

नेपाल सरकार

शिक्षक सेवा आयोग

खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

२०७३

तह : निम्न माध्यमिक

विषय : कम्प्युटर विज्ञान

Section B: Curriculum, Pedagogy and Technology in Computer Science Teaching in Lower Secondary Level - 40 Marks**Unit 1: Curriculum Studies**

- 1.1 Concept of curriculum
- 1.2 Definition of curriculum and its importance
- 1.3 Elements of curriculum
- 1.4 Process of school level curriculum development
- 1.5 General introduction of curriculum at lower secondary level
- 1.6 Objectives of computer science curriculum at lower secondary level
- 1.7 Scope and sequence of computer science curriculum at lower secondary level
- 1.8 Competencies of computer science curriculum at lower secondary level
- 1.9 Characteristics of computer science curriculum at lower secondary level

Unit: 2 Textbook, Teachers Guides and Reference Materials

- 2.1 Introduction of computer science textbook and its importance
- 2.2 Interrelationship between curriculum and textbook
- 2.3 Introduction of teachers guide
- 2.4 Use and importance of teachers guide of computer science at lower secondary level
- 2.5 Present status of using teachers guide at lower secondary level
- 2.6 Needs and importance of instructional materials
- 2.7 Role of teachers in selecting instructional materials for teaching computer science
- 2.8 Role of teachers in managing computer laboratories and instructional materials
- 2.9 Use of Interactive digital learning materials for teaching learning computer science
- 2.10 Use of self-learning materials (SLM) in achieving learning outcomes
- 2.11 Use of multimedia in teaching learning process
- 2.12 Use of Information & Communication Technology (ICT) for effective learning.

Unit 3: Process of preparing Instructional Plan

- 3.1 Selecting general learning goals
- 3.2 Introduction of Instructional Planning

- 3.3 Needs and importance of Instructional Planning for effective learning of computer science
- 3.4 Preparation and use of Instructional Planning:
 - a. Daily lesson plan,
 - b. Unit plan,
 - c. Annual instructional plan.
- 3.5 Innovation in instructional planning

Unit 4: Learning Theories and Learning Psychology

- 4.1 Concept of learning theories
- 4.2 Meaning & definition of learning theory
- 4.3 Some learning theories and their educational implication focusing on computer science at lower secondary level
 - a. Classical conditioning
 - b. Operant conditioning
 - c. Trial & error learning theory
 - d. Insightful learning theory
- 4.4 Difference between learning theory and instructional theory
- 4.5 Preparation and Utilization of computer science curriculum-based learning activities

Unit 5: Teaching Methods and Techniques

- 5.1 Useful methods of teaching computer science
 - a. Demonstration method
 - b. Problem solving method
 - c. Practical exercise
 - d. Question answer
 - e. Discussion method
 - f. Project work
- 5.2 Importance of using ICT in teaching learning activities.
- 5.3 Problems and challenges of the use of ICT in teaching learning activities
- 5.4 Student Participation and role of teacher in project work of computer science

Unit 6: Evaluation

- 6.1 Meaning, definition and methods of evaluation
- 6.2 Types of evaluation
- 6.3 Differences between examination and evaluation

- 6.4 Provision of student evaluation process in lower secondary level
- 6.5 Useful tools for student assessment and evaluation of computer science at lower secondary level
- 6.6 Management of theoretical and practical examination of computer science
- 6.7 Preparation and use of specification grid in computer education at lower secondary level
- 6.8 Analysis and use of result for further improvement of computer science at lower secondary level
- 6.9 Use of ICT in student evaluation and result analysis

Unit 7: Subject teaching in Lower Secondary Level

- 7.1 Interrelationship of computer science with other subjects
- 7.2 Subject teaching of computer science at lower secondary level:

7.2.1. Fundamental Knowledge and Skill of Computer

- Introduction, history, characteristics and types of computer
- Basic knowledge of Operating System
- Fundamental knowledge of Hardware & Software
- Introduction of software and applications
- Word processor and its different features
- Spread sheet and its different features
- Presentation package and its different features

7.2.2. ICT, Ethics and Cyber Laws

- Introduction of ICT and its application in Nepalese Schools
- Concept of ICT technology
- ICT tools and its application
- Cyber Law and Ethics
- Concept of Cyber Law
- Area of Cyber Law
- Cyber Law in Nepal
- Concept of Computer Crime
- Concept of Computer Hacking
- Computer virus and its remedy

7.2.3. Number System

- Concept of Number system

- Binary and decimal number system
- Conversion - Binary to Decimal and Decimal to Binary
- Binary calculation (Addition and multiplication)

7.2.4. Computer Graphics

- Concept of Computer Graphics
- Application of Computer Graphics in various field
- Basic concept of multimedia and its usages

7.2.5. Concept of Computer Programming

- Basic concept of computer programming
- Program design tools (Algorithm, Flowchart and Pseudo code)
- Simple programs using Qbasic

Section C : Content Knowledge of Subject Matter

-40 Marks

Unit 8 : Introduction of Computer

- 8.1 Introduction and characteristics of computer (Speed, Storage, Diligence, Versality, Electronics, Automatic and Accuracy, Non-intelligent)
- 8.2 Types of computer:
 - 8.2.1 Mainframe computer, minicomputer, microcomputer
 - 8.2.2 Analog, digital and hybrid computer
- 8.3 History and Generation of computer
- 8.4 Computer speed and its measurement unit
- 8.5 Computer hardware and software
- 8.6 Input and output device
- 8.7 Specification of PC

Unit 9 : Operating system

- 9.1. Introduction of computer operating system, main function of operating system, single user and multi user operating system
- 9.2. Disk Operating System (DOS), DOS command (internal and external command), system files (Config.sys, IO.sys, MSDOC.sys, autoexec.bat)
- 9.3. Windows Operating System, Windows interface, Desktop, files and folder
- 9.4. Introduction to open source operating system
- 9.5. Computer Memory (ROM, RAM)

Unit 10 :Email Internet and Web

- 10.1 Introduction of email and internet, URL, Internet addressing
- 10.2 WWW, Websites and Webpage, web browsers, web searching
- 10.3 Concept internet addressing, URL, DNS, ISP and web hosting
- 10.4 Introduction to HTML
 - 10.4.1 HTML document
 - 10.4.2 HTML tags
- 10.5 Working with text, hyperlinks, Images, Lists, Tables

Unit 11 :Number System

- 11.1 Introduction of number system
- 11.2 Decimal, Binary, Octal, Hexadecimal Number System
- 11.3 Conversion from one system to another number system
- 11.4 Binary arithmetic

Unit 12: Application Package**12.1 Word Processor**

- Concept and types of Word Processor
- Formatting and Editing Text, Page number
- Working with Tables, Charts and Graphics
- Templates and Styles
- Mail Merge and Macro
- Hyperlink
- Working with Outlines and Long Documents
- Typing in Unicode

12.2 Spread Sheet

- Fundamentals of Spread Sheet
- Workbook and Worksheet
- Creating and Working with Charts
- Different Functions and Formulas
- Data Filter and sorting
- Data Analysis and PivotTables
- What-If Analysis Unit

12.3 Presentation

- Fundamental of Presentation
- Designing, Formatting and Editing a Presentation
- Transition of Presentation
- Animation and Custom Animation
- Inserting Tables, Charts, Graphics and Hyperlink
- Working with Multimedia

Unit 13: Computer Programming

- 13.1 Concept of computer programming
- 13.2 Algorithm, flowchart and pseudo code
- 13.3 Variable, constant, operator, comment, data type, array and functions
- 13.4 Input/output function, control statement
- 13.5 Programming in QBASIC
- 13.6 Concept of Object Oriented Programming
- 13.7 Structure of C programming
- 13.8 Comparison of QBASIC programming and C programming

Unit 14: ICT and Its Social Impact

- 14.1 Social impact of ICT
- 14.2 Digital divide
- 14.3 Intellectual Properties Right
- 14.4 Privacy, Anonymity
- 14.5 Computer ethics
- 14.6 Computer Crime and Cyber law
- 14.7 Cyber Law in Nepal
- 14.8 Computer Crime and Cyber law
- 14.9 Computer ethics