Computer Science

Grade 8

**1. Fundamental Knowledge and Skill of Computer**

• History of computer Development

• Generation of Computer

• Types of computer

• Introduction of software and applications

• Different types of Operating System

• Advance features of Word Processor

• Advance features of Spread Sheet

• Advance features of presentation

**2. ICT, Ethics and Cyber Laws**

• Concept ICT technology

• Computer Ethics and cyber law

• Computer virus

• Introduction of Web design

• Introduction of data communication and Network

• Search educational materials through Web

**3. Number System**

• Decimal to Binary and Vice versa

• Binary calculation

**4. Computer Graphics**

• Introduction of Computer Graphics

• Create multimedia document

• Usages of Computer Graphics in various field

**5. Concept of Computer Programming**

• Basic concept of computer programming

• Simple programs based on pseudo code

Course Contents

|  |  |  |
| --- | --- | --- |
| **Area** | **Topics** | **Wt.** |
| **Fundamental Knowledge**  **and Skill of**  **Computer** | • **History of computer Development**  **• Generation of Computer**  **• Types of computer**  􀂙 Analog, Digital and Hybrid  􀂙 Classification of Digital computer  Super, Mainframe, Mini and Micro  **• Types of software and applications**  **• Types of Operating System**  􀂙 Based on Mode of user (Single user and Multi user OS)  􀂙 Based on user interface (CUI and GUI)  **• Advance features of Word Processor**  􀂙 Creating, editing and formatting text  􀂙 Develop graphs and charts using Excel data  **• Advance features of Spread Sheet**  􀂙 Editing and formatting text in Spread Sheet  􀂙 Develop graphs and charts  􀂙 Basic calculation  function of Spread Sheet(Sum(+), Min(-), Max(), Average(a)  ,IF)  􀂙 Develop graphs and charts in Spread Sheet  • **Advance features of presentation**  􀂙 Layout design of Slides  −Fonts, Page layout, Effect Insert text and graphics or charts  􀂙 Insert new slide, delete | 60 |
| **ICT, Ethics**  **and Cyber**  **Laws** | **Concept of ICT**  • **Computer Ethics and cyber law**  • **Computer virus, remedy and protection**  • **Introduction of Web design**  􀂙 Introduction of web page, browser and hyperlinks  􀂙 Introduction of HTML  􀂙 Create Simple Web page using HTML (use basic tags and  following tags:  <P>,<B>,<U>,<I>,<SUP>,<SUB>,<HR>,<BR>,<FONT>,<H  1…H6> ,<A> ,<MARQUEE> ,<IMG>  • **Introduction of data communication and Network**  􀂙 Introduction of data communication  􀂙 Introduction of computer network and its advantages  􀂙 LAN, MAN and WAN  • **Types of Network**  • **Search educational materials through Web** | 35 |
| **Number**  **System** | **Decimal to Binary and Vice versa**  • **Binary calculation**  􀂙 Addition and multiplication | 7 |
| **Computer**  **Graphics** | **Introduction of Computer Graphics**  • **Create multimedia document**  • **Usages of Computer Graphics in various fields**  􀂙 Introduction of Photo Editing  􀂙 General concept of photo editing tools and usages  􀂙 Introduction and importance of Page Layout  􀂙 General concept of Page layout  􀂙 Common software for Page Layout | 15 |
| **Concept of**  **Computer**  **Programming** | **Basic concept of computer** programming  􀂙 Computer program and programming  􀂙 Program design tools (Algorithm, Flowchart and Pseudo code)  􀂙 Simple program using Qbasic(concept of variable and constant and program in sequence structure only: CLS, LET, PRINT, INPUT, END,REM) | 33 |
|  |  | 175 |

**Specification Grid**

**Computer Education Class 8**

**Full Mark : 50 Time : 2 Hours Pass Mark : 17.5**

**Theory Part**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SN | Area | Topics | No. of Questions | Types of Questions | | | |
| **knowledge Base** | **Skill** | **Low Ability** | **High Ability** |
| 1 | Fundamental  Knowledge & Skill  Computer | Introduction of computer  • Introduction of Hardware  • Introduction of Software  • Input and output devices  • Storage Devices  • Introduction of word Processing  • Introduction of Spread sheet  • Introduction of Presentation package | 4 | 1 | 1 | 1 | 1 |
| 2 | ICT, Ethics and  Cyber Laws | Concept ICT technology  • Computer Ethics and cyber law  Computer virus, remedy and protection  • Introduction data communication and Network  • Introduction of Web design  • Use of Website, Internet and Email | 2 | 1 |  | 1 |  |
| 3 | Number system | Decimal to Binary and Vice versa  • Binary calculation: addition & Multiplication | 1 |  | 1 |  |  |
| 4 | Computer Graphics | Introduction of Computer Graphics  • Usages of Computer Graphics in various field | 2 | 1 | 1 |  |  |
| 5 | Concept of  Computer Programming | Basic concept of computer programming | 1 |  |  |  | 1 |
| Total | | | 10 | 3 | 3 | 2 | 2 |

**For Practical Exam**

**Full Marks: 50 Time: 1.00 hrs. Pass Marks: 17.5**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SN | Area | Topics | No. of  questions | Marks |
| 1 | Fundamental knowledge and Skill of  Computer | Creating document by following instructions  • Create four different types of data and show in chart  • Insert given data according to instruction  • To create four Power Point slides and presentation | 1 | 25 |
| 2 | Computer Graphics | Develop simple Web page using HTML Tags  • Develop four colour Book Design | 1 | 25 |

Course Title: Computer Science (Grade 8) Full Marks: 50 + 50

Nature of the Course: Theory + Practical Pass Marks: 20 + 20

**FIRST TERMINAL EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Introduction/History/Generation of Computer |
| * Basic Concept Of Number System |
| **Operating System Concept** | * Introduction * Functions of Operating System * Types Of Operating System |
| **Advance Features of Word Processor** | * Introduction * Creating, editing and formatting text * Develop graphs and charts using Excel data |
| **Concept of Computer Programming** | * Computer program and programming * Program design tools (Algorithm, Flowchart and Pseudo code) |

**Half Yearly EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Types of Computer |
| **Advance Features of Spread Sheet** | * Introduction * Editing and formatting text in Spread Sheet * function of Spread Sheet(Sum(+), Min(-), Max(), Average(a) ,(IF) * Develop graphs and charts in Spread Sheet |
| **ICT, Ethics and**  **Cyber Laws** | * Concept of ICT * Computer Ethics and cyber law * Computer virus, remedy and protection |
| **Concept of Computer Programming** | * Simple program using Qbasic(concept of variable and constant and program in sequence structure only: CLS, LET, * PRINT, INPUT, END,REM) |

**Second TERMINAL EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Software and Application |
| **Advance Features of Presentation** | * Introduction * Layout design of Slides   −Fonts, Page layout, Effect Insert text and graphics or charts   * Insert new slide, delete |
| **Web Designing &**  **Network** | * Introduction of web page, browser and hyperlinks * Introduction of HTML * Create Simple Web page using HTML (use basic tags and following tags:   <P>,<B>,<U>,<I>,<SUP>,<SUB>,<HR>,  <BR>,<FONT>,<H1…H6> ,<A> ,<MARQUEE> ,<IMG>   * Introduction of data communication * Introduction of computer network and its advantages * Typesof Network |

**Final Examination**

|  |  |
| --- | --- |
| **Computer Graphics** | * Introduction of Photo Editing * General concept of photo editing tools and usages * Introduction and importance of Page Layout * General concept of Page layout * Common software for Page Layout |
| **Concept of Computer Programming** | * Revision Tour |

Computer Science (Optional II)

Grade 9-10

Course Contents

Grade IX

|  |  |  |  |
| --- | --- | --- | --- |
| Area | Contents | Tentative No. of Classes | |
| Th | Pr |
| 1. Computer  Fundamental | (1.1) Introduction (Importance and modern application areas)  (1.2) Types of Computers (Digital, Analog & Hybrid)  (1.3) Computer System (Basic Architecture)  (i) Input (ii) Process (iii) Output(iv) Storage  (1.4) Computer Hardware  (a) Motherboard  (b) Microprocessor  (c) Memory  (i) Primary (RAM, ROM, Cache Memory)  (ii) Secondary  -Magnetic Storage Device (Tape, Hard Disk, Flash Memory)  -Optical Storage Device (CD-ROM, CD-RW, DVD ROM, Blue Ray Disk etc)  (iii) Units of memory measurement (BIT, Nibble, Byte, KB,  MB, GB, TB, PB)  (d) Input Devices  -Keyboard, Mouse, Scanner, Track ball, Touch pad, Joystick,  Scanner, Bar Code Reader, Digital Camera, Microphone,  Graphic Digitizer, Touch Screen, QR Code Scanner  (e) Output Device  - Monitor, Printer & its type, Speaker, Graphic Plotter  (1.5) Computer Software  (1.5.1) Types of Computer Software  (a) System Software  (i) Operating System and its functions  Types of OS  - Single User  - Multi User  GUI Environments  - Introduction to GUI Environments (Desktop)  - Concepts of Icon, Windows dialogue box, GUI Controls  - Mouse pointer and its activities  - File and Folder Management  (ii) Language Processor  (b) Application Software  (c) Utility Software  (1.5.2) Introduction Open Source Software  (1.5.3) An introduction to desktop & web apps | 33 |  |
| 2. Working with  Graphics | (2.1) Different Graphics Format  (2.2) Graphics for Web  (2.3) Image size, resolution  (2.4) Graphics Editing  - Changing the size and format of image  - Text and selection tool  - Cropping images | 7 | 17 |
| 3. Internet and  Web Technology | (3.1) Internet Technology  An introduction to  - web browser, search engine, upload, download, webserver,  URL, home page, web page, website, DNS  - IOT (Internet of Things)  - Cloud Computing  (3.2) HTML  (3.2.1) Creating, opening and formatting HTML Document  - <HTML>, <HEAD>, <TITLE>, <BODY> (BGCOLOR),  <P> (ALIGN), <FONT> (SIZE, COLOR &  FACE), <H1> ..... <H6> (ALIGN), <B>, <I>, <CENTER>,  <U>, <SUB>, <SUP>, <BR>, <HR>  (3.2.2) Setting marquee - <MARQUEE> (BEHAVIOR, BGCOLOR)  (3.2.3) Creating Links  - <A> (HREF)  (3.2.4) Inserting Images  -<IMG> (SRC, WIDTH, HEIGHT)  (3.2.5) Working with table  -<TABLE> (BORDER, BGCOLOR), <TD>, <TR>  (3.2.6) Working with forms  - Different form Elements  (3.3) CSS (Cascading Style Sheets)  Introduction to CSS, CSS syntax, CSS Measuring Units, CSS:  Colors, Backgrounds, Fonts, Text, Images, Links, borders,  margins | 20 | 34 |
| 4. Computer  Programming | (4.1) General Concept  (a) Programing & programmer  (b) Programming language  (c) Translator (Compilers and Interpreters)  (d) Algorithm and Flow chant  (4.2) Programming in QBASIC  (4.2.1) Introduction  (a) Features of QBASIC programming  (b) QBASIC interface (Screen, menus, shortcut commands)  (4.2.2) Data types  (a) Numeric (Integer, Long integer, single precision, double  precision)  (b) Variables and rules for naming variables  (c) Constants (Literal and symbolic)  (d) Variable Declaration (Implicit and Explicit)  (i) Using type declaration characters (%, &, !, # and $)  (ii) Using DIM AS statement  (4.2.3) Operators, operands & expressions  (a) Operators and their precedence  (i) Arithmetic operators (+,-,\*,/,\,MOD,^)  (ii) Relational operators (=,>,>,>=,<=,<>)  (iii) Logical operators (AND, OR, NOT)  (iv) String Operators (+)  (v) Assignment operators (=)  (b) Expression  (i) Arithmetic expression  (ii) Logical (Boolean expression  (iii) String expression  (4.2.4) Program Statements (use and syntax)  (a) Declaration statement (CONST, DIM, REM)  (b) Assignment statement (LET, SWAP)  (c) Input/Output statement  - CLS, INPUT, LINE INPUT, READ ... DATA, INPUT$,  INKEY$, PRINT, LPRINT, PRINT USING, LPRINT USING, TAB, SPC, LOCATE, DATE$, TIME$  (4.2.5) Program flow and control structures  (a) Sequence Structure  (b) Selection Structure (IF, SELECT statement)  (c) Loop Structure (FOR, WHILE, DO WHILE statements)  (4.2.6) Library Functions  String manipulation functions : (ASC, CHR$, LEFT$, RIGHT$,  MID$, LTRIM$, RTRIM$, VAL, STR$, SPACE$,  STRING$, LCASE$, UCASE$, DATE$, TIME$)  Mathematical Calculation Functions (ABS, COS, SIN, TAN,  GQR, SGN, INT)  (ABS, COS, SIN, TAN, SQR, SGN, INT)  (4.2.7) Arrays (Declaring and Using)  (a) Array Variables  (b) Array elements and subscripts  (c) One dimensional array (Searching, Sorting)  (d) Two dimensional array (general concept) | 27 | 34 |
|  |  | 85 | 85 |

Grade X

|  |  |  |  |
| --- | --- | --- | --- |
| Area | Contents | Tentative No. of Classes | |
| Th | Pr |
| 1. Introduction  Technology  Fundamentals | (1.1) Networking & Telecommunications  (1.1.1) Introduction to Networks  (i) Communication Media (Guided & Unguided Media)  (ii) Elements of Network (NIC Card, Connectors, Hub,  Bridge, Switch, Router, Gateway, Repeater, Modem)  (iii) Types of Network  LAN, MAN, WAN  (iv) Network Architecture  Peer-to-peer Network, Client-Server Network,  Centralized Network  (v) Topologies (Bus, Star, Ring)  (vi) Protocols (Definition and Example)  (vii) Advantages & Disadvantages of Network  (viii) Internet and its services  (1.2) Ethical and Social Issues in ICT  Digital Citizenship, Digital Footprint, IT policy 2072,  Electronic Transaction Act, Opportunities and  threats in Social Media  (1.3) Computer Security  (a) Computer security, Information security, security  threats, malicious codes  (b) Security mechanisms  (i) Authentication systems: Password, biometric  (ii) Firewalls  (iii) Cryptography : Encryption, Decryption  (iv) Antivirus software  (v) Backup System  (a) Hardware Security  (i) Regular Maintenance (ii) Insurance (iii) Free from dust  (iv) Fire (v) Thief (vi) Air Condition system (vii)  Power protection device (Volt guard, Spike guard,  UPS)  (1.4) E-Commerce  (i) Introduction (ii) Benefits and Limitation of E-Commerce (iii) Types of E-Commerce: B2B, B2C, C2C  (iv) M-Commerce (v) Online Payment  (1.5) Contemporary Technology  Cloud Computing, Artificial Intelligence Virtual Reality, E-Governance, Mobile Computing, Internet of  things (IOT)  (1.6) Number system  (a) Binary Arithmetic (addition, Subtraction, Multiplication,  Division)  (b) Base Conversion (Decimal, Octal, binary and hexadecimal) | 34 |  |
| 2. Database Management  System | (2.1) Introduction  (i) Data and Information, Database Concept, Database  Management Concept  (ii) Files, Data type, Record, Table  (2.2) Creating a Database using MS-Access  (i) Creating a new Database  (ii) Creating a new Table by design view, Saving and  creating a Primary key  (iii) Adding and deleting fields  (iv) Editing Field name, Data type, Field size and Index  (2.3) Entering and Editing Data  (i) Adding, Editing, Inserting, Deleting and sorting  records  (ii) Adjusting Column widths and hiding columns  (2.4) Querying Database  (i) Select Query (ii) Update Query (iii) Delete Query (iv)  Insert Query (criteria with maximum two conditions)  (2.5) Creating and using forms  (i) Creating Form by using wizard, Entering and Editing  Data using a from  (2.6) Creating and Printing Reports  (i) Printing the table data, Creating a Report Using the  Report Wizards  (ii) Printing a Report | 17 | 29 |
| 3. Programming in  QBASIC | (3.1) Modular Programming  (i) Concept of modular programming approach  (ii) Main module, procedure modules (function and sub  procedures)  (iii) Parameters (Concept of Local & Global variables)  (iv) Writing and calling function procedure  (v) Define and call procedures  (FUNCTION... END FUNCTION, SUB... END  SUB,CALL)  (3.2) File processing (file handling)  (i) Data file (sequential only)  (ii) File modes (output, input, append)  (iii) File processing activities  Opening a file  Write to a file  Reading a file  Appending records to a file  Closing file  Statements and Functions to be covered:  File Input / Output Management statement and functions  (OPEN, CLOSE, WRITE#, PRINT#,INPUT#,INPUT$  LINE INPUT#,EOF,NAME,KILL,FILES,CHDIR, MKDIR,RMDIR) | 24 | 37 |
| 4. C- Programming | 1. Introduction to C-Language Programming  2. Data types, operators  3. Keywords in C-Language  4. Input /Output using scan f & Print f  5. Writing Programs using IF and looping statements | 10 | 10 |
|  |  | 85 | 85 |

Course Title: Computer Science (STANDARD X) Full Marks: 50 + 50

Nature of the Course: Theory + Practical Pass Marks: 20 + 20

**FIRST TERMINAL EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Networking And Telecommunication |
| * Ethical and social Issues in ICT |
| * Number System |
| **QBASIC** | * Review of Control Statements * Review of Library Functions * Introduction to Modular Programming * Introduction/Concept of Function * Library Vs. User Defined Functions (Compare And Contrast) * Programming With SUB PROCEDURES * Programming With FUNCTION PRODECURES |

**Half Yearly EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * E-commerce |
| * Contemporary Technology |
| **Database Management With MS-ACCESS** | * Introduction To Database * Features Of Access/Purpose * Creating Database Using MS-Access * Entering and Editing Data * Creating Queries And Editing * Creating And Using Forms * Creating And Printing Reports |

**Second TERMINAL EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Computer Security |
| **QBASIC** | Sequential File Handling In Q-BASIC   * Open- For OUTPUT (File Creation) * Close# (Closing A File) * Write# (Writing On A File) * Open- For INPUT (File Reading) * Input# (Reading From A File) * EOF (Checking End Of File)   Open- For APPEND |
| **Structured Programming** | * Introduction * Data types, operators * Keywords in C-Language * Input /Output using scanf & Printf * Writing Programs using IF and looping statements |
| **Qbasic** | **Project Work (Platform-QBASIC)**   * Introduction To Project * Project Guidelines * Project Proposal Preparation/Format Demonstration * Presentation Guidelines/Demonstration |

Course Title: Computer Science (STANDARD IX) Full Marks: 50 + 50

Nature of the Course: Theory + Practical Pass Marks: 17.5 + 17.5

**FIRST TERMINAL EXAMINATION**

|  |  |  |
| --- | --- | --- |
| **Computer Fundamentals** | | * Introduction/ Types Computer |
| * Computer System Architecture |
| **QBASIC** | **Program Development Life Cycle** | * Stages of PDLC * Algorithm (Advantage/Disadvantage) * Flowchart (Advantage/Disadvantage) * Types Of Flowchart |
| **Introduction To Qbasic** | * Introduction/Features * Q-Basic Interface * Menu Commands |
| **Fundamentals of Qbasic** | * Introduction To Variable/Constant (Their Types) * Basic Words (Reserved Vs. User Defined) * Basic Operators (Its Types Including Truth Tables) |
| **Programming in Qbasic** | * Commands And Statements (CLS, REM, * INPUT, PRINT……...) * READ….. DATA Statement * PRINT USING Statement * Simple Graphics with QBASIC (Locate, Line, Circle.) * Immediate Mode Commands |
| **Control Statements** | * IF…THEN, IF…THEN…ELSE, NESTED * IF…THEN…. Statement * SELECT CASE Statement |

**Half Yearly EXAMINATION**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Computer Fundamentals** | * Computer Hardware |  |
| **OS** | **Operating System Concept** | * Introduction * Functions Of Operating System * Relation Between User-OS-Hardware * Types Of Operating System/Booting Types * Introduction to GUI Operating system |  |
|  |  |
| **QBASIC** |  | * Concept of Looping and its practical application |  |
| **Looping** | * FOR….NEXT |  |
| * WHILE…..WEND |  |
|  | * DO……LOOP |  |
| **Library Functions** | * Introduction to Functions * User Defined Vs. Library Functions * Numeric Functions * Trigonometric Functions * String Handling Functions |  |

**Second TERMINAL EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Computer Software |
| **Qbasic** | * Introduction to Arrays (Single and Two Dimensional) |
| **Computer Graphic** | * Introduction * Working with Photoshop |
| **Hyper Text Mark Up Language** | * Introduction/Concept Of Web Page and Web Site * Components of the Web * Html Tags (Paired/Unpaired) * Creating, Opening and Formatting HTML * Documents * Inserting Images/Setting Marquee/Creating Links * Working With Tables and Lists * Working with Frames |
| **Cascading Style Sheets** | * Introduction * Advantages * Syntax, Measuring Unit * CSS: Colors, backgrounds, Fonts, Text, Images, Links, Borders, margin   Project On HTML, CSS |

**Final EXAMINATION**

|  |  |
| --- | --- |
| **Computer Fundamentals** | * Computer Software |
| **Internet Technology** | * Introduction * Important Terms of Internet Technology * IoT, Cloud Computing |
| **Qbasic** | * Introduction to Arrays (Single and Two Dimensional) |