# 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**<br>• **Generation of Computer**<br>• **Types of computer**<br>☐ Analog, Digital and Hybrid<br>☐ Classification of Digital computer<br>Super, Mainframe, Mini and Micro<br>• **Types of software and applications**<br>• **Types of Operating System**<br>☐ Based on Mode of user (Single user and Multi user OS)<br>☐ Based on user interface (CUI and GUI)<br>• **Advance features of Word Processor**<br>☐ Creating, editing and formatting text<br>☐ Develop graphs and charts using Excel data<br>• **Advance features of Spread Sheet**<br>☐ Editing and formatting text in Spread Sheet | 60 |

| | | |
|---|---|---|
| | ☐ Develop graphs and charts<br>☐ Basic calculation<br>function of Spread Sheet(Sum(+), Min(-), Max(), Average(a) ,IF)<br>☐ Develop graphs and charts in Spread Sheet<br>• **Advance features of presentation**<br>☐ Layout design of Slides<br>−Fonts, Page layout, Effect Insert text and graphics or charts<br>☐ Insert new slide, delete | |
| **ICT, Ethics and Cyber Laws** | **Concept of ICT**<br>• **Computer Ethics and cyber law**<br>• **Computer virus, remedy and protection**<br>• **Introduction of Web design**<br>☐ Introduction of web page, browser and hyperlinks<br>☐ Introduction of HTML<br>☐ Create Simple Web page using HTML (use basic tags and following tags:<br><P>,<B>,<U>,<I>,<SUP>,<SUB>,<HR>,<BR>,<FONT>,<H1…H6> ,<A> ,<MARQUEE> ,<IMG><br>• **Introduction of data communication and Network**<br>☐ Introduction of data communication<br>☐ Introduction of computer network and its advantages<br>☐ LAN, MAN and WAN<br>• **Types of Network**<br>• **Search educational materials through Web** | 35 |
| **Number System** | **Decimal to Binary and Vice versa**<br>• **Binary calculation**<br>☐ Addition and multiplication | 7 |
| **Computer Graphics** | **Introduction of Computer Graphics**<br>• **Create multimedia document**<br>• **Usages of Computer Graphics in various fields**<br>☐ Introduction of Photo Editing<br>☐ General concept of photo editing tools and usages<br>☐ Introduction and importance of Page Layout<br>☐ General concept of Page layout<br>☐ Common software for Page Layout | 15 |
| **Concept of Computer Programming** | **Basic concept of computer** programming<br>☐ Computer program and programming<br>☐ Program design tools (Algorithm, Flowchart and Pseudo code)<br>☐ 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<br>• Introduction of Hardware<br>• Introduction of Software<br>• Input and output devices<br>• Storage Devices<br>• Introduction of word Processing<br>• Introduction of Spread sheet<br>• Introduction of Presentation package | 4 | 1 | 1 | 1 | 1 |
| 2 | ICT, Ethics and Cyber Laws | Concept ICT technology<br>• Computer Ethics and cyber law<br>Computer virus, remedy and protection<br>• Introduction data communication and Network<br>• Introduction of Web design<br>• Use of Website, Internet and Email | 2 | 1 | | 1 | |
| 3 | Number system | Decimal to Binary and Vice versa<br>• Binary calculation: addition & Multiplication | 1 | | 1 | | |
| 4 | Computer Graphics | Introduction of Computer Graphics<br>• 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<br>• Create four different types of data and show in chart<br>• Insert given data according to instruction<br>• To create four Power Point slides and presentation | 1 | 25 |
| 2 | Computer Graphics | Develop simple Web page using HTML Tags<br>• 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<br>• Functions of Operating System<br>• Types Of Operating System |
| **Advance Features of Word Processor** | • Introduction<br>• Creating, editing and formatting text<br>• Develop graphs and charts using Excel data |
| **Concept of Computer Programming** | • Computer program and programming<br>• Program design tools (Algorithm, Flowchart and Pseudo code) |

## Half Yearly  EXAMINATION

| | |
|---|---|
| **Computer Fundamentals** | • Types of Computer |
| **Advance Features of Spread Sheet** | • Introduction<br>• Editing and formatting text in Spread Sheet<br>• function of Spread Sheet(Sum(+), Min(-), Max(), Average(a) ,(IF)<br>• Develop graphs and charts in Spread Sheet |
| **ICT, Ethics and Cyber Laws** | • Concept of ICT<br>• Computer Ethics and cyber law<br>• 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,<br>• PRINT, INPUT, END,REM) |

## Second  TERMINAL  EXAMINATION

| | |
|---|---|
| **Computer Fundamentals** | • Software and Application |
| **Advance Features of Presentation** | • Introduction<br>• Layout design of Slides<br>  − Fonts, Page layout, Effect Insert text and graphics or charts<br>• Insert new slide, delete |
| **Web Designing & Network** | • Introduction of web page, browser and hyperlinks<br>• Introduction of HTML<br>• 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<br>• Introduction of computer network and its advantages<br>• Types of Network |

## Final Examination

| Computer Graphics | • Introduction of Photo Editing<br>• General concept of photo editing tools and usages<br>• Introduction and importance of Page Layout<br>• General concept of Page layout<br>• 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)<br>(1.2) Types of Computers (Digital, Analog & Hybrid)<br>(1.3) Computer System (Basic Architecture)<br>　　(i) Input (ii) Process (iii) Output(iv) Storage<br>(1.4) Computer Hardware<br>　　(a) Motherboard<br>　　(b) Microprocessor<br>　　(c) Memory<br>　　　(i) Primary (RAM, ROM, Cache Memory)<br>　　　(ii) Secondary<br>　　　　-Magnetic Storage Device (Tape, Hard Disk, Flash Memory)<br>　　　　-Optical Storage Device (CD-ROM, CD-RW, DVD ROM, Blue Ray Disk etc)<br>　　　(iii) Units of memory measurement (BIT, Nibble, Byte, KB, MB, GB, TB, PB)<br>　　(d) Input Devices<br>　　　-Keyboard, Mouse, Scanner, Track ball, Touch pad, Joystick, Scanner, Bar Code Reader, Digital Camera, Microphone, Graphic Digitizer, Touch Screen, QR Code Scanner<br>　　(e) Output Device<br>　　　- Monitor, Printer & its type, Speaker, Graphic Plotter<br>(1.5) Computer Software<br>(1.5.1) Types of Computer Software<br>　　(a) System Software<br>　　　(i) Operating System and its functions<br>　　　　Types of OS<br>　　　　- Single User<br>　　　　- Multi User<br>　　　　GUI Environments<br>　　　　- Introduction to GUI Environments (Desktop)<br>　　　　- Concepts of Icon, Windows dialogue box, GUI Controls<br>　　　　- Mouse pointer and its activities<br>　　　　- File and Folder Management<br>　　　(ii) Language Processor<br>　　(b) Application Software<br>　　(c) Utility Software<br>(1.5.2) Introduction Open Source Software<br>(1.5.3) An introduction to desktop & web apps | 33 | |
| 2. Working with Graphics | (2.1) Different Graphics Format<br>(2.2) Graphics for Web<br>(2.3) Image size, resolution | 7 | 17 |

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|---|---|---|---|
| | (2.4) Graphics Editing<br>   - Changing the size and format of image<br>   - Text and selection tool<br>   - Cropping images | | |
| 3. Internet and Web Technology | (3.1) Internet Technology<br>An introduction to<br>- web browser, search engine, upload, download, webserver, URL, home page, web page, website, DNS<br>- IOT (Internet of Things)<br>- Cloud Computing<br>(3.2) HTML<br>(3.2.1) Creating, opening and formatting HTML Document<br>   - <HTML>, <HEAD>, <TITLE>, <BODY> (BGCOLOR), <P> (ALIGN), <FONT> (SIZE, COLOR & FACE), <H1> ..... <H6> (ALIGN), <B>, <I>, <CENTER>, <U>, <SUB>, <SUP>, <BR>, <HR><br>(3.2.2) Setting marquee - <MARQUEE> (BEHAVIOR, BGCOLOR)<br>(3.2.3) Creating Links<br>   - <A> (HREF)<br>(3.2.4) Inserting Images<br>   -<IMG> (SRC, WIDTH, HEIGHT)<br>(3.2.5) Working with table<br>   -<TABLE> (BORDER, BGCOLOR), <TD>, <TR><br>(3.2.6) Working with forms<br>   - Different form Elements<br>(3.3) CSS (Cascading Style Sheets)<br>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<br>   (a) Programing & programmer<br>   (b) Programming language<br>   (c) Translator (Compilers and Interpreters)<br>   (d) Algorithm and Flow chant<br>(4.2) Programming in QBASIC<br>(4.2.1) Introduction<br>   (a) Features of QBASIC programming<br>   (b) QBASIC interface (Screen, menus, shortcut commands)<br>(4.2.2) Data types<br>   (a) Numeric (Integer, Long integer, single precision, double precision)<br>   (b) Variables and rules for naming variables<br>   (c) Constants (Literal and symbolic)<br>   (d) Variable Declaration (Implicit and Explicit)<br>     (i) Using type declaration characters (%, &, !, # and $)<br>     (ii) Using DIM AS statement<br>(4.2.3) Operators, operands & expressions<br>   (a) Operators and their precedence<br>     (i) Arithmetic operators (+,-,*,/,\,MOD,^)<br>     (ii) Relational operators (=,>,>,>=,<=,<>)<br>     (iii) Logical operators (AND, OR, NOT)<br>     (iv) String Operators (+)<br>     (v) Assignment operators (=)<br>   (b) Expression<br>     (i) Arithmetic expression<br>     (ii) Logical (Boolean expression<br>     (iii) String expression<br>(4.2.4) Program Statements (use and syntax)<br>   (a) Declaration statement (CONST, DIM, REM) | 27 | 34 |

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| | (b) Assignment statement (LET, SWAP)<br>(c) Input/Output statement<br>   - CLS, INPUT, LINE INPUT, READ ... DATA, INPUT$,<br>    INKEY$, PRINT, LPRINT, PRINT USING, LPRINT<br>    USING, TAB, SPC, LOCATE, DATE$, TIME$<br>(4.2.5) Program flow and control structures<br>    (a) Sequence Structure<br>    (b) Selection Structure (IF, SELECT statement)<br>    (c) Loop Structure (FOR, WHILE, DO WHILE statements)<br>(4.2.6) Library Functions<br>  String manipulation functions : (ASC, CHR$, LEFT$, RIGHT$,<br>  MID$, LTRIM$, RTRIM$, VAL, STR$, SPACE$,<br>  STRING$, LCASE$, UCASE$, DATE$, TIME$)<br>  Mathematical Calculation Functions (ABS, COS, SIN, TAN,<br>  GQR, SGN, INT)<br>  (ABS, COS, SIN, TAN, SQR, SGN, INT)<br>(4.2.7) Arrays (Declaring and Using)<br>    (a) Array Variables<br>    (b) Array elements and subscripts<br>    (c) One dimensional array (Searching, Sorting)<br>    (d) Two dimensional array (general concept) | | |
| | | 85 | 85 |

## Grade X

| Area | Contents | Tentative No. of Classes | |
|---|---|---|---|
| | | Th | Pr |
| 1. Introduction Technology Fundamentals | (1.1) Networking & Telecommunications<br>(1.1.1) Introduction to Networks<br>    (i) Communication Media (Guided & Unguided Media)<br>    (ii) Elements of Network (NIC Card, Connectors, Hub,<br>      Bridge, Switch, Router, Gateway, Repeater, Modem)<br>    (iii) Types of Network<br>      LAN, MAN, WAN<br>    (iv) Network Architecture<br>      Peer-to-peer Network, Client-Server Network,<br>      Centralized Network<br>    (v) Topologies (Bus, Star, Ring)<br>    (vi) Protocols (Definition and Example)<br>    (vii) Advantages & Disadvantages of Network<br>    (viii) Internet and its services<br>(1.2) Ethical and Social Issues in ICT<br>    Digital Citizenship, Digital Footprint, IT policy 2072,<br>    Electronic Transaction Act, Opportunities and<br>    threats in Social Media<br>(1.3) Computer Security<br>    (a) Computer security, Information security, security<br>      threats, malicious codes<br>    (b) Security mechanisms<br>      (i) Authentication systems: Password, biometric<br>      (ii) Firewalls<br>      (iii) Cryptography : Encryption, Decryption<br>      (iv) Antivirus software<br>      (v) Backup System<br>    (a) Hardware Security<br>      (i) Regular Maintenance (ii) Insurance (iii) Free from dust<br>      (iv) Fire (v) Thief (vi) Air Condition system (vii)<br>      Power protection device (Volt guard, Spike guard, | 34 | |

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|---|---|---|---|
| | UPS)<br>(1.4) E-Commerce<br> (i) Introduction (ii) Benefits and Limitation of E-Commerce<br> (iii) Types of E-Commerce: B2B, B2C, C2C<br> (iv) M-Commerce (v) Online Payment<br>(1.5) Contemporary Technology<br> Cloud Computing, Artificial Intelligence Virtual Reality, E-<br> Governance, Mobile Computing, Internet of<br> things (IOT)<br>(1.6) Number system<br> (a) Binary Arithmetic (addition, Subtraction, Multiplication,<br> Division)<br> (b) Base Conversion (Decimal, Octal, binary and<br> hexadecimal) | | |
| 2. Database<br>Management<br>System | (2.1) Introduction<br> (i) Data and Information, Database Concept, Database<br> Management Concept<br> (ii) Files, Data type, Record, Table<br>(2.2) Creating a Database using MS-Access<br> (i) Creating a new Database<br> (ii) Creating a new Table by design view, Saving and<br> creating a Primary key<br> (iii) Adding and deleting fields<br> (iv) Editing Field name, Data type, Field size and Index<br>(2.3) Entering and Editing Data<br> (i) Adding, Editing, Inserting, Deleting and sorting<br> records<br> (ii) Adjusting Column widths and hiding columns<br>(2.4) Querying Database<br> (i) Select Query (ii) Update Query (iii) Delete Query (iv)<br> Insert Query (criteria with maximum two conditions)<br>(2.5) Creating and using forms<br> (i) Creating Form by using wizard, Entering and Editing<br> Data using a from<br>(2.6) Creating and Printing Reports<br> (i) Printing the table data, Creating a Report Using the<br> Report Wizards<br> (ii) Printing a Report | 17 | 29 |
| 3. Programming<br>in<br>QBASIC | (3.1) Modular Programming<br> (i) Concept of modular programming approach<br> (ii) Main module, procedure modules (function and sub<br> procedures)<br> (iii) Parameters (Concept of Local & Global variables)<br> (iv) Writing and calling function procedure<br> (v) Define and call procedures<br> (FUNCTION... END FUNCTION, SUB... END<br> SUB,CALL)<br>(3.2) File processing (file handling)<br> (i) Data file (sequential only)<br> (ii) File modes (output, input, append)<br> (iii) File processing activities<br> Opening a file<br> Write to a file<br> Reading a file<br> Appending records to a file<br> Closing file<br> Statements and Functions to be covered:<br> File Input / Output Management statement and functions<br> (OPEN, CLOSE, WRITE#, PRINT#,INPUT#,INPUT$<br> LINE INPUT#,EOF,NAME,KILL,FILES,CHDIR, | 24 | 37 |

| | MKDIR,RMDIR) | | |
|---|---|---|---|
| 4. C-Programming | 1. Introduction to C-Language Programming<br>2. Data types, operators<br>3. Keywords in C-Language<br>4. Input /Output using scan f & Print f<br>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 |
| **Q B A S I C** | **Program Development Life Cycle** | ❖  Stages of PDLC<br>❖  Algorithm (Advantage/Disadvantage)<br>❖  Flowchart (Advantage/Disadvantage)<br>❖  Types Of Flowchart |
| | **Introduction To Qbasic** | ❖  Introduction/Features<br>❖  Q-Basic Interface<br>❖  Menu Commands |
| | **Fundamentals of Qbasic** | ❖  Introduction To Variable/Constant (Their Types)<br>❖  Basic Words (Reserved Vs. User Defined)<br>❖  Basic Operators (Its Types Including Truth Tables) |
| | **Programming in Qbasic** | ❖  Commands And Statements (CLS, REM,<br>❖  INPUT, PRINT……...)<br>❖  READ….. DATA Statement<br>❖  PRINT USING Statement<br>❖  Simple Graphics with QBASIC (Locate, Line, Circle.)<br>❖  Immediate Mode Commands |
| | **Control Statements** | ❖  IF…THEN, IF…THEN…ELSE, NESTED<br>❖  IF…THEN…. Statement<br>❖  SELECT CASE Statement |

## Half Yearly EXAMINATION

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

## Second  TERMINAL  EXAMINATION

| | |
|---|---|
| **Computer Fundamentals** | ❖  Computer Software |
| **Qbasic** | ❖  Introduction to Arrays (Single and Two Dimensional) |
| **Computer Graphic** | ❖  Introduction<br>❖  Working with Photoshop |

| | |
|---|---|
| **Hyper Text Mark Up Language** | ❖ Introduction/Concept Of Web Page and Web Site<br>❖ Components of the Web<br>❖ Html Tags (Paired/Unpaired)<br>❖ Creating, Opening and Formatting HTML<br>❖ Documents<br>❖ Inserting Images/Setting Marquee/Creating Links<br>❖ Working With Tables and Lists<br>❖ Working with Frames |
| **Cascading Style Sheets** | ❖ Introduction<br>❖ Advantages<br>❖ Syntax, Measuring Unit<br>❖ CSS: Colors, backgrounds, Fonts, Text, Images, Links, Borders, margin<br>Project On HTML, CSS |

## Final EXAMINATION

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