

COMPUTER SCIENCE

Class VIII

Total Class Hours : **120 hours (55 Hours theory, 65 Hours practical)**

Working Days per year : 160 (approx)
Class per day : 1 (of 45 Minutes duration)
Total Hours : 120

Unit	Topic	Class Hours		
		Theory	Practical	Total
UNIT 1 : 20 Marks	Introduction	2	4	6
	MS Windows	10	12	22
	MS PowerPoint	4	6	10
UNIT 2 : 10 Marks	Getting Started With Word:	1	1	2
	Working with Text; Entering Text	4	4	8
	Saving a Word Document:	2	2	4
	Formatting a Document:	5	6	11
UNIT 3 : 10 Marks	Bullets and Numbering:	4	4	8
	Headers and Footers:	2	2	4
	Footnotes and Endnotes:	2	2	4
	Columns:	2	2	4
UNIT 4 : 10 Marks	Views:	1	1	2
	Page and Section:	1	1	2
	Printing:	1	1	2
	Find and Replace:	2	2	4
	Spelling and Grammar:	2	2	4
UNIT 5 : 10 Marks	Table:	4	5	9
UNIT 6 : 10 Marks	Graphic Objects:	3	3	6
	Mail Merge:	3	5	8
Theory : 70 Marks		55	65	120

UNIT 1 : 20 Marks

Introduction

2 Hours theory + 4 hours Practical

Computer system – keyboard (different parts, use of Ctrl, Alt, Shift, Num Lock, Caps Lock keys, Cursor control keys, insert and overtype modes, delete and Backspace keys), memory (primary and secondary), monitor (VDU), CPU, mouse, floppy disk and hard disks: Uses of computer – common applications.

MS Windows

10 Hours theory + 12 Hours Practical

Windows Operating System; Graphical User Interface; Mouse – left click, right click, double click, drag; Concept of files and folders; Desktop; Start Menu; Parts of a window; Navigating windows – closing, minimizing, maximizing, resizing, using scroll bars, activating, deactivating; Dialog boxes – command buttons, radio buttons, check boxes, ellipsis, list boxes, text boxes, spin buttons; My Computer and Windows Explorer – views, sort buttons; Creating, deleting, renaming, moving, copying files, folders and shortcuts; Selecting – contiguous and non contiguous multiple objects.

MS PowerPoint (to be taught after MS Word is completed) 4 hour theory + 6 hour practical

Starting PowerPoint, PowerPoint menu and toolbar, creating a presentation, editing a presentation, appending, editing, inserting and deleting slides, designing using templates; Animation and transition.

UNIT 2 : 10 Marks

MS Word

Getting Started With Word:

1 hour theory + 1 hour practical

Setting Up the Screen, Displaying Toolbars; Moving and Reshaping Toolbars; Displaying and Hiding the Status Bar and Scroll Bars; Displaying and Hiding the Rulers; Creating a New Document

Working with Text: Entering Text:**4 hour theory + 4 hour practical**

Insert and Overtyping Modes; Moving the Insertion Point; Selecting Text; Selecting Text with the Extend Selection Feature; Deleting Text; Cutting, Pasting and Moving Text

Saving a Word Document:**2 hour theory + 2 hour practical**

Saving a Document for the First Time; Saving a Document Again; Saving a Document under Another Name; Saving a Word Document in a Different Format, Opening a Word Document, Opening Using Word; Opening using Windows Techniques; Finding Word Document: Opening a Non-Word Document; Closing the Document; Exiting Word

Formatting a Document:**5 hour theory + 6 hour practical**

Character Formatting (font, change case, drop cap); Paragraph Formatting; Using tabs (left, right, center, decimal, bar, dot leader); Borders and Shading; Styles; Creating a New Style; Modifying a Style; Removing a Style; Using the Style Gallery;

UNIT 3 : 10 Marks**Bullets and Numbering:****4 hour theory + 4 hour practical**

Automatic Bullets and Numbering: Adding Bullets and Numbering; Removing Bullets and Numbering; Modifying the Bullets and Numbering Styles: Outline Numbering

Headers and Footers:**2 hour theory + 2 hour practical**

Working with Headers and Footers: Setting Headers and Footers; Formatting Headers and Footers

Footnotes and Endnotes:**2 hour theory + 2 hour practical**

Inserting a Footnote or Endnote; Changing Footnote and Endnote Separators; Adding Continued Notices to Footnotes; Moving and Copying Footnotes and Endnotes; Deleting a Footnote or Endnote; Viewing Footnotes or Endnotes; Converting Footnotes to Endnotes, and Vice Versa

Columns:**2 hour theory + 2 hour practical**

Creating Columns Quickly with the Columns Button; Creating Columns with the Columns Dialog Box; Changing the Number of Columns; Starting a New Column; Removing Columns from Text

UNIT 4 : 10 Marks**Views:****1 hour theory + 1 hour practical**

Viewing the Document: Normal View; Page Layout View; Print Preview; Split-Screen View; Zooming the View

Page and Section:**1 hour theory + 1 hour practical**

Page Setup; Section Formatting

Printing:**1 hour theory + 1 hour practical**

Printing a Document: Using Print Preview; Printing a Document; Printing on Different Paper; Choosing a Paper Source; Setting a Default Paper Source

Find and Replace:**2 hour theory + 2 hour practical**

Using Find and Replace: Finding Text; Finding Special Characters; Using Wildcards; Finding and Replacing Text; Finding and Replacing Formatting; Finding and Replacing Styles

Spelling and Grammar:**2 hour theory + 2 hour practical**

Checking Spelling and Grammar: On-the-Fly Spell-Checking and Grammar-Checking; Static Spell-Checking and Grammar-Checking ;Using the Thesaurus

UNIT 5 : 10 Marks**Table: 4 hour theory + 5 hour practical**

Drawing a Table with the Draw Table Button; Inserting a Table Quickly with the Insert Table Button; Inserting a Table with the Insert Table Command; Using Table AutoFormatting; Converting Existing Text to a Table; Selecting Parts of a Table; Navigating in Tables; Editing Text in Table; Adding and Deleting Cells, Rows, and Columns; Setting Alignment in Tables; Setting Indents in Tables; Adding Borders and Shading to the Whole Table; Adding Borders and Shading to Selected Cells; Adding Borders and Shading to Paragraphs within Cells; Merging cells; Changing Column Width; Changing Row Height; Table Headings

UNIT 6 : 10 Marks**Graphic Objects: 3 hour theory + 3 hour practical**

Working with Graphics, and Text Boxes: Inserting and Sizing Pictures; Resizing and Cropping Pictures; Inserting a Frame Around a Graphic; Moving a Graphic; Adding Borders to a Graphic; Drawing Features; Sizing and Moving the Drawing; Inserting, Positioning, and Formatting Text Boxes

Mail Merge: 3 hour theory + 5 hour practical

Components of a Form Letter, Creating the Main Document, Specifying the Data Source, Creating a New Data Source, Using an Existing Data File; Adding Merge Fields to the Main Document; Sorting the Records to be Merged; Filtering the Records to be Merged; Merging the Data

Instructions for Examiners:**Marks : 100**

Theory	70	(Objective : 35, Descriptive : 35)
Practical	30	

(Note: The marks indicated against each Unit in the syllabus are for Theory)

Time :

Theory	: 3 hours
Practical	: 3 hours

Questions :

Theory (Objective) :	
Unit 1	: 10 marks
Units 2 to 5	: 5 marks each

Breakup of marks within each question should be specified.

Theory (Descriptive)

Unit 1	: 4 questions are to be set of which 2 are to be answered. (5 marks each)
Units 2 to 5	: 2 questions are to be set for each of these units of which 1 is to be answered. (5 marks each)

Practical: Questions for the Practical Examination need not necessarily be from list provided in the syllabus

There shall be two parts. Part I is to contain 2 Questions of 10 marks each (from Windows and PowerPoint), and Part II should contain 2 questions of 20 marks each (from Word). One question from each part is to be answered.

Practical Evaluation Criteria:

Formatting	50%
Typing (without errors)	25%
Completion	25%

Books Recommended

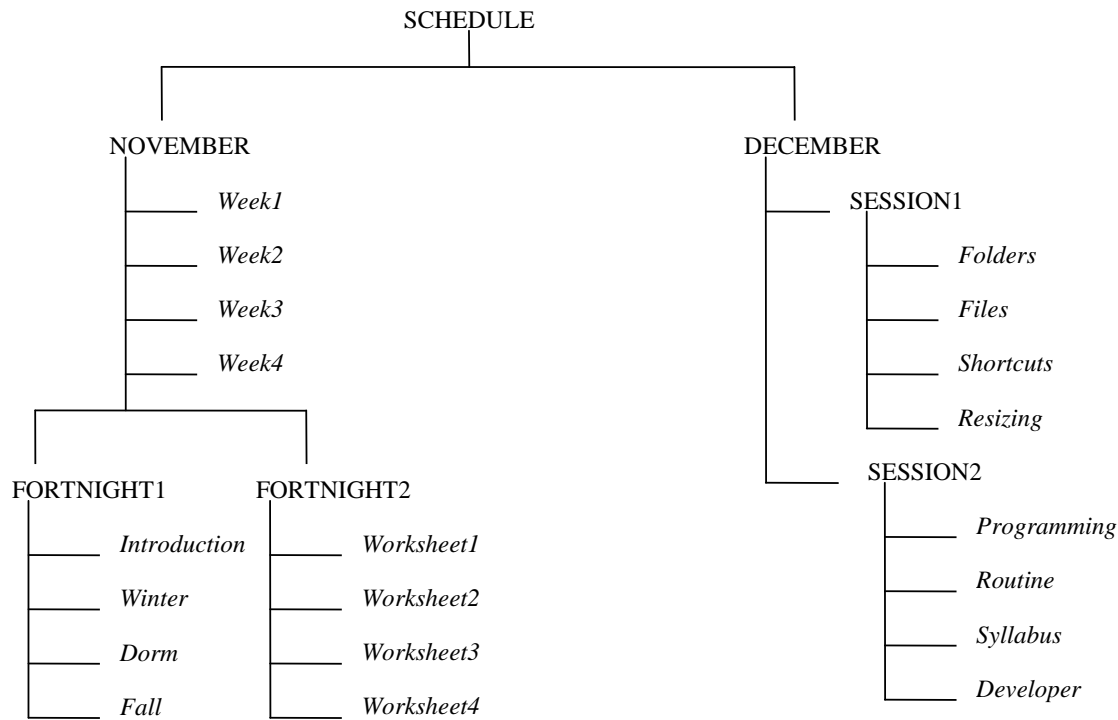
1. Computer Science and Applications (for Class VIII MBOSE)

Evergreen Publications, N. Delhi

SAMPLE PROGRAMS FOR WINDOWS

(Questions for the Practical Examination need not necessarily be from this list)

Make the following structure.



(Note: Text in italics denote files and uppercase denotes folders)

- Under the folder *NOVEMBER* use notepad to enter the corresponding data in the files.
Week1:The difference between a watch and a clock is in the size.
Week2:Registration is a prerequisite for appearing at an examination.
Week3:Admit cards will be available once the fees are paid.
Week4:Work experience must be certified by the employer.
- Under the folder *SESSION1* enter the following data in the corresponding files.
Folders: They are other names for directories.
Files: They can be of various types.
Shortcuts: There are no shortcuts in life.
Resizing: This will ensure that I can have a window size of my own structure.
- Under the folder *SESSION2* enter the following into the corresponding file.
Program: C language developed by Bell laboratories is a structured language.
- Move the file *Program* and *Developer* from *SESSION2* to *FORTNIGHT1* in a single step.
- Selectively copy the files *Worksheet1*,*Worksheet2* & *Worksheet4* from *FORTNIGHT2* to *DECEMBER* in a single step and rename them as *Wk1*,*Wk3* & *Wk4* respectively.
- Copy all the files of *NOVEMBER* to *SESSION2* in a single step.
- Create a shortcut to *Worksheet3* of *FORTNIGHT2* in *SESSION1*, *SESSION2*, *FORTNIGHT1* & *DECEMBER*.
- Move the *Worksheet3* to *NOVEMBER*.
- Create the files *Rex1*,*Rex2*,*Rex3* & *Rex4* on the Desktop. Copy these files to the folder *SESSION1* in a single step .Now move these files in one step to the folder *FORTNIGHT2* and rename them as *Ren1*,*Ren2*, *Ren3* & *Ren4* respectively.
- Create a shortcut to *Dorm* in *FORTNIGHT1* on the Desktop
- Add the file *folders* on to the StartMenu.
- Make provision for the file *Developer* to be loaded automatically (in maximized mode) every time the computer is booted.
- Make Provision for the file *Winter* to be accessible from the program menu.
- Display the file extension of all the files that you have created. Ensure that only a single window appears on the desktop whose contents will change as you browse around.

SAMPLE PROGRAMS FOR POWERPOINT

(Questions for the Practical Examination need not necessarily be from this list)

- 1) Make five slides containing the following text respectively using AutoLayout slides as directed
 - a) Learning Microsoft PowerPoint
 - b) PowerPoint is a presentation software
It is used for making Powerful and Effective Presentation
 - c) In PowerPoint, it is easy to make
 - Custom Animation
 - Slide transition
 - Rehearsals
 - d) However, while designing the Presentation, one must remember
 - i) Target Audience
 - ii) Subject Matter
 - iii) Flow of the Presentation
 - iv) Design Overview
 - e) That's it for today.

For slide (a), use *Title Slide*
 For slide (b), use *Blank*
 For slide (c), use *Bulleted List*
 For slide (d), use *Blank*, and
 For slide (e), use *Title Only*

- 2) Make the following transitions for the slides made above:
 - a) This slide should have a transition *Blinds Horizontal*, on mouse click
 - b) This slide should have a transition *Box In* automatically after 20 seconds
 - c) This slide should have a transition *Cover Left-Up* automatically after 30 seconds
 - d) This slide should have a transition *Checkerbox Across* on mouse click
 - e) This slide should have a transition *Fade through Black* on mouse click
- 3) Put in the following animations for the prepared slides
 - a) For this slide, use animation *Appear* on mouse click all at once
 - b) For this slide, the second line should appear with *Box Out* animation, and then the first line should appear with *Dissolve*
 - c) In this case, the first line should have no effects, while the bulleted lines should appear all at once in *Spiral* after 10 seconds
 - d) In this slide, each line should appear in a *Swivel* at separate mouse clicks
 - e) In this case, every letter should appear with a *Typewriter* animation.
- 4) Put a Clip Art on the last slide
- 5) Add a new slide and insert a Microsoft Excel Worksheet to contain the following

Name	Age	Basic	NetPay
John	30	1000	
James	29	2000	
Jonathan	50	1500	

Using Microsoft Excel, get a formula in the column **NetPay** to calculate the net salary as

$$Net\ Pay = Basic + 51\% \text{ of } Basic$$
- 6) Change the font size of the fifth slide to 54 and change the font color to red.
- 7) Edit the animation for slide (d), so that all the lines appear at once in *Swivel* on a single mouse click.
- 8) Make the clip art appear with *Drive-In*.
- 9) Insert a chart with the following data

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
East	20.4	27.4	90	20.4
West	30.6	38.6	34.6	31.6
North	45.9	46.9	45	43.9

- 10) Convert the chart type of the inserted chart to *Exploded Pie with 3-D visual effect*.

Sample problem/work sheets for MS Word have not been included.

COMPUTER SCIENCE

Class IX

Total Class Hours: 120 Hours (70 Hours theory, 50 Hours practical)

Working Days per year : 160 (approx)
Class per day : 1 (of 45 Minutes duration)
Total Hours : 120

Units	Topics	Class Hours		
		Theory	Practical	Total
Unit 1 : 10 Marks	History of Computers :	2		2
	Hardware and Software:	4		4
	Operating System:	2		2
	Commands:	8	7	15
Unit 2 : 10 Marks	Working in Excel:	2	1	3
	Entering Data:	2	3	5
	Working with Workbook:	2	2	4
	Function and Shortcut Keys:	1	1	2
Unit 3 : 10 Marks	Using formulae:	2	2	4
	Using Ranges:	2	2	4
	Formatting :	2	3	5
Unit 4 : 10 Marks	Printing	2	1	3
	Errors :	1		1
	Functions:	8	9	17
Unit 5 : 10 Marks	Charts:	3	4	7
	Filters:	2	2	4
	Sorting:	1	1	2
Unit 6 : 10 Marks	Introduction to Programming :	2		2
	Algorithms and Flowcharts :	8		8
Unit 7 : 10 Marks	Introduction to the programming language with respect to QBASIC:	6		6
	Simple Commands :	6	6	12
	Simple Library Functions :	2	6	8
Theory : 70 Marks		70	50	120

Unit 1 : 10 Marks

Fundamentals

History of Computers :

2 Hours Theory

Introduction to the origins of calculating machines, the abacus, Babbage's differential engine and analytical engine; Development of electronic computers, Computer Generations, significant developments in electronics that led to modern electronic Computers.

Hardware and Software:

4 Hours Theory

Hardware : Input/Output Devices – Keyboard, mouse, trackball, light pen, scanner, OCR, OMR, MICR, printers (dot matrix, inkjet, laser, Chain printers, Drum Printers), display unit; Memory – primary and secondary, RAM (EDO, SD, DDR), ROM, PROM, EPROM, EEPROM, Hard disk, Floppy disk, CD ROMs, DVD ROMs, Tracks, sectors and cylinders, seek time, access time, storage capacities, units of measurements (bit, byte, KB, MB, GB, TB)

Software, Types of software (System Software, Application Software); Elementary idea about Operating systems; Single user and Multi-User

MS DOS:**Operating System:****2 Hours Theory**

MS-DOS Operating system, Commonly used terms like Booting, Command Prompt, Drive Names, Naming Files.

Commands:**8 Hours Theory+7 Hours Practical**

Types of commands : Internal and external commands, concepts of directories and paths, pathname – absolute and relative, Wildcards, some internal commands – CLS, DIR, DATE, TIME, PROMPT, MD, CD, RD, COPY, DEL, REN, TYPE, PATH: some external commands – TREE, EDIT

Unit 2 : 10 Marks**MS Excel****Working in Excel:****2 Hours Theory+ 1 Hour Practical**

Introduction: What is a spreadsheet, workbook, worksheet, row, column, cell;

Starting Excel, Excel application window, Choosing commands, Getting on line help

Creating a new workbook, Entering data in cells, Save a workbook; Save a new, unnamed workbook; Save an existing workbook; Save a copy of a workbook; Close a workbook; Exiting from Excel

Entering Data:**2 Hours Theory+ 3 Hours Practical**

Enter numbers, text, date, or time; Entering a formula, use of formula palette; Entering data in adjacent cells and creating series (AutoFill, Linear, Growth, Date); Enter the same data into several cells at once; Enter or edit the same data on multiple worksheets; Tips on entering numbers, text

Working with Workbook:**2 Hours Theory+ 2 Hours Practical**

Editing the Workbook: Open a workbook, Moving around in workbook and worksheet; Editing cell contents (F2 key, Formula Bar, Double click); Selecting a range of cells, rows and columns; Clearing, inserting, deleting cells, rows and columns; Insert and delete worksheets; Rename worksheets, Move or copy worksheets, Save automatically as you work; Copying and Moving data from selected cells; Copying and Pasting selected cells, Paste special (only the following – Formula, Values, Paste links and Transpose rows to columns and vice versa)

Function and Shortcut Keys:**1 Hours Theory+ 1 Hours Practical**

Function keys: F1 to F12 with Alt / Ctrl / Shift;

Shortcut keys: ENTER, ESC, ALT+ENTER, BACKSPACE, DELETE, CTRL+DELETE, Arrow keys (left, right, up, down), HOME, TAB, =(Equal Sign), CTRL+'(single left quotation mark), CTRL+B, CTRL+I, CTRL+U, CTRL+C, CTRL+V, CTRL+X, CTRL+Y, CTRL+Z, CTRL+SPACEBAR, SHIFT+SPACEBAR, CTRL+A, CTRL+SHIFT+HOME, CTRL+SHIFT+END, SHIFT+HOME, PAGEUP, PAGEDOWN, CTRL+PAGEUP, CTRL+PAGEDOWN, CTRL+UP/DOWN/LEFT/RIGHT arrow key

Unit 3 : 10 Marks**Using formulae:****2 Hours Theory+ 2 Hours Practical**

Operators (Arithmetic, Comparison, Text), Precedence of operators, Referencing techniques – Absolute, relative, mixed; moving and copying formulae; display formulae in the worksheet

Using Ranges:**2 Hours Theory+ 2 Hours Practical**

Name cells in a workbook; About labels and names in formulas; Guidelines for naming cells, formulas, and constants; Name a cell or a range of cells; Name cells by using existing row and column labels; Change cell references in formulas to names; Change the cell, formula, or constant represented by a name; Change the name for a reference, formula, or constant; Determine what a name refers to; Create a name to represent a formula or a constant value

Formatting:**2 Hours Theory+ 3 Hours Practical**

Change the font or font size; Borders, colors and patterns; Apply borders to cells; remove borders; Autoformat; Format cells and lists quickly with styles or built-in table formats; Apply an autoformat to a range; Copy formats from one cell or range to another; Format Painter; Number formatting; Customized format; Fast Formatting; Built-in formats; Change the way Microsoft Excel displays numbers, dates, and times (using comma, dollar sign, percentage sign); Change column width and row height; Define the default column width; Show/Hide rows and

columns; Change the color of cell gridlines; Shrink the font size to show all data in a cell; Change the default font and font size used in new workbooks; Change currency from Dollars to Rupees

Alignment: Center data; align data to the left, right, top, bottom of a cell; Rotate text in a cell by a certain degree

Styles: Specify formats for a style; Apply an autoformat to a range; Apply an existing style; Create a new style; Copy formats from one cell or range to another

Unit 4 : 10 Marks

Printing:

2 Hours Theory+ 1 Hours Practical

Print Preview; About the Print Preview window; Headers and footers; Select a built-in header or footer; Create custom headers and footers; Set header and footer margins; Margins(left, right, top, bottom); Set page margins; Page Break; Page break preview; Page Break Preview/Normal View; Insert or move a page break; Start a new page by inserting a page break; Insert a horizontal page break; Insert a vertical page break; Move a page break; Print a specific area of a worksheet; Change the layout of the printed worksheet (Change the page orientation; Set the size of the paper; Center worksheet data on the printed page; Set the printing order of pages; Change the page number for the first page); Print a worksheet on a specified number of pages; Print only odd/even pages; Print the active sheets, a selected range, or an entire workbook; Print cell gridlines; Labels on a worksheet: to appear on every page

Errors:

1 Hour Theory

Formulae that refer back to their own cells; Some of the error values -Error #####, error #DIV/0! , error #REF, error #N/A

Functions:

8 Hours Theory+ 9 Hours Practical

Categories of functions, Using functions to calculate values; Multiple functions within functions, or nesting; Using both cell references and names in formulae using the following functions;

Database Functions DCOUNT, DCOUNTA, DMAX, DMIN, DSUM, DAVERAGE

Date and Time functions - DATE, NOW, TIME, TODAY

Logical functions - AND, IF, NOT, OR, TRUE, FALSE

Lookup and Reference functions - HLOOKUP, VLOOKUP, LOOKUP

Mathematical functions- ABS, COUNTIF, INT, ROUND, ROUNDUP, ROUNDDOWN, SQRT, SUM, SUMIF

Statistical functions - AVERAGE, COUNT, COUNTA, LARGE, MAX, MAXA, MIN, MINA, SMALL

Text functions - LEFT, LEN, LOWER, PROPER, RIGHT, TRIM, UPPER

Unit 5 : 10 Marks

Charts:

3 Hours Theory+ 4 Hours Practical

Overview on the following types of charts - column, bar, line and pie; Components of a chart; Create chart using wizards; Creating embedded charts; Creating charts on a separate sheet; Create a chart from nonadjacent selections; Create a default chart in one step; Move and resize chart items by using the mouse; Pull out slices in pie and doughnut charts; Add a title to a chart or axis; Change colors, patterns, lines, fills, and borders in charts; Add a picture to a chart item; Size and set up a chart for printing; Change the cell range used to create a chart; Change the chart type; Updating Charts; Add data to a chart; Add data to a chart by copying and pasting; Add data to an embedded chart by using color-coded ranges; Add data to an embedded chart by dragging

Filters:

2 Hours Theory+ 2 Hours Practical

Auto filter and Advanced filter; Define the criteria; Three or more conditions in a single column; Use of OR and AND logic in filtering; Criteria from two or more columns; Display a subset of rows by comparing values; Display a subset of rows in a list by using filters; Types of comparison criteria (viz. A series of characters, Wildcard characters, Values within specified limits); Display only unique records; Show all the data; Display results on the same sheet or separate sheet

Sorting:

1 Hours Theory+ 1 Hour Practical

Sort a list; Sort rows in ascending order based on the contents of one column; Sort rows based on the contents of two or more columns; Sort columns based on the contents of rows; Sort months, weekdays, or custom lists

Unit 6 : 10 Marks**QBASIC:****Introduction to Programming :****2 Hours Theory**

Program; Data; Information, Programming Languages – machine, assembly, high level; source code; object code; compiler; translator

Algorithms and Flowcharts :**8 Hours Theory**

Algorithms for problem solving; Flowcharts; pseudo-code; Flowchart symbols; meanings and uses; writing elementary flowcharts; the simple sequence, simple selection and simple loop and their related flowcharts (*it should be emphasized that unconditional branches should be avoided in any algorithmic solution*).

Unit 7 : 10 Marks**Introduction to the programming language with respect to QBASIC: 6 Hours Theory**

The character set; constants and variables; naming of variables; Arithmetic and logical operators; hierarchy or operators; expressions; arithmetic and logical expressions; order and sequence of evaluation of expressions; Instructions for the following: assigning a value to a variable; assigning an expression to a variable using operators mentioned above

Simple Commands :**6 Hours Theory+ 6 Hours Practical**

LET, INPUT, PRINT, REM, IF-THEN-ELSE-ENDIF, FOR-NEXT, STOP, END

Simple Library Functions :**2 Hours Theory+ 6 Hours Practical**

ASC, CHR, LEFT, RIGHT, MID, LEN, UPPER, LOWER

Instructions for Examiners:**Marks : 100**

Theory 70 (Objective : 35, Descriptive : 35)

Practical 30

(Note: The marks indicated against each Unit in the syllabus are for Theory)

Time :

Theory : 3 hours

Practical : 3 hours

Questions :

Theory (Objective) :

Each Unit : 5 marks

Theory (Descriptive)

2 questions are to be set from each unit of which 1 is to be answered. (5 marks for each question)

Breakup of marks within each question should be specified.

Practicals: Questions for the Practical Examination need not necessarily be from list provided in the syllabus

There shall be two parts. Part I is to contain 2 Questions of 10 marks each, and Part II should contain 2 questions of 20 marks each. One question from each part is to be answered.

Practical Evaluation Criteria:

Syntax	10%
I/O Design	10%

Logic (Source Code, Pseudo Code, formulae)	30%
Error Trapping	10%
Completion	20%
Result	20%

Books Recommended

Text :

1. **Computer Science and Applications (for Class IX MBOSE)**

Evergreen Publications, N. Delhi

SAMPLE PROGRAMS FOR EXCEL

(Questions for the Practical Examination need not necessarily be from this list)

1. Create a workbook storing the marks for a given number of subjects of various students and calculate the total and average.
2. Create a workbook storing the payroll list of an establishment containing employee number, name, basic pay, allowances, etc. and total pay after various deductions.
3. A worksheet similar to that of 1, contains the marks and grades of students. Using COUNTIF function find the number of students in various grades and using SUMIF function find the average total mark for each grade. Also find the maximum and minimum total marks.
4. In the worksheet made in 1, calculate the result (pass or fail) of each student.
5. A range contains the various rates of income tax. Using lookup functions, calculate the tax for employees in the workbook created in 2.
6. A firm hires contractual salespersons on monthly basis. A worksheet contains their names, serial numbers and the month they worked in. Another worksheet contains the bonus given in different months. Calculate the bonus payable to each salesperson using reference functions.
7. A workbook contains the names, state of domicile, sex, marks obtained in various subjects and result of a given number of students. Using database functions, produce reports like state-wise pass percentage, list of those passed from a given state, percentage of pass among boys and girls, etc. Draw charts to show the trend (wherever applicable) and add legends and titles as required. Also use comparative histogram to show the number passed from different states of boys versus girls.
8. A worksheet contains scores (1 to 10) of a large number of archers. Prepare a frequency distribution table.
9. Create a database which has the pollution level of the metropolitan cities of India and compare them by various graphs.
10. A workbook contains the names of various publishers and the profits earned by them for five years from a particular book stall. Using chart wizard, plot a chart to compare the revenues of all the publishers for five years. Add appropriate legends and title. Also display the data labels on the chart. Plot a pie chart to show the revenue percentage made by each publisher (explode the slice of a particular publisher).
11. A vegetable wholesaler sells four types of vegetable to the seven north-eastern states at different prices for each. These are contained in a worksheet. Another worksheet contains the amount of each vegetable sold to each state. Calculate the total turnover state-wise, using lookup and reference functions.
12. Create a worksheet containing all the ASCII characters along with their corresponding ASCII values.

SAMPLE PROGRAMS FOR QBASIC

(Questions for the Practical Examination need not necessarily be from this list)

1. Write a program to display the message “Welcome to the QBASIC programming world” on the screen.
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2. Write a program to find out the sum of two integer values and display the result on the screen. Input the two values from the keyboard.
3. Write a program to find out the greatest of three numbers.
4. Write a program for **swapping** the two numbers with / without using another variable.
5. Write a program to find whether the given year is a leap year or not. (use modulus operator)
6. Write a program to find out the real roots of quadratic equation, $Ax^2+Bx+C=0$.
7. Write a program to convert the given temperature in Fahrenheit to Celsius using the following conversion formula, $C=(F-32)/1.8$
8. Write a program to find out the average of any ten numbers. (Use (a) **while** loop, and (b) **for** loop).
9. Write a program to sum the following series:
 - a) The first n natural numbers
 - b) The first n odd natural numbers
 - c) The first n even natural numbers
10. The total distance traveled by a vehicle in t seconds is given by
$$\text{Distance} = ut + (at^2)/2$$

Where **u** is the initial velocity (meters per second), **a** is the acceleration (meters per second²). Write a program to evaluate the distance traveled at regular intervals of time, given the values of **u** and **a**. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of **u** and **a**.

COMPUTER SCIENCE

Class X

Total Class Hours : **120 hours (60 Hours theory, 60 Hours practical)**

Working Days per year : 160 (approx)
Class per day : 1 (of 45 Minutes duration)
Total Hours : 120

Units	Topics	Class Hours		
		Theory	Practical	Total
Unit 1 : 20 Marks	Number Systems:	13		13
	Logic Gates :	3		3
Unit 2 : 20 Marks	DOS Commands:	3	3	6
	Batch files:	3	3	6
Unit 3 : 14 Marks	Introduction to programming language with reference to QBASIC:	3		3
	Simple Commands:	3	4	7
	Print Control :	4	4	8
	Decision Structures:	5	9	14
	Loop Structures:	8	15	23
Unit 4 : 14 Marks	Functions and Subroutines:	5	5	10
	Arrays:	5	10	15
Unit 5 : 12 Marks	Data files:	5	7	12
Theory : 80 Marks		60	60	120

Unit 1 : 20 Marks

Discrete Mathematics and Logic

Number Systems:

13 Hours Theory

Digital (discrete) and analog (continuous) operations; binary data; Number system – binary, decimal, octal and hexadecimal systems, simple conversions from decimal to binary, octal, hexadecimal, and vice versa; Bits, nibbles and bytes, word length, character representation; Simple Binary arithmetic - addition, subtraction, Computer logic, Boolean operations

Logic Gates :

3 Hours Theory

AND, OR, NOT, NAND, NOR – diagrammatic representations and truth table

Unit 2 : 20 Marks

Advanced DOS :

DOS Commands:

3 Hours Theory+ 3 Hours Practical

DIR (/W /P /S /O /A), DEL (/P), MOVE, DOSKEY, MORE, MSBACKUP, MSRESTORE, FORMAT (/U /S /Q /V), SYS, CHKDSK, FIND (/V /C /N), SCANDISK, DISKCOPY, ATTRIB, DEFRAG, XCOPY (/A /M /D /P /S /E /V /C), DELTREE (/Y) –only specified switches need to be taught wherever mentioned.

Batch files:

3 Hours Theory+ 3 Hours Practical

Replaceable parameters in batch files; Named parameters in batch files; batch processing commands – call, echo, for, goto, if, pause, rem.

Unit 3 : 14 Marks

QBASIC

Introduction to programming language with reference to QBASIC:

3 Hours Theory

The character set; constants and variables; naming of variables; Arithmetic (+, -, *, /, ^, \, MOD) and logical operators; hierarchy of operators; expressions; arithmetic and logical expressions

Simple Commands:

3 Hours Theory+ 4 Hours Practical

LET, INPUT, PRINT, END, REM, STOP, READ-DATA-RESTORE

Print Control : **4 Hours Theory+ 4 Hours Practical**
PRINT, PRINT USING, LPRINT, LPRINT USING, TAB, LOCATE

Decision Structures: **5 Hours Theory+ 9 Hours Practical**
Relational Operators, IF-THEN-ELSE-ENDIF, IF-THEN-ELSEIF-ELSE-ENDIF, SELECT-CASE-END SELECT

Loop Structures: **8 Hours Theory+ 15 Hours Practical**
FOR-NEXT, WHILE-WEND; DO { WHILE|UNTIL }...LOOP, DO...LOOP { WHILE|UNTIL }; nested loops, EXIT DO, EXIT FOR

Unit 4 : 14 Marks

Functions and Subroutines: **5 Hours Theory+ 5 Hours Practical**
Library Functions: ABS, SGN, FIX, INT, SPACE\$, SPC, STRING\$, LEFT\$, RIGHT\$, MID\$, LEN, LCASE\$, UCASE\$, LTRIM\$, RTRIM\$, ASC, CHR\$, BEEP, INSTR, CINT, CLNG, CDBL, CSNG, DATE\$, TIME\$,
User defined functions: FUNCTION - END FUNCTION, DEF FN, CALL, EXIT FUNCTION
Subroutines : SUB – END SUB, EXIT SUB, ON-GO-SUB

Arrays: **5 Hours Theory+ 10 Hours Practical**
Lists, subscripted variables, DIM statement, REDIM statement; programs on Array such as adding the elements of an Array; programs for manipulating Arrays, (largest elements, smallest elements, sorting, insertion of elements, deletion of elements and so on)

Unit 5 : 12 Marks

Data files: **5 Hours Theory+ 7 Hours Practical**
Sequential Data Files; Creation, Reading, Appending; File opening modes – APPEND, INPUT, OUTPUT; Commands - OPEN ; EOF; INPUT#; WRITE#; PRINT#, MKI\$, MKL\$, MKS\$, MKD\$, CVI, CVL, CVS, CVD.

Instructions for Examiners:

Marks : 100

Theory	80	(Objective : 40, Descriptive : 40)
Practical	20	

(Note: The marks indicated against each Unit in the syllabus are for Theory)

Time :

Theory	: 3 hours
Practical	: 2 hours

Questions :

Theory (Objective) :
Unit 1 : 10 marks
Unit 2 : 10 marks
Unit 3 : 7 marks
Unit 4 : 7 marks
Unit 5 : 6 marks

Theory (Descriptive)

Unit 1 : 3 questions are to be set of which 2 are to be answered. (5 marks each)
Unit 2 : 3 questions are to be set of which 2 are to be answered. (5 marks each)
Unit 3 : 3 questions are to be set of which 2 are to be answered. (3½ marks each)
Unit 4 : 3 questions are to be set of which 2 are to be answered. (3½ marks each)
Unit 5 : 2 questions are to be set of which 1 are to be answered. (6 marks)

Breakup of marks within each question should be specified.

Practicals : (Questions to be set only from Units III, IV and V)

There shall be two parts:

- Part I is to contain 2 Questions of 10 marks each, 1 to be answered
- Part II is to contain 2 questions of 10 marks each, 1 to be answered

Practical Evaluation Criteria:

Syntax	10%
I/O Design	10%
Logic (Source Code, Pseudo Code)	30%
Error Trapping	10%
Completion	20%
Result	20%

Books Recommended

Text :

1. **Computer Science and Applications (for Class X MBOSE)**
Evergreen Publications, N. Delhi

Reference:

1. DOS 5: A to Z BPB Publications, New Delhi
2. Programming with BASIC
Schaum Outline Series, McGraw Hill Publishing Company, New Delhi

SAMPLE PROGRAMS FOR QBASIC

1. Write a program to display the message “Welcome to the QBASIC programming world” on the screen.
2. Write a program to find out the sum of two integer values and display the result on the screen. Input the two values from the keyboard.
3. Write a program to find out the greatest of three numbers.
4. Write a program for **swapping** the two numbers with / without using another variable.
5. Write a program to find whether the given year is a leap year or not. (use modulus operator)
6. Write a program to find out the real roots of quadratic equation, $Ax^2+Bx+C=0$.
7. Write a program to convert the given temperature in Fahrenheit to Celsius using the following conversion formula, $C=(F-32)/1.8$.
8. Write a program to find out the average of any ten numbers. (Use (a) **while** loop, and (b) **for** loop).
9. Write a program to generate fibonacci sequence. (1,1,2,3,5,8,13, ...)
10. An employee is paid 1.5 times the normal rate for every hour beyond 40 hours worked in a week. Write a program to calculate the weekly wage of an employee.
11. Write a program to check whether the given string is palindrome or not.
12. The total distance traveled by a vehicle in t seconds is given by

$$\text{Distance} = ut + (at^2)/2$$

Where **u** is the initial velocity (meters per second), **a** is the acceleration (meters per second²). Write a program to evaluate the distance traveled at regular intervals of time, given the values of **u** and **a**. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of **u** and **a**.

13. Write a program to read the following numbers, round them off to the nearest integers and print out the results in integer form:
35.750.21 -23.73 -46.45
14. Admission to a professional course is subject to the following conditions:
 - (a) Marks in mathematics ≥ 60
 - (b) Marks in physics ≥ 50
 - (c) Marks in chemistry ≥ 40
 - (d) Total in all three subjects ≥ 200
 Or
 Total in mathematics and physics ≥ 150
 Write a program to search of admission of students. The user has to enter the marks from the keyboard of the corresponding subjects.
15. Write a program that will read the value of **x** and evaluate the following function

$$Y = \begin{cases} 1 & \text{for } x > 0 \\ 0 & \text{for } x = 0 \\ -1 & \text{for } x < 0 \end{cases}$$

Using

- (a) nested **if** statements,
 - (b) **else if** statements, and
 - (c) conditional operator **?:**
16. Write a program to calculate the monthly telephone bill according to the following rules:
 - (a) Rural subscribers:

Upto 250 calls	Free
251 calls to 450 calls	0.60
451 calls to 500 calls	0.80
501 calls to 1000 calls	1.00
above 1000 calls	1.20
 - (b) Urban subscribers:

Upto 150 calls	Free
151 calls to 400 calls	0.80
401 calls to 1000 calls	1.00
above 1000 calls	1.20
 - (c) The rental for urban subscribers depends on the number of calls upto 400 calls the rental will be 200/- and above 400 calls the rental will be 240/-. For rural subscribers the rental is always 200/-.

17. Write a program to input the Name, City Type (whether Metro or Non-Metro) and Basic Pay of an employee and calculate the salary according to the following rules:
- (a) Dearness allowance (DA)
 - (i) Upto Rs. 3500 110% of basic pay
 - (ii) Above Rs.3500 90% of the basic pay subject to a maximum of Rs. 3850 (i.e. DA should be at least Rs. 3850).
 - (b) House Rent Allowance (HRA) is 15% of the basic pay subject to a maximum of Rs. 800 (i.e. never more than Rs. 800)
 - (c) If City is Metro, City Compensatory Allowance (CCA)=800 else if it is Non-Metro, CCA=600.
 - (d) Provident Fund (PF) is 12% of the basic pay.
- (Total Salary=Basic Pay +DA+HRA+CCA-PF)**

The **output** should be in the following format (Example only)

Example Name	ABCDEF
Basic Salary	5000
Dearness Allowance	4500
HRA	750
CCA : Non-Metro	600
PF	600
Total Salary	10250

18. Given a number, write a program using while loop to reverse the digits of the number. For example, the number 12345 should be written as 54321. (**Hint:** Use modulus operator to extract the last digit and the integer division by 10 to get the n-1 digit number from the n digit number.)
19. Write a program to display the multiplication table of a given number from 1 to 20.
20. Write a program to display the multiplication table of a given number for a given range.
21. Write a program to display the multiplication table of a given group of numbers (maximum five numbers) for a given range.
22. Write a program for sorting the elements of an array.
23. Write a program to generate positive prime numbers between two given limits.
24. Write a program to find the biggest and smallest number and its position in the given array.
25. Write a program to merge two sorted arrays to obtain a third sorted array.
26. The factorial of an integer m is the product of consecutive integers from 1 to m. That is,
 $\text{Factorial } m = m! = m*(m-1)*(m-2)*\dots*1.$
27. Write a program to read the text and convert the case of the text.
28. Write a program to search a pattern in a given text.
29. Write a program to write a given number in words using function.
30. Write a program to count the number of vowels, consonants, and other characters and the number of words in a string. A word is separated by either a space, tab, or a punctuation mark (, ; . : !).
31. Write a menu driven program to create records of students with marks in various subjects and store them in a file (sequential, random or binary). Make provision for viewing all the records, searching a particular record, editing a particular record, deleting a particular record and listing a particular group of records.
