging trends technology	1	10
5	ICT in Education	1	10
6	Computer Fundamentals	1	10
7	Number System and Boolean Logic	1	10
8	Computer Networking	1	10
9	Web Technology	1	10
10	Cyber Security and Ethical Issues	1	10

Notes:

1 This curriculum is divided into section A & section B.

2 Generally, from section A question will be asked related to pedagogy and integration with contents.

3 From section B questions will be asked covering cognitive level.

4 Separate answer sheets will be used for each section.

5 The medium of the language in written test will be either Nepali or English or both.

6 This curriculum will be effective from 2081/02/07.

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Model Questions

Computer Science

Lowe Secondary Level (Grade 6-8)

Group A : (5 x 10=50 Marks)

Attempts: All Questions

1. How does the *"Track Changes"* feature in Microsoft Word help with peer reviews between students and teachers? Explain. (10)
2. What strategies would you apply to help students understand the concept of "for loop" in programming lanagage teaching? Describe. (10)
3. How can social media be utilised in student engagement environments? Explain with reference to Facebook. (10)
4. How do cloud-based platforms facilitate group learning and interaction among students? Give examples. (10)
5. Define a technology-enabled classroom. Is it supported by your government's policy to use online and blended learning in Nepal? Provide the references.. (5+5)

Group B : (5 x 10=50 Marks)

Attempts: All Questions

6. Describe the memory hierarchy in a computer system and explain the role of each level. (10)
7. Define a number system. Convert the decimal number 56 to its binary equivalent. Provide a detailed explanation of each step in your conversion. (2+4+4)
8. What are the different types of communication cables used in computer networking? Describe. (10)
9. How can you make an image clickable using the <a> tag in HTML? What attribute must be included in the <img> tag to provide an alternative text for an image? Descibe with an example. (5+5)
10. What are the most common types of cybercrimes targeting educational institutions? how can they be prevented? (5+5)

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