COMPUTER SCIENCE
(D-9)

STD XI, Paper – I

Sr. No.	Topic	No. of Lectures
1.	Number System and Binary Arithmetic	8
2.	Program Analysis	8
3.	Introduction to C ++	40
4.	Visual Basic	40
5.	Introduction to Networking & Internet	24

STD XI, Paper –II

Sr. No.	Topic	No. of Lectures
1.	Study of Components and Circuits	15
2.	Circuits Logic Gates and Sequential	25
3.	Functional Hardware Parts of PC	35
4.	Peripheral Devices	45

Practical (D-9)

STD XI
PAPER - I

1. Study of Win 98 Desktop (a) My Computer (b) Task Bar (c) Navigation with help of Mouse (d) Maximize, Minimize, Close, Restore Windows.
2. Study of Win 98 – Start Menu, Execution of a Package like Word, etc
3. File operations using Explorer
4. C++ Program – Study of Structure of C++ Program involving different data types.
5. C++ Program – Using Operators.
6. C++ Program – Using control Structures
7. C++ Program – Using Functions
8. C++ Program – Using Unformatted I/O operations.
9. VB Programs – Study of Integrated Development Environment and navigation through various windows and menus.
10. VB Programs – Study of toolbox and Property Editor.
11. VB Programs – use of buttons, labels, text windows, picture boxes, check boxes and option buttons
12. VB Programs – Program a simple Addition/subtraction Calculator
13. Internet – Study how to write and send an email.
14. Internet – Study of Browser and access sites on Hard Disk.
15. Internet – Use of Chat. (Optional)
16. Internet – Study of FTP.

1. Study of BASIC GATES using TTL or CMOS Chips
2. Study of UNIVERSAL BLOCKS using IC's 7400, 7402.
3. Study of Three State Buffer IC 74125.
4. Study of Square wave Generator using IC 7414. (or IC 40106)
5. Study of Half Adder using Gates.
6. Study of FULL ADDER using IC 7483.
7. Study of Concept of Addressing using Diode Matrix ROM.
8. Study of Decoder Chip BCD to Decimal using IC 7445.
9. Study of Multiplexer using IC 74154.
10. Study of Input Devices: Keyboard, Mouse.
11. Study of Scanner and Printer.
12. Study of Multimedia – recording a voice, playing AVI file, etc

Note: Student should perform Minimum 12 Experiments from each Paper.

COMPUTER SCIENCE
(D-9)

STD XII, Paper – 1

Sr. No	Topic	No of Lectures
1.	Operating Systems	30
2.	Data Structures	20
3.	C++	50
4.	HTML	20

STD XII, Paper – II

Sr. No	Topic	No. of Lectures
1	Introduction to Microprocessors and Organization of 8085	25
2	Instruction Set and Programming of 8085	45
3	Introduction to Intel X86 family	5
4	Introduction to Microcontroller	15
5	Networking Technology	30

STD XII
PAPER - I

1. C++ Program – Using Array and Pointers.
2. C++ Program – with CLASS implementation.
3. C++ Program – Using Arrays of Object
4. C++ Program – based on constructors and destructors.
5. C++ Program – based on operator Overloading.
6. C++ Program – Based on type conversions.
7. C++ Program – based on single inheritance.
8. C ++ Program – Single file operation.
9. VB Program – use of various tools in toolbox.
10. VB Program – Creating and customizing menus.
11. VB Program – Use of If... Then... Else, For... Next
12. VB Program – Use of Do...Loop, Case... Else
13. VB Program – Designing A Table.
14. A simple Project using Visual Basic.
15. Designing A simple Web Page with Text.
16. Designing A simple Web Page with Text and Graphics.
17. Use of simple VB Script in Web page designing.

STD XII
PAPER - II

1. Familiarization with 8085 Microprocessor Kit.
2. Simple addition and Subtraction Programs using 8085.
3. Multiplication and Division Using 8085.
4. Program for addition of decimal numbers.
5. Use of monitor routines of the 8085 kit.
6. Program to use µp as two-digit addition calculator using monitor routine.
7. Program to display messages on display.
8. Copy of memory block from one location to another memory location.
9. Program to find minimum/maximum in a memory block.
10. Program for searching a given number.
11. Program using rotate instructions.
12. Programs using Stack Operations
13. Program to generate a square wave.
14. Study of Interrupts.
15. Study of Transmission media such as Co-axial, twisted pair, fiber optic cables and connectors
16. Study of modem, hub, repeaters and routers.
17. Case study of existing Network topology used in the LAB.
18. Setting up of LAN network in Laboratory (Demonstration Experiment)

Note: Student should perform Minimum 12 Experiments from each Paper.

COMPUTER SCIENCE
(D-9)

STD XI, Paper – I

Sr. No.	Topic	Scope and Limitation	No. of Lectures
1.	Number System and Binary Arithmetic	Binary Numbers, Decimal, Octal, Hexadecimal numbers, BCD, Conversion from one number system to another, ASCII Code. Binary Addition, Subtraction by One's and Two's compliment, binary multiplication and Division. Ref : Malvino – Sec –4.1 to 4.6, 5.1,5.2, 5.6, 5.9	8
2.	Program Analysis	Analysis of Problem, Pseudo Code, design steps, Flow Charts, structured programming, modular programming concepts, Algorithms – Searching and Sorting. Ref : Dromey (related topics from ch 1, 5)	8
3.	Introduction to C ++	Introduction to structure of C ++ Program Keywords, Identifiers, Basic Data Types, User defined data types, Derived data types, constants, type compatibility, Declaration of variables Operators in C++ , memory management operators, manipulators Control Structures – IF, Switch, do while, while , for Functions in C++ , Standard C++ Library, I/O functions. Prototyping, Call by Reference, Return by reference Unformatted I/O operations Simple programs in C++ Ref Balagurusamy (related topics from) Ch- 2, 3, 4, 10	40
4.	Visual Basic	Introduction to Visual Basic, Visual Basic Environment – Menu bar, tool bars, toolbox, properties setting. Form Layout, Visual Basic Programming – variables, constants, defining variables, arrays, relational operators, control flow statements, loop statements, nesting of loops, use of built in functions, event driven programming. A simple VB project - simple calculator. Ref : Petroutsos- (related topics from CH 1, 2 ,3)	40
5.	Introduction to Networking & Internet	Networking Terms and Concepts Centralized, Distributed, Collaborative Configurations – Server based, Peer to Peer Network Security, LAN , WAN Network Applications – email, voice mail, FTP, WWW, E-commerce, chat, BBS, user group Ref : Networking Essentials (Techmedia) CH 1	24

Note: The References only indicate the scope of the topic

STD XI, Paper –II

Sr. No.	Topic	Scope and Limitation	No. of Lectures
1.	Study of Components and Circuits	• Study of Components – Resistors, Capacitors. Inductors and transformers. • Semiconductor Components – diodes. transistors, zener diode, LED. • Transistor as switch, single stage amplifier, clock circuit. • Regulated Power Supply, Concept of SMPS Power Supply. • Logic Families – TTL and CMOS, their comparative study and input parameters. Ref : Bhargava sec 1.4.1, 4.1 to 4.3, 4.9.3, 4.9.5, 5.1 to 5.4, 8.2 Malvino- sec 6.1 to 6.3, 7.2 to 7.4	15
2.	Circuits Logic Gates and Sequential	• Logic Gates – Study of Basic Gates : AND, OR, NOT their truth table. Study of NAND, NOR, EXOR gates. Basic building block, simple combinational circuits, Half Adder, Full Adder. • Sequential Circuits – Flip Flop – RS, D, Toggle, JK Flip Flop, Registers, Shift Registers, Counters. Decoders, multiplexers, Demultiplexers. Ref: Malvino – 1.2 to 1.7, 3.7, 5.7, 8.1 to 8.6, 10.1 to 10.5, 11.1, 3.1, 3.2	25
3.	Functional Hardware Parts of PC	• Study of System Board/Mother board layout. Study of CPU properties with reference to Pentium chip. • PC Memory, Types of memory – Conventional, extended and expanded, Semiconductor memory and its types. • Introduction to PC expansion Buses – What is BUS? • Interrupts and Direct Memory Access Channels. • Features of EISA, PCI and USB buses. • What is Controller? Video adapter, Floppy disk and Hard disk Controller Ref : Minasi – Related topics from Chapter 3	35
4.	Peripheral Devices	• Video – Video Board characteristics, resolution and colour, Video monitor characteristics – Dot pitch, Horizontal Scan frequency, Multi-Sync. • Keyboard – Keyboard Working • Mouse – types , Scanner –their use and types • Printer – types Dot Matrix, Ink- Jet, Laser • Drives – Floppy drive, Hard Disk, CD-ROM Drive. • Multimedia kits – Sound Boards • Modem, Plug and Play Ref : Minasi – Related topics from Chapter 15, 17, 18, 19, 20, 21, 22, 24	45

Note: The References only indicate the scope of the topic

Sr. No	Topic	Scope and Limitation	No of Lectures
1.	Operating Systems	• What is Operating System • Services in OS • Overview of OS : WINDOWS 98, WINDOWS NT, LINUX • Concepts related to Information management(Only definition) File System, Device Drivers, Terminal I/O • Concepts related to process management (Only definition) Process, Multiprogramming, Context Switching, Process States, Priority, Multitasking, Timesharing. • Concepts Related to Memory Management (Only definition) A typical map for single user computer, Partitioning, Fixed & Variable Partitioning, Paging, Segmentation, Virtual memory. • GUI : Basic GUI features such as Windows, Task List, Drag, Resize, Close, Minimize, Maximize • Access and Security aspect of OS Security Threats, Attacks on Security, Computer Worms, Computer Viruses. Ref : Godbole - 3.1, 3.2, 4.1, 4.4.1, 4.4.2, 5.1 5.2, 5.3, 5.4, 5.5, 5.19.1, 5.19.2, 5.19.3, 5.20, 8.1, 8.6.18.7.1, 8.9.1.1, 8.9.1.2, Ch. 12 , 9.1, 9.2, 9.3, 9.5, 9.6	30
2.	Data Structures	• Introduction to Data Structure, Data Structure Operations, Algorithmic notation, Control Structures, • Arrays – representation in memory, traversing, inserting, deleting, sorting, binary search in an array. Pointers arrays, Records in memory using arrays. • Link List, Representation of link list in memory. • Trees, Binary tree, representing Binary tree in memory Ref : Lipschutz Sec – 1.2 to 1.4, 2.3, 2.5, 4.1 to 4.8, 4.10, 4.11, 4.12, 5.1 to 5.3, 7.1 to 7.3	20
3.	C++	• Review of C++ • Arrays, pointers, references, strings • Principle of Object Oriented Programming • Classes and Objects • Constructors and Destructors • Operator Overloading & type conversion • Virtual Functions & Polymorphism • Inheritance Working with files Ref Balagurusamy – (related topic from) Ch 5, 6, 7,8,9, 11	50

| 4. | HTML | Introduction to HTML
• Why HTML, Its advantages and Drawbacks
• Study of Tags : <HTML>, <HEAD>, <TITLE>, <BODY>,<P>,
,<UL>,<LI>,<PRE>,<MARQ UEE>
• Font Styles <B>,<I>,<U>,<BIG>,<SMALL>,<SUB>,<SUP>, <FONT>,
• IMAGES : <HREF>,<HR>,<IMG>, SRC, ALT, HEIGHT, WIDTH, ALIGN
• TABLES : <TABLE>,<CAPTION>,<TR>,<TH>,<TD>
• Use of Scripting as a language support (NOTE : Only VB Script using FOR..NEXT, IF..THEN..ELSE, MsgBox, InBox, DIM, SET
Ref : Hoyler – Ch. 3, 4, 5, 6 | 20 |

Note : The References only indicate the scope of the topic

STD XII, Paper – II

Sr. No	Topic	Scope and Limitation	No. of Lectures
1	Introduction to Microprocessors and Organization of 8085	Evolution of Microprocessors, What is Microprocessor? Block diagram of Generic microprocessor and study of various blocks in it. Block Diagram of 8085 μp. Study of various blocks and functions of various pins on it. Ref : Tokheim Sec. – 4.2, 4.5, 5.3, 8.1 to 8.3	25
2	Instruction Set and Programming of 8085	Addressing Modes in 8085, Programming model of 8085, Study of Instruction Set – Data Transfer, Arithmetic, Logic, Branching , Stack, I/O and Machine Control Group Instructions. Assembly language programs based on above instructions (Note: The program size generally should not exceed 20-25 instructions) Ref : Tokheim Sec. –8.4 to 8.10, 9.1 to 9.4	45
3	Introduction to Intel X86 family	Introduction to Advance Microprocessors, Introduction to X86 Family and study of major attributes of the X86 family processors, Programming Model of X86 family of microprocessors. Ref : Gilmore – Sec . 10.1 to 10.3	5
4	Introduction to Microcontroller	Introduction to Microcontroller, Study of 8051 Architecture and Programming model, Overview of other Microcontroller's in the 8051 family. Application of Microcontroller. Ref : Gilmore – 9.1, 9.2, 9.7	15

5	Networking Technology	Study of Transmission Media – Cable Media – Coaxial , Twisted pair, fiber optic, their comparison. Introduction to wireless media. Network topologies – access methods, Topologies – BUS, RING, STAR, Ethernet, Token Ring. Protocols – Internet protocols Introduction to connectivity devices – modem, hubs, repeaters, routers. Ref : Related topics . from Networking Essentials (Techmedia) Chapter 3, 4, 5, 6	30

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Suggested References (STD XI and XII)
1. Digital Principles and Applications – Albert Malvino, Donal Leach, 4th Ed., Tata McGraw Hill.
2. Modern Digital Electronics – R. P. Jain, 2nd Ed., Tata McGraw Hill.
3. Mastering Visual Basic – Evangelos Petroutsos, SYBEX / BPB
4. Networking Essentials MSCE Traning Guide, Techmedia
5. Basic Electronics and Linear Circuits – Bhargava, Kulshreshta, Gupta, Tata McGraw Hill.
6. PC Upgrade and Maintenance Guide – Mark Minasi, SYBEX / BPB
7. Operating Systems – Achyut Godbole, Tata McGraw Hill
8. Data Structures – S. Lipschutz , Schaum's Series, McGraw- Hill Book Co.
9. Programming with C++ - John Hubbard, Schaum's Series, McGraw Hill.
10. Object –Oriented Programming with C++ - E Balagurusamy, Tata McGraw Hill.
11. HTML in Easy Steps – Andy Holyer, Comdex, PUSTAK MAHAL
12. Microprocessor Fundamentals – Roger Tokheim, Schaum's Series, McGraw- Hill Book Co.
13. Microprocessors and Programmed Logic – Kenneth Short, 2nd Ed , PHI
14. Microprocessors Principles and Applications – Charles Gilmore, 2nd Ed. Tata McGraw Hill.
15. Microprocessor Architecture, Programming and Applications with 8085
    - Ramesh Gaonkar, 3rd Ed., Penram International.
16. How to solve it by Computer - R.G. Dromey , Prentice Hall of India.

Computer Science Practical (D-9)

STD XI
PAPER - 1

1. Study of Win 98 Desktop (a) My Computer (b) Task Bar (c) Navigation with help of Mouse (d) Maximize, Minimize, Close, Restore Windows.
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STD XII
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