# COMPUTER SCIENCE

**Class XI (Arts/Commerce/Science)**

**DISTRIBUTION OF MARKS**

**Theory - 70 marks**
**Pratical - 30 marks**

**Total Class Hours:** **130 hours (80 Hours theory, 50 Hours practical)**

*Working weeks per year :* *25 (approx)*
*Class per week :* *7 (of 45 Minutes duration)*
*Total Hours :* *130 (approx)*

| Units | Topics | Class Hours | | |
|---|---|---|---|---|
| | | Theory | Practical | Total |
| UNIT 1 : 20 Marks | Computer Hardware: | 5 | | 5 |
| | Data Representation: | 6 | | 6 |
| | Introduction to Windows: | 8 | 7 | 15 |
| UNIT 2 : 14 Marks | HTML Fundamentals: | 6 | 5 | 11 |
| | Hyperlinks and Anchors: | 5 | 5 | 10 |
| | Text Alignment and Lists: | 4 | 5 | 9 |
| UNIT 3 : 14 Marks | Text Formatting and Fonts: | 5 | 5 | 10 |
| | Images: | 6 | 6 | 12 |
| | Tables and Table Layout: | 6 | 5 | 11 |
| UNIT 4 : 10 Marks | Frames: | 5 | 6 | 11 |
| | HTML Forms: | 5 | 6 | 11 |
| UNIT 5 : 12 Marks | Introduction and Transmission Media: | 7 | | 7 |
| | Networks and Topologies: | 5 | | 5 |
| | Network Devices and Security: | 7 | | 7 |
| Theory = 70 Marks | | 80 | 50 | 130 |

***UNIT I:* 20 Marks** ***Theory: 19 Hours + Practical: 7 Hours***

Computer Hardware – Parts of a computer and their functions – CPU, Clock speed, Cache memory, Primary memory, Secondary memory, Input and Output devices, Motherboard, Sound Card, Graphics Card, SMPS, UPS (*the aim is to only understand what components are present in a typical computer and their functions; details are not needed*)

Data Representation – Number system, Base of a number system, Decimal, Binary, Octal, Hexadecimal representation, Conversion between Decimal, Binary, Octal and Hexadecimal representations, character representation (ASCII, EBCDIC, Unicode)

Introduction to Windows – Graphical User Interface, Mouse – left click, right click, double click, drag, Concept of files and folders; Desktop; Start Menu; Parts of a window Navigating Window – Closing, Maximizing, Minimizing, resizing, using scrollbars, activating, deactivating, Dialog boxes – Command buttons, radio button, check boxes, ellipsis, list boxes, text boxes, spin button; My Computer and Windows Explorer – views, sort buttons; creating, deleting, renaming, moving files, folders and shortcuts; Selecting – contiguous and non-contiguous multiple objects; Notepad.

***UNIT II*** : **14 Marks** ***Theory: 15 Hours + Practical: 15 Hours***

Basic concepts of Web Browsers with emphasis on popular browsers such as Internet Explorer and Mozilla Firefox.

Understanding HTML and the Web – Web Site Design and Web Page Design, Creating, Editing and Saving Web Pages in Notepad
HTML Tags – <HTML>, <HEAD>, <TITLE>, <BODY>, <P>, <BR>, <HR> and their attributes
Headings: <H1>, <H2>, <H3>, <H4>, <H5>, <H6> tags
Understanding Hyperlink and Anchors: <A> tag and its attributes
Text Alignment and Lists: <DIV>, Align text to CENTER, LEFT and RIGHT, <OL>, <UL>, <LI>, <DL>, <DT>, <DD>

***UNIT III***: **14 Marks** ***Theory: 17 Hours + Practical: 16 Hours***

Text Formatting and Font Control: <B>, <I>, <U>, <TT>, <PRE>, <BIG>, <SMALL>, <SUB>, <SUP>, <STRIKE>, <FONT> tags with attributes
Background and Text Colors

Images – Adding Images, <IMG> tag and Attributes, Using Images as Hyperlink Anchors
Tables and Table Layout – Definition and its purpose, <TABLE>, <TR>, <TD> tags and attributes, Adding images to table

***UNIT IV***: **10 Marks** ***Theory: 10 Hours + Practical: 12 Hours***

Frames and its Applications, Setting up a Frames Document, <FRAMESET>, <FRAME>, <IFRAME>, <NOFRAMES> tag and attributes, Nested Frames

Creating HTML forms: <FORM>, <INPUT>, <TEXTAREA>, <SELECT>, <OPTION> tags and attributes

***UNIT V***: **12 Marks** ***Theory: 19 Hours***

Evolution of Networking: ARPANET, Internet
Transmission Media – Twisted pair cable, Coaxial cable, Optical fiber, Infrared, Bluetooth, Radio link, Microwave link, Satellite link

Concepts of LAN, WAN, MAN; Different Topologies – Bus, Star, Tree
Network Devices – Modem, RJ45 Connector, Ethernet Card, Hub, Switch, Router, Gateway
Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers

**Note: The activities for practicals will be as mentioned in the textbook.**

**Textbook Prescribed :**

**Understanding Computer Science & Applications for Class XI**
Published by – M/S C & P Enterprises, M. C. Road,
Guwahati – 781003.

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## 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
Unit 2 : 7 marks
Unit 3 : 7 marks
Unit 4 : 5 marks
Unit 5 : 6 marks

Theory (Descriptive)

Unit 1 : 4 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. (3½ 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. (2½ marks each)
Unit 5 : 3 questions are to be set of which 2 are to be answered. (3 marks each)

***Breakup of marks within each question should be specified.***

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

There shall be two parts:

- Part I is to contain 2 Questions of 15 marks each, 1 to be answered

- Part II is to contain 2 questions of 15 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 :**
As recommended by MBOSE

**Reference:**

1. Fundamentals of Computers — Prentice-Hall India, New Delhi
2. A B C's of Windows — BPB Publications, New Delhi
3. Sam's Teach Yourself HTML 4 — Techmedia, New Delhi

# COMPUTER SCIENCE

## Class XII (Arts/Commerce)

**Total Class Hours : 168 hours (89 Hours theory, 79 Hours practical)**

*Working weeks per year : 32 (approx)*
*Class per week : 7 (of 45 Minutes duration)*
*Total Hours : 168 (approx)*

| Units | Topics | Class Hours | | |
|---|---|---|---|---|
| | | Theory | Practical | Total |
| UNIT 1: 20 Marks | Internet | 10 | | 10 |
| | Web Design Using FrontPage | 10 | 10 | 20 |
| UNIT 2 : 14 Marks | C Fundamentals: | 9 | 4 | 13 |
| | Sequence Control : | 10 | 10 | 20 |
| UNIT 3 : 20 Marks | Functions and Storage Class : | 10 | 10 | 20 |
| | Arrays & Pointers : | 15 | 15 | 30 |
| UNIT 4 : 16 Marks | Structures, Unions and Enumerations: | 10 | 10 | 20 |
| | Data files: | 10 | 15 | 25 |
| | Macros : | 5 | 5 | 10 |
| **Theory : 70 Marks** | | **89** | **79** | **168** |

***UNIT 1 : 20 Marks***

### *Internet and Web Design*

#### Internet 10 Hours Theory

Internet, Internet Applications, Addressing in Internet – IP and domains; Internet Service Providers; Types of Connectivity such as leased lines, dial up, VSAT; E-Mail Networks; Format of Email Message – Address, Header, Body, Attachment,; Email Clients; Basic features of WWW; WWW Browsers; WWW Servers; URL; Search Engines

#### Web Design Using FrontPage 10 Hours Theory + 10 Hours Practical

Document Overview; Header Elements; Section Headings; Block oriented elements; lists; Inline elements; Visual Markup; Hypertext Links; Images; Tables; Forms.

***UNIT 2 : 14 Marks***

## *Programming in C*

### C Fundamentals: 9 Hours Theory + 4 Hours Practical

Introduction to C, History of C language, Structure of a C program

The C character set, Identifiers and Keywords, Data types, Data type qualifiers, Constants, Types of Constants, Difference in the storage of integer and floating point quantities, Strings, Variables
Operators, Expressions, Statements, Symbolic Constants

Operators (arithmetic, unary, binary, ternary, relational, logical), Precedence, Associativity, Result of operations on dissimilar operands, Type Cast, Assignment Operators

Basic I/O Functions : getchar(), getche(), getch(), putchar (), scanf(), printf(), gets(), puts(); Conversion Characters and some commonly used Flags for scanf() and printf()

### Sequence Control : 10 Hours Theory + 10 Hours Practical

Branching, Looping; if … else; switch; while, do … while, for; nested loops; break; continue; goto; comma operator

***UNIT 3 : 20 Marks***

### Functions and Storage Class : 10 Hours Theory + 10 Hours Practical

Defining a Function Accessing a function; Forward declaration: function prototypes, Call by value, Call by reference; Recursion; Storage classes (auto, register, static, extern), Header Files: Use Of Library Functions; Command line parameters

### Arrays & Pointers : 15 Hours Theory + 15 Hours Practical

**Arrays**: Declaration, initialisation, as arguments to functions, accessing array elements, Arrays & strings , Two-dimensional arrays, strings and two-dimensional arrays, sorting (selection, bubble, insertion)

**Pointers** : Declaration, initialisation, address operator, indirection operator; Pointer arithmetic; Pointers and functions (taking pointers as arguments and returning pointers); Pointers and arrays (one-dimensional and two-dimensional); array of pointers; Pointers and scanf() function; Pointer Arrays and Strings

*UNIT 4 : 16 Marks*

**Structures, Unions and Enumerations: 10 Hours Theory + 10 Hours Practical**

Declaration, instantiation; member access operators (. and ->), typedef; Structures / Unions and Pointers; functions and structures/unions; Nested Structures; Array of Structures; Enumerations

**Data files: 10 Hours Theory + 15 Hours Practical**

File opening modes, File I/O (Character I/O. String I/O, Formatted I/O, Record I/O) checking file opening error, closing data files; Data files : Appending, editing, deleting, searching, displaying records;

**Macros : 5 Hours Theory + 5 Hours Practical**

Defining macros, macros with arguments, comparison of macros and functions (advantages and is advantages); The C Preprocessor

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## 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
Unit 2 : 8 marks
Unit 3 : 10 marks
Unit 4 : 7 marks

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

***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. **No questions from Unit 1 should be included in practical.**

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 XII MBOSE)**
   **Evergreen Publications, N. Delhi**

**Reference :**


1. Ram, B, ***Fundamentals of Microprocessors and Microcomputers***, Dhanpat Raji & Sons, Delhi, 1995.
2. Gottfried, Byron, S., ***Theory and Practice of programming with C***, Schaum's Outline Series, McGraw Hill Publishing Company, NewDelhi, 1990 (For Unit 1, 2 & 3 section (a)).
3. Malvino and Leach, ***Digital Computer and applications***, Tata McGraw Hill, New Delhi.
4. Balagurusamy, E., ***Programming In ANSI C***, Second edition, Tata McGraw Hill Publishing Company, New Delhi, 1995 (For Unit 1, 2 & 3).
5. Kanetkar, Yashavant, ***Let Us C***, BPB Publishing Company, New Delhi, 1995
6. Lafore, Robert, ***C Programming Using Turbo C++***, Galgotia Publishing Company, New Delhi, 1994

## *Problem Sheet : Programming in C*

1. Write a program to display the message "Welcome to the C 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 **swap**ping 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

    Distance = $ut + (at^2)/2$

    Where **u** is the initial velocity (meters per second), **a** is the acceleration (meters per second$^2$). 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. For a certain electrical circuit with an inductance L and resistance R, the damped natural frequency is given by

    Frequency = $\sqrt{[(1/LC-R^2/4C^2)]}$

    It is desired to study the variation of this frequency with C (capacitance). Write a program to calculate the frequency for different value of C starting from **0.1** in steps of **0.01**.
14. Write a program to read the following numbers, round them off to the nearest integers and print out the results in integer form:

    35.7 50.21 -23.73 -46.45
15. Given the string "WORDPROCESSING ", write a program to read the string from the terminal and display the same in the following formats:

    (a) WORD PROCESSING (b) WORD
    PROCESSING (c) W. P.
16. 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.

17. Write a program that will read the value of **x** and evaluate the following function

    1 for x>0
    Y= 0 for x=0
    -1 for x<0

    Using
    (a) nested **if** statements,
    (b) **else if** statements, and
    (c) conditional operator **? :**

18. 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/-.

19. Write a C 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 |

20. 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
21. Write a program to sum the series : 2 * 3 – 3 * 5 + 4 * 7 + to n terms
22. 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.)
23. Write a program for sorting the elements of an array by using Selection sort, Bubble sort, Insertion sort.
24. Write a program to generate positive prime numbers.
25. Write a program to display the multiplication table of a given number from 1 to 20.
26. Write a program to display the multiplication table of a given number for a given range.
27. Write a program to display the multiplication table of a given group of numbers (maximum five numbers) for a given range.
28. Write a program to find the biggest and smallest number and its position in the given array.
29. Write a program to find addition, subtraction and multiplication of matrices using function.
30. The factorial of an integer m is the product of consecutive integers from 1 to m. That is,
    Factorial m = m! =m*(m-1)*(m-2)*…*1.
31. Write a program to find the sum of row, column, and diagonals of the given matrix.
32. Write a program to find the largest number of the given matrix using function.
33. Write a program to sort all the elements of a matrix using function.
34. Write a program to input a string and perform the following tasks without using library functions: (a) to find its length, (b) to change it to upper case / lower case (c) to extract the left most n characters, (d) to extract the right most n characters (e) to extract n characters from it starting from position p, (f) to insert another string in it at position p (g) to replace n characters in it starting at position p with a given string
35. Write a program to search a pattern in a given text.
36. Write a program to search a pattern in a given text and replace every occurrence of it with another given string.
37. Write a program to write a given number in words using function.
38. Write a program to display the text in a FILE. (TYPE command in DOS).

39. Write a program to copy the contents of one text to another text file using command line arguments.
40. Write a program to merge the two text file to another text file.
41. Write a program to copy the contents of one text file to any number of given files using command line arguments.
42. Write a program to count the number of characters, lines and words in a text file.
43. Write a program to print every line of a text file containing a given pattern .
44. To copy a file by converting lower case text file to upper case text file using command line argument.
45. Write a program to input, sort, and display n names using array of pointers.
46. Write a program to count the number of vowels, consonants, and other characters and the number of words in a string / file. A word is separated by either a space, tab, or a punctuation mark (, ; . : !).
47. 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.

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High-Frequency Oscillatory Ventilation: Theory and Practical Applications Jane Pillow. 2 I Foreword I. Important noteÂ  The initial arterial blood gas at 30 min of life reflected the significant difficulties experienced gaining control of ventilation and gas mixing: pH 6.9, PaCO2 95 mmHg, PO2 78 mmHg, BE -9.7 mmol/L, Lactate 8.3 mmol/L. The arterial blood gas im-proved over the next 75 min although a moderately severe mixed respiratory/meta-bolic acidosis persisted at 2 hours of age: pH 7.13, PaCO2 66.5 mmHg, PaO2 47.6 mmHg, BE â€“ 6.4 mmol/L with an FiO2 of 0.9 and mean airway pressure 13 cmH2O (oxygenation index (OI) =. 24.6).Â  with increasing FiO2. After 36 hours, HFOV was recommenced with a different oscillator without capability of tidal volume monitoring or volume targeted HFOV. You have 80,000 hours in your career. How can you best use them to help solve the worldâ€™s most pressing problems?Â Subscribe by searching for 80,000 Hours wherever you get podcasts, or click one of the buttons below: Recommended episodes View all â†'. June 21, 2018. #35 â€“ Tara Mac Aulay on the audacity to fix the world without asking permission. Listen now. November 19, 2019. #65 â€“ Amb.