

COMPUTER SCIENCE

HIGHER SECONDARY FIRST YEAR

2, 3 MARK

&

5 MARK QUESTION ANSWERS

NAME : _____

CLASS : XI SECTION:

CHAPTER 1**1. INTRODUCTION TO COMPUTER****1. What is computer?**

A computer is an electronic machine, capable of performing basic operations like addition, subtraction, multiplication, division, etc. The computer is also capable of storing information, which can be used later.

2. What is the name of the machine developed by Charles Babbage?

The Difference Engine was built by Charles Babbage. Babbage is called the father of today's computer.

3. What is algorithm?

Algorithm is defined as a step-by-step procedure or formula for solving a problem i.e. a set of instructions or procedures for solving a problem.

4. List out the computer system components?

- ✓ Hardware
- ✓ Software.

5. What is Computer Software?

Software refers to a program that makes the computer to do something meaningful. It is the planned, step-by-step instructions required to turn data into information.

6. List out the computer classifications?

- ✓ Analog computers
- ✓ Digital Computers
- ✓ Hybrid computers.

7. Classification of Digital Computers?

- ✓ Super computers
- ✓ Mainframe computers
- ✓ Mini computers
- ✓ Micro computers

8. Classification of Micro Computers?

- ✓ workstation
- ✓ personal computers
- ✓ laptop computers
- ✓ smaller computers

9. Define ‘Data’.

Data is a collection of facts from which information may be derived stored facts. Data is defined as an un-processed collection of raw facts in a manner suitable for communication, interpretation or processing.

10. Define ‘Information’.

Information is a collection of facts from which conclusions may be drawn. Data that has been interpreted, translated, or transformed to reveal the underlying meaning. This information can be represented in textual, numerical, graphic, cartographic, narrative, or audiovisual forms.

11. What is an operating System?

The Operating system provides so many facilities with which a user comfortably uses their computers.

12. What is an analog computing system?

Analog Computer is a computing device that works on continuous range of values.

13. What is a lap-top computer?

Laptop computers are portable computers that fit in a briefcase. **Laptop computers**, also called **notebook computers**, are wonderfully portable and functional, and popular with travelers who need a computer that can go with them.

14. What are the peripheral devices ?

The hardware devices attached to the computer are called peripheral equipment. Peripheral equipment includes all input, output and secondary storage devices.

15. What is word processor software?

The software lets you create, edit, format, store and print text and graphics. Some of the commonly used word processors are Microsoft Word, WordStar, WordPerfect, etc.

16. What is a computer program?

A computer **program** (or set of programs) is designed to systematically solve a problem.

5 MARKS

1. Discuss the various computer generations along with the key characteristics of the computer of each generation.

First Generation - 1940-1956: Vacuum Tubes

- ✓ The first generation of computers used vacuum tubes for circuitry and magnetic drums for memory.
- ✓ They were large in size, occupied a lot of space and produced enormous heat.
- ✓ They were very expensive to operate and consumed large amount of electricity.
- ✓ Sometimes the heat generated caused the computer to malfunction.
- ✓ First generation computers operated only on machine language.
- ✓ Input was based on punched cards and paper tape, and output was displayed on printouts.
- ✓ First generation computers could solve only one problem at a time.
- ✓ The Universal Automatic Computer (UNIVAC) and the Electronic Numerical Integrator and Calculator (ENIAC) are classic examples of first-generation computing devices.

Second Generation - 1956-1963: Transistors

- ✓ The second generation of computers witnessed the vacuum tubes being replaced by transistors.
- ✓ The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, energy-efficient and more reliable than their first-generation counter parts.
- ✓ The transistors also generated considerable heat that sometimes caused the computer to malfunction.
- ✓ Second-generation computers moved from the use of machine language to assembly languages, which allowed programmers to specify instructions in words.
- ✓ The computers stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

Third Generation - 1964-1971: Integrated Circuits

- ✓ The development of the integrated circuit left its mark in the third generation of computers.
- ✓ Transistors were made smaller in size and placed on silicon chips, which dramatically increased the speed and efficiency of computers.

- ✓ In this generation, keyboards and monitors were used instead of punched cards and printouts.

Fourth Generation - 1971-Present: Microprocessors

- ✓ The microprocessor brought forth the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip.

Fifth Generation - Present and Beyond: Artificial Intelligence

- ✓ Fifth generation computing devices, based on artificial intelligence, are still in their developmental stage.
- ✓ Fifth generation computers will come close to bridging the gap between computing and thinking.

2. What is the relationship between software and hardware? OR

Write detail about computer software and their categories?

Software

Software refers to a program that makes the computer to do something meaningful. It is the planned, step-by-step instructions required to turn data into information.

Hardware

The term hardware refers to all the physical items associated with a computer system. Software is a set of instructions, which enables the hardware to perform a specific task.

Software Categories

1. System Software
2. Application Software.

System Software

- ✓ System software consists of general programs written for a computer.
- ✓ These programs provide the environment to run the application programs.
- ✓ System software comprises programs, which interact with the hardware at a very basic level.
- ✓ They are the basic necessity of a computer system for its proper functioning.
- ✓ System software serves as the interface between hardware and the user.
- ✓ The operating system, compilers and utility programs are examples of system software.
- ✓ The most important type of system software is the operating system.
- ✓ DOS (Disk Operating System), Unix, Linux and Windows are some of the common operating systems.

- ✓ The compiler software translates the source program (user written program) into an object program (binary form).
- ✓ Specific compilers are available for computer programming languages like FORTRAN, COBOL, C, C++ etc.

Application Software :

- ✓ An Application Software consists of programs designed to solve a user problem.
 - ✓ It is used to accomplish specific tasks rather than just managing a computer system.
 - ✓ Application software are in turn, controlled by system software which manages hardware devices.
 - ✓ Some typical examples are railway reservation system, game programs, word processing software, weather forecasting programs.
 - ✓ The commonly used Application Software packages are word processor, spread sheet, database management system and graphics.
1. Application Software
 2. Hardware
 3. System Software

3. Discuss the important features and uses of micro, mini, mainframe and super Computers

Based on performance, size, cost and capacity, the digital computers are classified into four different types.

1. Super computers
2. Mainframe computers
3. Mini computers
4. Micro computers.

Super Computers

- ✓ The mightiest computers but at the same time, the most expensive ones are known as super computers.
- ✓ Super computers process billions of instructions per second.
- ✓ In other words, super computers are the computers normally used to solve intensive numerical computations.
- ✓ Examples of such applications are stock analysis, weather forecasting.

Mainframe Computers

- ✓ Mainframe computers are capable of processing data at very high speeds – hundreds of million instructions per second.
- ✓ They are large in size. These systems are also expensive.
- ✓ They are used to process large amount of data quickly.
- ✓ Some of the obvious customers are banks, airlines and railway reservation systems.

Mini Computers

- ✓ The mini computers were developed with the objective of bringing out low cost computers.
- ✓ They are lower to mainframe computers, in terms of speed and storage capacity.
- ✓ Some of the hardware features available in mainframes were not included in the mini computer hardware in order to reduce the cost.
- ✓ Some features which were handled by hardware in mainframe computers were done by software in mini computers.
- ✓ Hence the performance of mini computer is less than that of the mainframe.

Micro Computers

The micro computers are further classified into

1. Workstations
2. Personal Computers
3. Laptop Computers
4. Palm PCs

CHAPTER – 2**NUMBER SYSTEMS****II. Review Questions:**

1. Convert the following decimal numbers into equivalent binary, octal and hexadecimal numbers.

DECIMAL TO BINARY**a. 512**

2	512	- 0
2	256	- 0
2	128	- 0
2	64	- 0
2	32	- 0
2	16	- 0
2	8	- 0
2	4	- 0
2	2	- 0
	1	- 0

$$512_{10} = 1000000000_2$$

b. 1729

2	1729	
2	864	- 1
2	432	- 0
2	216	- 0
2	108	- 0
2	54	- 0
2	27	- 0
2	13	- 1
2	6	- 1
2	3	- 0
	1	- 1

2	1001	
2	500	- 1
2	250	- 0
2	125	- 0
2	62	- 1
2	31	- 0
2	15	- 1
2	7	- 1
2	3	- 1
	1	- 1

d. 777

2	777	
2	388	- 1
2	194	- 0
2	97	- 0
2	48	- 1
2	24	- 0
2	12	- 0
2	6	- 0
2	3	- 0
	1	- 1

e. 160

2	160	
2	80	- 0
2	40	- 0
2	20	- 0
2	10	- 0
2	5	- 0
2	2	- 1
	1	- 0

$$777_{10} = 1100001001_2$$

$160_{10} = 10100000_2$

c. 1001

$1729_{10} = 11011000001_2$

DECIMAL TO OCTAL

a. 512

$$\begin{array}{r} 512 \\ \hline 8 | 64 \quad -0 \\ 8 | 8 \quad -0 \\ \hline 1 \quad -0 \end{array}$$

$512_{10} = 1000_8$

b. 1729

$$\begin{array}{r} 1729 \\ \hline 8 | 216 \quad -1 \\ 8 | 27 \quad -0 \\ \hline 3 \quad -3 \end{array}$$

$1729_{10} = 3301_8$

c. 1001

$$\begin{array}{r} 1001 \\ \hline 8 | 125 \quad -1 \\ 8 | 15 \quad -5 \\ \hline 1 \quad -7 \end{array}$$

$1001_{10} = 1751_8$

d. 777

$$\begin{array}{r} 777 \\ \hline 8 | 97 \quad -1 \\ 8 | 12 \quad -1 \\ \hline 1 \quad -4 \end{array}$$

$777_{10} = 1411_8$

e. 160

$$\begin{array}{r} 160 \\ \hline 8 | 20 \quad -0 \\ 2 \quad -4 \end{array}$$

$160 = 240$

DECIMAL TO HEXADECIMAL

a. 512

$$\begin{array}{r} 512 \\ \hline 16 | 32 \quad -0 \\ 16 | 2 \quad -0 \end{array}$$

$512_{10} = 200_1$

b. 1729

$$\begin{array}{r} 1729 \\ \hline 16 | 108 \quad -1 \\ 16 | 6 \quad -12 \end{array}$$

$1729_{10} = 6C1_{16}$

c. 1001

$$\begin{array}{r} 1001 \\ \hline 16 | 62 \quad -9 \\ 16 | 3 \quad -14 \end{array}$$

d. 777

$$\begin{array}{r} 777 \\ \hline 16 | 48 \quad -9 \\ 16 | 3 \quad -0 \end{array}$$

777_{10}
 $=309_{16}$

e. 160

$$\begin{array}{r} 16 \\ \hline 160 \\ \hline 10 \end{array} -0$$

160₁₀ = A0₁₆

2) Write -27 as an 8 – bit 2's complement number

 -27

$$\begin{array}{r} 11011 \\ 00011011 \\ 11100100 \\ \hline +1 \\ \hline 11100101 \end{array}$$

$-27_{10} = 11100101_2$

3) Add the signed numbers $+15_{10}$ and $+36_{10}$. Write the operands and the sum as 8 – bit binary numbers.

$15 = 1111$

$36 = 100100$

$$\begin{array}{r} 00001111 \\ 00100100 \\ \hline 00110011 \end{array}$$

$+15_{10} + 36_{10} = 00110011_2$

4) Write the largest positive and negative number for an 8 – bit signed numbers in decimal and

2's complement notation. The largest positive number for an eight bit signed number in decimal is $2^{n-1} - 1 = 2^{8-1} - 1 = 2^7 - 1 = 127$ The largest negative number for an eight bit signed number in decimal is -2^{n-1}

$= -2^{8-1}$

$= -2^7$

$= -128$

5) Do the following signed binary arithmetic operations.

a) $10_{10} + 15_{10}$

$$10 = 1010$$

$$15 = 1111$$

$$\begin{array}{r} 1010 \\ \underline{1111} \\ 11001 \end{array}$$

$$10_{10} + 15_{10} = 11001_2$$

b) $-12_{10} + 5_{10}$

$$-12$$

$$1100$$

$$00001100$$

$$11110011$$

$$\begin{array}{r} +1 \\ \hline \end{array}$$

$$\underline{11110100}$$

$$5 = 0101$$

$$11110100$$

$$\underline{00000101}$$

$$\underline{11111001}$$

$$-12_{10} + 5_{10} = 11111001_2$$

c) $14_{10} - 12_{10}$

$$14 = 1110$$

$$12 = 1100$$

$$\begin{array}{r} 1110 \\ \underline{1100} \\ 0010 \end{array}$$

$$14_{10} - 12_{10} = 0010_2$$

d) $(-2_{10}) - (-6_{10})$

$$-2$$

$$0010$$

$$00000010$$

$$11111101$$

$$\begin{array}{r} +1 \\ \hline \end{array}$$

$$\underline{11111110}$$

-6

0110
00000110
11111010
11111010

11111110
11111010 (-)
00000100

$$(-2_{10}) - (-6_{10}) = 00000100_2$$

6) Convert the following binary numbers to decimal numbers.

a) 10011_2

$$\begin{array}{r}
 1\ 0\ 1\ 1 \\
 \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 1 \times 2^0 = 1 \\
 1 \times 2^1 = 2 \\
 0 \times 2^2 = 0 \\
 1 \times 2^3 = 8 \\
 \hline
 11
 \end{array}$$

$$1011_2 = 11_{10}$$

b) 101110_2

$$\begin{array}{r}
 1\ 0\ 1\ 1\ 1\ 0 \\
 \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 0 \times 2^0 = 0 \\
 1 \times 2^1 = 2 \\
 1 \times 2^2 = 4 \\
 1 \times 2^3 = 8 \\
 0 \times 2^4 = 0 \\
 1 \times 2^5 = 32 \\
 \hline
 46
 \end{array}$$

$$101110_2 = 46_{10}$$

c) 1010011_2

$$\begin{array}{r}
 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 1 \\
 | \quad | \quad | \quad | \quad | \quad | \quad | \\
 \rightarrow 1 \times 2^0 = 1 \\
 \rightarrow 1 \times 2^1 = 2 \\
 \rightarrow 0 \times 2^2 = 0 \\
 \rightarrow 0 \times 2^3 = 0 \\
 \rightarrow 1 \times 2^4 = 16 \\
 \rightarrow 0 \times 2^5 = 0 \\
 \underline{1 \times 2^6 = 64} \\
 \hline
 83
 \end{array}$$

$$1010011_2 = 83_{10}$$

7) Convert the following binary numbers into hexadecimal numbers.

a) 101₂

$$= 5$$

$$101_2 = 5_{16}$$

b) 1 1010₂

$$= 11010$$

$$= 1A$$

$$11010_2 = 1A_{16}$$

c) 1111 0100 0010₂

$$= 111101000010$$

$$= F42_{16}$$

$$111101000010_2 = F42_{16}$$

8) Convert the following hexadecimal number to decimal numbers.

a) F2₁₆

$$= 11110010$$

$$\boxed{F2_{16} = 11110010_2}$$

b) 1A8₁₆

$$= 000110101000$$

$$1A8_{16} = 000110101000_2$$

c) $39EB_{16}$

$$\begin{array}{cccc} 3 & 9 & E & B \\ 0011 & 1001 & 1110 & 1011 \end{array}$$

$$39EB_{16} = 0011100111101011_2$$

9) Convert the following hexadecimal number to decimal numbers.

a) $B6_{16}$

$$\begin{array}{cc} B & 6 \end{array}$$

$$6 \times 16^0 = 6$$

$$\begin{array}{r} 11 \times 16^1 = 176 \\ \hline 182 \end{array}$$

$$B6_{16} = 182_{10}$$

b) $5E9_{16}$

$$\begin{array}{c} 5 \quad E \quad 9 \\ \swarrow \quad \searrow \quad \swarrow \\ \rightarrow 9 \times 16^0 = 9 \\ \rightarrow 14 \times 16^1 = 224 \\ \rightarrow 5 \times 16^2 = 1280 \\ \hline 1513 \end{array}$$

$$5E9_{16} = 1513_{10}$$

c) $CAFE_{16}$

$$\begin{array}{c} C \quad A \quad F \quad E \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \rightarrow 14 \times 16^0 = 14 \\ \rightarrow 15 \times 16^1 = 240 \\ \rightarrow 10 \times 16^2 = 2560 \\ \rightarrow 12 \times 16^3 = 49152 \\ \hline 51966 \end{array} \left. \begin{array}{l} E = 14 \\ F = 15 \\ A = 10 \\ C = 12 \end{array} \right\}$$

$$CAFE_{16} = 51966_{10}$$

10) Do the following binary arithmetic.

a. $11011001 + 1011101$

$$\begin{array}{r} 11011001 \\ 1011101 \\ \hline 100110110 \end{array}$$

$$11011001 + 1011101 = 100110110_2$$

b. $101110 - 1011$

$$\begin{array}{r} \xrightarrow{10} \xrightarrow{10} \\ 101110 \\ 1011 \\ \hline 100011 \end{array}$$

$$101110 - 1011 = 100011_2$$

11) Convert the following decimal numbers to binary using sum of powers of 2 methods.

a) 41_{10}

The largest power of 2 that is smaller than or equal to 41 is 32

$$64 \quad 32 \quad 16 \quad 8 \quad 4 \quad 2 \quad 1$$

Set the bit $41 > 32$ Set the bit 32 is 1

$$\begin{array}{ccccccc} 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ 0 & 1 & & & & & \end{array}$$

$$41 - (32) = 9$$

Since, $9 < 16$ show that

Set the bit 16 is 0

$\therefore 9 > 8$, set the bit 8 is 1

$$\begin{array}{ccccccc} 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ 0 & 1 & 0 & 1 & & & \end{array}$$

$$41 - (32+8) = 1$$

Since, $1 < 4$ and $1 < 2$. Set the bit 4 and 2 is 0

Since, $1 = 1$

Set the bit 1 is 1

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1 \\
 0 & 1 & 0 & 1 & 0 & 0 & 1 \\
 & & & & & & 41 - (32+8+1) = 0 \\
 & & & & & & \boxed{41_{10} = 0101001_2}
 \end{array}$$

b) 77_{10}

The largest power of 2 that is smaller than or equal to 77 is 64

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1
 \end{array}$$

Set the bit 64 is 1

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1 \\
 & 1 & & & & &
 \end{array}$$

$$77 - (64) = 13$$

Since, $13 < 32, 13 < 16$. Set the bit 32 and 16 is 0

$$\therefore 13 > 8$$

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1 \\
 & 1 & 0 & 0 & 1 & &
 \end{array}$$

$$77 - (64+8) = 5$$

Since, $5 > 4$, set the bit 4 is 1

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1 \\
 & 1 & 0 & 0 & 1 & 1 &
 \end{array}$$

$$77 - (64+8+4) = 1$$

Since, $1 < 2$, set the bit 2 is 0

$$\therefore 1 = 1, \text{ set the bit 1 is 1}$$

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1 \\
 & 1 & 0 & 0 & 1 & 1 & 0 & 1
 \end{array}$$

$$77 - (64+8+4+1) = 0$$

$$\boxed{77_{10} = 1001101_2}$$

c) 95_{10}

The largest power of 2 that is smaller than or equal to 95 is 64

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1
 \end{array}$$

Set the bit 64 is

$$\begin{array}{ccccccc}
 64 & 32 & 16 & 8 & 4 & 2 & 1 \\
 & 1 & & & & &
 \end{array}$$

$$95 - (64) = 31$$

Since, $13 < 32$, Set the bit 32 is 0

$$\therefore 31 > 16, \text{set the bit 16 is 1}$$

64	32	16	8	4	2	1
1	0	1				

$$95 - (64+16) = 15$$

Since , $15 > 8$, Set the bit 8 is 1

64	32	16	8	4	2	1
1	0	1	1			

$$95 - (64+16+8) = 7$$

Since , $7 > 4$, Set the bit 4 is 1

64	32	16	8	4	2	1
1	0	1	1	1		

$$95 - (64+16+8+4) = 3$$

Since , $3 > 2$, Set the bit 2 is 1

64	32	16	8	4	2	1
1	0	1	1	1	1	

$$95 - (64+16+8+4+2) = 1$$

Since , $1=1$,

Set the bit 1 is 1

64	32	16	8	4	2	1
1	0	1	1	1	1	1

$$95 - (64+16+8+4+2+1) = 1$$

$$95_{10} = 1011111_2$$

12) Using the theorems started in Boolean algebra, prove the following.

a) $A + AB = A$

$$= A + AB$$

$$= A(1+B)$$

$$[\quad A+1=1]$$

$$= A(1)$$

$$= A$$

$$\boxed{A + AB = A}$$

b) $(A+B)(A+C) = A + (BC)$

Input			Intermediate				Output	
A	B	C	A+B	A+C	(A+B)(A+C)	BC	A+ (BC)	
0	0	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0
0	1	0	1	0	0	0	0	0
0	1	1	1	1	1	1	1	1
1	0	0	1	1	1	0	0	1
1	0	1	1	1	1	0	0	1
1	1	0	1	1	1	0	0	1
1	1	1	1	1	1	1	1	1

15) Draw the truth table of the Boolean expression.

$$(\bar{A} + \bar{B} + \bar{C})$$

Input			Intermediate				Output	
A	B	C	\bar{A}	\bar{B}	\bar{C}	$\bar{A}+\bar{B}+\bar{C}$		
0	0	0	1	1	1	1	0	
0	0	1	1	1	0	1	0	
0	1	0	1	0	1	1	0	
0	1	1	1	0	0	1	0	
1	0	0	0	1	1	1	0	
1	0	1	0	1	0	1	0	
1	1	0	0	0	1	1	0	
1	1	1	0	0	0	0	1	

Extra :

1. What is a BIT.

A bit is small piece of data that is derived from the words “binary digit”. Bits have only two possible values, 0 and 1. A binary number contains a sequence of 0s and 1s like 10111.

2. What is a Byte.

Bytes are used to represent characters in a text. Different types of coding schemes are used to represent the character set and numbers. A collection of 8 bits is called as a byte. With 8 bits in a byte, we can represent 256 values ranging from 0 to 255.

3. What is Product term?

A product term in a Boolean expression is a term where one or more literals are connected by AND operators. A single literal is also a product term. E.g., AB, AC, AC̄, and E are the product terms.

4. What is Minterm?

A minterm is a product term, which includes all possible variables either complemented or uncomplemented. In a Boolean expression of 3 variables, x, y, and z, the terms xyz̄, x̄yz, xyz, and xyz̄ are minterms. But x̄ y is not a minterm. Minterm is also called as a standard product term.

5. What is Sumterm?

A sum term in a Boolean expression is a term where one or more literals are connected by OR Operators. E.g., A + B + D

6. What is Maxterm?

A maxterm is a sum term in a Boolean expression, which includes all possible variables in true or complement form. In a Boolean expression of 3 variables, x, y, and z, the terms x + y + z, and x̄ + ȳ + z̄ are the maxterms. Maxterm is also called as Standard Sum Term.

CHAPTER 3**3. COMPUTER ORGANIZATION****1) How are the human being and the computers are related?**

Computers are often compared to human beings since both have the ability to accept data, store, work with it, retrieve and provide information. The main difference is that human beings have the ability to perform all of these actions independently. Human beings also think and control their own activities. The computer, however, requires a program (a predefined set of instructions) to perform an assigned task.

2) What are the components of the digital computer?

A computer system is the integration of physical entities called hardware and nonphysical entities called software. The hardware components include input devices, processor, storage devices and output devices. The software items are programs and operating aids (Systems) so that the computer can process data.

3) What are the functional units of a computer system?

- ✓ The functionalities of the computer systems are Input Unit, Output Unit, Central Processing Unit Memory Unit.
- ✓ These units are interconnected by minute electrical wires to permit communication Between them. This allows the computer to function as a system.

4) Write the essentials of the stored program concept.

All modern computers use the stored program concept. This concept is known as the Von – Neumann concept due to the research paper published by the famous mathematician John Von Neuman.

- ✓ The program and data are stored in a primary memory (main memory)
- ✓ Once a program is in memory, the computer can execute it automatically without manual intervention.
- ✓ The control unit fetches and executes the instructions in sequence one by one.

5) Write the main functions of the central processing unit.

The CPU is the brain of the computer system. It performs arithmetic operations as well as controls the input, output and storage units.

- ✓ Co – ordinate all computer operations
- ✓ Perform arithmetic and logical operations on data

6) What are the different types of main memory?

There are different types of memory.

- ✓ They are Random Access Memory (RAM).
- ✓ Read Only Memory (ROM).
- ✓ Programmable Read- Only Memory (PROM).
- ✓ Erasable Programmable Read-Only Memory (EPROM).
- ✓ Electrically Erasable Programmable Read-Only Memory (EEPROM).

7) Define memory read and memory write operations.

Operations on memories are called *reads* and *writes*, defined from the perspective of a processor or other device that uses a memory: a write instruction transfer's information from other device to memory and a read instruction transfer's information from the memory to other devices. A memory that performs both reads and writes is often called a RAM, random access memory.

8) What do you mean by memory access time?

Access time, also known as *response time* or *latency*, refers to how quickly the memory can respond to a read or write request.

9) What is the advantage of EEPROM over EPROM?

EEPROM is a recently developed type of memory. This is equivalent to EPROM, but does not require ultraviolet light to erase its content. It can be erased by exposing it to an electrical charge.

10) When do we use ROM?

In ROM, the information is burnt (pre-recorded) into the ROM chip at manufacturing time. Once data has been written into a ROM chip, it cannot be erased but you can read it. When we switch off the computer, the contents of the ROM are not erased but remain stored permanently. ROM is a non-volatile memory. ROM stores critical programs such as the program that boots the computer.

11) What is an input device?

An input device is used to feed data into a computer. For example, a keyboard is an input device. It is also defined as a device that provides communication between the user and the computer. Input devices are capable of converting data into a form which can be recognized by computer.

12) List few commonly used input devices.

- ✓ Keyboard
- ✓ Mouse
- ✓ Scanner
- ✓ Bar Code Reader
- ✓ Digital Camera
- ✓ Magnetic Ink Character Recognition (MICR)
- ✓ Optical Character Recognition (OCR)
- ✓ Optical Mark Reading and Recognition (OMR)
- ✓ Light Pen

13) What is an output device?

An output device is capable of presenting information from a computer. There are many output devices attached with the computers. But the monitors and printers are commonly used output devices.

14) List few commonly used output devices.

- ✓ Monitors
- ✓ Printers
- ✓ Speakers
- ✓ Plotters

15) What is a storage device?

The computer may need to store data, programs etc. in a computer readable medium. This is called the secondary storage. Secondary storage is also called backup storage. Secondary storage can be used to transmit data to another computer either immediately or a latter time.

16) List few commonly used storage devices.

- ✓ Hard Disk
- ✓ Magnetic Tape
- ✓ Floppy Disk
- ✓ Optical Disk

17) What is the role of ALU?

- ✓ The ALU is the computer's calculator.
- ✓ It executes arithmetic and logical operations.
- ✓ The arithmetic operations include addition, subtraction, multiplication and division.

- ✓ The logical operation compares numbers, letters and special characters.
- ✓ The ALU also performs logic functions such as AND, OR and NOT.
- ✓ The ALU functions are directly controlled by the control unit

18) What is a control unit?

The control unit directs and controls the activities of the computer system. It interprets the instructions fetched from the main memory of the computer, sends the control signals to the devices involved in the execution of the instructions.

19) What are registers?

Performing these operations the ALU takes data from the temporary storage area inside the CPU named **registers**. They are high-speed memories which hold data for immediate processing and results of the processing.

20) What is a bus?

A set of instruction to follow and perform a specific task. Between any two components of the computer system, there is a pathway called a **bus** which allows for the data transfer between them.

21. What is hardware?

The hardware components include input devices, processor, storage devices and output devices.

22. What is software?

The software items are programs and operating aids (systems) so that the computer can process data.

23. What is Logical Operations?

The importance of the logic unit is to make logical operations. These operations include logically comparing two data items and take different actions based on the results of the comparison.

24. Characteristics of Impact Printers?

- ✓ In impact printers, there is physical contact with the paper to produce an image.
- ✓ Due to being robust and low cost, they are useful for bulk printing.
- ✓ Due to its striking activity, impact printers are very noisy.
- ✓ Since they are mechanical in nature, they tend to be slow.
- ✓ Impact printers do not support transparencies.

25. Characteristics of Non-Impact Printers?

- ✓ Non-impact printers are faster than impact printers because they have fewer moving parts.
- ✓ They are quiet than impact printers because there is no striking mechanism involved.
- ✓ They posses the ability to change typefaces automatically.
- ✓ These printers produce high-quality graphics
- ✓ These printers usually support the transparencies.

FIVE MARK QUESTION**1) Describe in detail the various units of the Central Processing Unit.**

- ✓ The CPU is the brain of the computer system.
- ✓ It performs arithmetic operations as well as controls the input, output and storage units.

The CPU has three major components.

1. Arithmetic and Logic Unit
2. Control Unit
3. Registers (internal memory)

- ✓ **The arithmetic and logic unit (ALU)** is the part of CPU where actual computations take place. It consists of circuits which perform arithmetic operations over data received from memory and are capable of comparing two numbers.
- ✓ The **control unit** directs and controls the activities of the computer system.
- ✓ It interprets the instructions fetched from the main memory of the computer, sends the control signals to the devices involved in the execution of the instructions.
- ✓ While performing these operations the ALU takes data from the temporary storage area inside the CPU named **registers**.
- ✓ They are high-speed memories which hold data for immediate processing and results of the processing.

2) Explain the working principle of CPU with an example.

- ✓ The CPU is similar to a calculator, but much more powerful.
- ✓ The main function of the CPU is to perform arithmetic and logical operations on data taken from main memory.
- ✓ The CPU is controlled by a list of software instructions.

- ✓ Software instructions are initially stored in secondary memory storage device such as a hard disk, floppy disk, CD-ROM, or magnetic tape.
- ✓ These instructions are then loaded onto the computer's main memory.
- ✓ When a program is executed, instructions flow from the main memory to the CPU through the bus.
- ✓ The instructions are then decoded by a processing unit called the instruction decoder that interprets and implements the instructions.
- ✓ The ALU performs specific operations such as addition, multiplication, and conditional tests on the data in its registers, sending the resulting data back to the main memory or storing it in another register for further use.

To understand the working principles of CPU, let us go through the various tasks involved in executing a simple program. This program performs arithmetic addition on two numbers

- (i) Input the value of a
- (ii) Input the value of b
- (iii) Sum = a + b
- (iv) Output the value of sum

This program accepts two values from the keyboard, sums it and displays the sum on the monitor.

1. The control unit recognizes that the program (set of instructions) has been loaded into the main memory. Then it begins to execute the program instructions one by one in a sequential manner.
2. The control unit signals the input device (say keyboard) to accept the input for the variable 'a'.
3. The user enters the value of 'a' on the keyboard.
4. The control unit recognizes and enables to route the data (value of a) to the pre-defined memory location (address of 'a').
5. The steps 2 to 4 will be repeated for the second input 'b'. The value of 'b' is stored in the memory location (address of 'b').
6. The next instruction is an arithmetic instruction. Before executing the arithmetic instruction, the control unit enables to send a copy of the values stored in address of 'a' and address of 'b' to the internal registers of the ALU and signals the ALU to perform the sum operation.
7. The ALU performs the addition. After the computation, the control unit enables to send the copy of the result back to the memory (address of 'sum').

8. Finally, the result is displayed on the monitor. The control unit enables to send the copy of the values of the address of ‘sum’ to the monitor (buffer) and signals it. The monitor displays the result.

9. Now this program execution is complete.

3) Briefly explain various types of memory.

- ✓ Memory units are the storage areas in a computer.
- ✓ The term “memory” usually refers to the main memory of the computer, whereas, the word “storage” is used for the memory that exists on disks, CDs, floppies or tapes.
- ✓ The main memory is usually called a physical memory which refers to the ‘chip’ (Integrated Circuit) capable of holding data and instruction.

There are different types of memory.

- ✓ Random Access Memory (RAM).
- ✓ Read Only Memory (ROM).
- ✓ Programmable Read- Only Memory (PROM).
- ✓ Erasable Programmable Read-Only Memory (EPROM).
- ✓ Electrically Erasable Programmable Read-Only Memory (EEPROM).

Random Access Memory (RAM).

- ✓ RAM is the most common type of memory found in the modern computers.
- ✓ This is really the main store and is the place where the program gets stored.
- ✓ When the CPU runs a program, it fetches the program instructions from the RAM and carries them out.
- ✓ If the CPU needs to store the results of the calculations it can store them in RAM.
- ✓ When we switch off a computer, whatever is stored in the RAM gets erased.

Read Only Memory - ROM

- ✓ In ROM, the information is burnt (pre-recorded) into the ROM chip at manufacturing time.
- ✓ Once data has been written into a ROM chip, it cannot be erased but you can read it.
- ✓ When we switch off the computer, the contents of the ROM are not erased but remain stored permanently.

Programmable Read Only Memory - PROM

- ✓ PROM is a memory on which data can be written only once.
- ✓ A variation of the PROM chip is that it is not burnt at the manufacturing time but can be programmed using PROM programmer or a PROM burner.

Erasable Programmable Read Only Memory - EPROM

- ✓ In EPROM, the information can be erased and reprogrammed using a special PROM – programmer.
- ✓ An EPROM differs from a PROM in that a PROM can be written to only once and Cannot be erased.
- ✓ But an ultraviolet light is used to erase the contents of the EPROM.

Electrically Erasable Programmable Read Only Memory – EEPROM

- ✓ EEPROM is a recently developed type of memory.
- ✓ EEPROM is not as fast as RAM or other types of ROM.
- ✓ A flash memory is a special type of EEPROM that can be erased and reprogrammed.
- ✓ It is also non-volatile in nature

4) List a few commonly used inputs / output devices and explain them briefly?**Input devices.**

- ✓ Keyboard
- ✓ Mouse
- ✓ Scanner
- ✓ Bar Code Reader
- ✓ Digital Camera
- ✓ Magnetic Ink Character Recognition (MICR)
- ✓ Optical Character Recognition (OCR)
- ✓ Optical Mark Reading and Recognition (OMR)
- ✓ Light Pen

Keyboard

- ✓ The most common input device is the keyboard.
- ✓ Keyboard consists of a set of typewriter like keys that enable you to enter data into a computer.
- ✓ They have alphabetic keys to enter letters, numeric keys to enter numbers,
- ✓ punctuation keys to enter comma, period, semicolon, etc.

Mouse

- ✓ Mouse is an input device that controls the movement of the cursor on the display screen.
- ✓ Mouse is a small device, you can roll along a flat surface.
- ✓ This movement of the ball is converted into signals and sent to the computer.

- ✓ We will need to click the button at the top of the mouse to select an option.
- ✓ Mouse pad is a pad over which you can move a mouse.
- ✓ Mouse is very popular in modern computers.

Scanner

- ✓ Scanner is an input device that allows information such as an image or text to be input into a computer.
- ✓ It can read image or text printed on a paper and translate the information into a form that the computer can use.
- ✓ That is, it is used to convert images (photos) and text into a stream of data.

Bar Code Reader

- ✓ The barcode readers are used in places like supermarket, bookshops, etc.
- ✓ A bar code is a pattern printed in lines of different thickness.
- ✓ The bar-code reader scans the information on the barcodes and transmits to the computer for further processing.
- ✓ The system gives fast and error-free entry of information into the computer.

Magnetic Ink Character Recognition (MICR)

- ✓ MICR is widely used by banks to process cheques.
- ✓ Human readable numbers are printed on documents such as cheque using a special magnetic ink.
- ✓ The cheque can be read using a special input unit, which can recognize magnetic ink characters.
- ✓ This method eliminates the manual errors.
- ✓ It also saves time, ensures security and accuracy of data.

Optical Character Recognition (OCR)

- ✓ The OCR technique permits the direct reading of any printed character like MICR but no special ink is required.
- ✓ With OCR, a user can scan a page from a book.
- ✓ The computer will recognize the characters in the page as letters and punctuation marks, and stores.
- ✓ This can be edited using a word processor.

Output Devices

1. Monitors
2. Printers
3. Speakers
4. Plotters

Monitors

- ✓ Monitor is a commonly used output device, sometimes called as display screen.
- ✓ It provides a visual display of data.
- ✓ Monitors are connected with the computer and are similar in appearance to a television set.
- ✓ The number of pixels that can be displayed vertically and horizontally gives the resolution of the monitor.
- ✓ Some popular resolutions are 640 x 480 pixels, 800 x 600 pixels and 1024 x 768 pixels.
- ✓ A resolution of 1024 x 768 pixels will produce sharper image than 640 x 480 pixels.

Printers

- ✓ Printer is an output device that prints text or images on paper or other media .
- ✓ By printing you create what is known as a ‘hard copy’.
- ✓ The two main types of printers are impact printers and non-impact printers.

Speakers

- ✓ The computer can also give produce voice output(audio data).
- ✓ Speaker serves as a voice output device.
- ✓ Using speakers along with speech synthesizer software, the computer can provide voice output.
- ✓ Voice output has become very common in many places like airlines, banks, automatic telephone enquiry system etc.
- ✓ Users can also hear music/songs using the voice output system.

Plotters

- ✓ Apart from the output devices like printers, plotters are also used to produce graphical output.
- ✓ Although printer output is very convenient for many purposes.
- ✓ The user needs to present the information graphically in order to understand its significance

Extras:**1. What are the components of the digital computer?**

A computer system is the integration of physical entities called hardware and non-physical Entities called software. The hardware components include input devices, processor, storage Devices and output devices. The software items are programs and operating aids (systems) That the computer uses to process data.

2. Write the essentials of the stored program concept?

The essentials of the stored program concept are –

1. The program and data are stored in a primary memory (main memory).
2. Once a program is in memory, the computer can execute it automatically without manual Intervention.
3. The control unit fetches and executes the instructions in sequence one by one.
4. An instruction can modify the contents of any location in the stored program concept. It is the basic operatig principle for every computer.

3. Define memory read and memory write operations.

Operations on memories are called reads and writes, A write instruction transfers information from other device to memory and a read instruction transfers information from the memory to othr devices.

A memory that performs both reads and writes is often called a RAM, random access memory.

4. What do you mean by memory access time?

The performance of a memory system is defined by two different measures, the access time and the memory cycle time.

Access time, also known as presponse time or latency, refers to how quickly the memory can respond to a read or write request.

Memory cycle time refers to the minimum period between two successive requests.

5. When do we use ROM?

The information is burnt (pre-recorded) into the ROM chip at manufacturing time.

Once data has been written into a ROM chip, it cannot be erased but we can read it.

When we switch off the computer, the contents of the ROM are not erased but remain stored permanently.

ROM is a non-volatile memory.

ROM stores critical programs such as the program that boots the computer.

6. What is an output device?

A computer uses devices with an interface between the computer and the user.

These devices take machine coded output results from the processor and convert them into a form that can be used by human beings. Example: Monitor, printer.

7. What is a storage device?

The device which stores Data, Programs etc, in a computer readable medium,

Example: CD, floppy.

8. Briefly explain how registers are used to perform calculations.

The inputs to be calculated are stored in the input register (AREG) and the input / out register (ACCM) for add, AND and OR functions.

The shift left and shift right functions operate on the value in the ACCUM.

The control unit controls the operations of the ALU by giving appropriate control signals to select a specific function and then enable the operation after the data are fed into the registers.

9. What is a control unit?

The control unit directs and controls the activities of the computer system. It interprets the instructions fetched from the main memory of the computer, sends the control signal to the devices involved in the execution of the instructions.

10. What are registers?

While performing operations, the ALU takes data from the temporary storage area inside the CPU named registers. They are high-speed memories which hold data for immediate processing and results of the processing.

11. What is a bus?

Between any two components of the computer system, there is a pathway called a bus which allows the data transfer between them.

CHAPTER 4**WORKING PRINCIPLE OF DIGITAL LOGIC****1. What is a logic gate?**

A logic gate is an elementary building block of a digital circuit. It is a circuit with one output and one or more inputs. At any given moment, logic gate takes one of the two binary conditions low (0) or high (1), represented by different voltage levels.

2. List the fundamental logical gates?

There are three fundamental logic gates namely, AND, OR and NOT. Also we have other logic gates like NAND, NOR, XOR and XNOR. Out of these NAND and NOR gates are called the universal gates, because the fundamental logic gates can be realized Through them.

3. Why NAND and NOR gates are called as universal gates?

NAND and NOR gates are called the universal gates, because the fundamental logic gates can be realized Through them. The circuit symbol and the truth table of these logic gates.

6. Give the truth table of XOR gates for two inputs.

The truth table for XOR gate is

INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

7. What is a half adder?

- ✓ The circuit that performs addition within the Arithmetic and Logic Unit of the CPU are called adders.
- ✓ A unit that adds two binary digits is called a half adder.

8. What is a full adder?

- ✓ The circuit that performs addition within the Arithmetic and Logic Unit of the CPU are called adders.
- ✓ The one that adds together three binary digits is called a full adder.

9. What is a combinational circuit?

A combinational circuit is a logic circuit who's output are based on the inputs present at that time.

10. What is a sequential circuit?

A combinational circuit is a logic circuit who's output are based on, not only the inputs present at that time, but also on the previous state output.

FIVE MARK

- Determine the truth table for the following Boolean functions

$$E = A + (B \cdot C) + D$$

INPUT							OUTPUT
A	B	C	D	A	B.C	D	E = A + (B . C) + D
0	0	0	0	1	0	1	1
0	0	0	1	1	0	0	1
0	0	1	0	1	0	1	1
0	0	1	1	1	0	0	1
0	1	0	0	1	0	1	1
0	1	0	1	1	0	1	0
0	1	1	1	1	1	0	1
1	0	0	0	0	0	1	1
1	0	0	1	0	0	0	0
1	0	1	0	0	0	1	1
1	0	1	1	0	0	0	0
1	1	0	0	0	0	1	1
1	1	0	1	0	0	0	0
1	1	1	0	0	1	1	1
1	1	1	1	0	1	0	1

2. Convert the following truth tables to Boolean equations.

INPUT			OUTPUT
A	B	C	D
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1

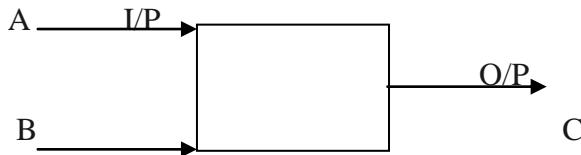
Answers:

INPUT			OUTPUT	MINTERM
A	B	C	D	
0	0	0	0	
0	0	1	1	A.B.C
0	1	0	1	A.B.C
0	1	1	0	
1	0	0	1	A.B.C
1	0	1	0	
1	1	0	1	A.B.C
1	1	1	0	

5. Explain the steps involved in designing a logic circuit.

Step 1: Statement of the problem given

Step 2: Identify inputs and outputs. Identify inputs and outputs.



Step 3: Formulate truth table.

INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	1

Step 4: Convert the truth table to a boolean function.

Identify the minterms for the rows in the truth table which have an output ‘1’.

INPUT			OUTPUT	MINTERM
A	B	C		
0	0	0		
0	1	1		A.B
1	0	1		A.B
1	1	0		

By ORing the minterms, we obtain the boolean function corresponding to the truth table as

$$D = (A \cdot B) + (A \cdot B)$$

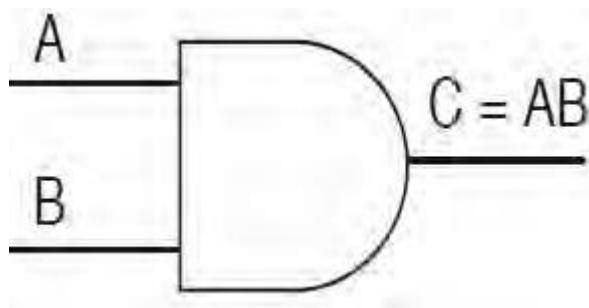
Step 5: Realization of the Boolean function into a Logic Circuit Diagram.

The logic circuit diagram corresponding to this boolean function is given below.

6. What are the different types of logic gates? Explain with the help of truth tables and give an example for each gate.

AND GATE:

The AND gate is so named because, if 0 is called “false” and 1 is called “true,” the gate acts in the same way as the logical “AND” operator. The output is “true” only when both inputs are “true”, otherwise, the output is “false”.



One way to symbolize the action of an AND gate is by writing the Boolean function.

$$C = A \cdot B$$

The truth table for AND Gate is

INPUT		OUTPUT
A	B	C
0	0	0
0	1	0
1	0	0
1	1	1

OR GATE:

The OR gate gets its name from the fact that it behaves like the logical inclusive “OR”. The output is “true” if either or both of the inputs are “true”. If both inputs are “false,” then the output is “false”.

The OR gate output is

$$C = A + B$$

The truth table for OR gate is

INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	1

NOT GATE:

The NOT gate, called a logical inverter, has only one input. It reverses the logical state. In other words the output C is always the complement of the input.

The logical symbol of the NOT gate is

The boolean function of the NOT gate is

$$C = \bar{A}$$

The truth table for NOT gate is

INPUT	OUTPUT
A	C
0	1
1	0

NOR GATE:

The NOR gate circuit is an OR gate followed by an inverter. Its output is “true” if both inputs are “false” Otherwise, the output is “false”.

The logic circuit of the NOR gate is

The output of NOR gate is

$$C = (A + B)$$

The truth table for NOR gate is

INPUT		OUTPUT
A	B	C
0	0	1
0	1	0
1	0	0
1	1	0

NAND GATE:

The NAND gate operates as an AND gate followed by a NOT gate. It acts in the manner of the logical operation “AND” followed by inversion. The output is “false” if both inputs are “true”, otherwise, the output is “true”.

The logical symbol of NAND gate is

The output of the NAND gate is

$$C = (A \cdot B)$$

The truth table for NAND gate is

INPUT		OUTPUT
A	B	C
0	0	1
0	1	1
1	0	1
1	1	0

XOR GATE:

The XOR (exclusive-OR) gate acts in the same way as the logical “either/or.” The output is “true” if either, but not both, of the inputs are “true.” The output is “false” if both inputs are “false” or if both inputs are “true.”.

The logic circuit of XOR gate is

The output of the XOR gate is

$$C = A \bar{B} + \bar{A} B$$

The truth table for XOR gate is

INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

XNOR Gate

The XNOR (exclusive-NOR) gate is a combination XOR gate followed by an inverter. Its output is “true” if the inputs are the same and “false” if the inputs are different.

The logic circuit of XNOR gate is

The output of the XNOR is NOT of XOR.

$$C = A \cdot B$$

The truth table for XNOR gate is

INPUT		OUTPUT
A	B	C
0	0	1
0	1	0
1	0	0
1	1	1

Extras:

1.What is flip-flop?

A flip flop is a circuit which is capable of remembering the value which is given as input.

It

can be used as a basic memory element in a memory device. These circuits are capable of storing one bit of information.

2. What is electronic workbench?

Electronic workbench is a simulation tool for electronic circuits. It allows to design and analyze circuits without using actual instruments. The workbench's click-and-drag operation make editing a circuit fast and easy. It is a windows compatible tool and follows the normal conventions of windows.

Chapter 5**OPERATING SYSTEMS****1. Who will access the computer hardware directly?**

Operating system access the computer hardware directly.

2. Define an OS.

An Operating System is an interface between the user and hardware.

3. Explain the different roles taken by the OS.

The Operating System's goals are to:

- 1) Execute user programs in a user-friendly atmosphere.
- 2) Make the computer system convenient to use.
- 3) Optimize computer hardware.

4. Explain the main functions of the operating system.

- ✓ The primary task of the Operating System is to keep track of who is using which resource, to grant resource requests, to account for usage and to mediate conflicting requests from different programs and users.
- ✓ The Operating System is the intermediary between the user and computer hardware.
- ✓ The primary goal of the Operating System was mainly to optimize resources.
- ✓ The secondary goal was to make the computer environment, user-friendly.
- ✓ The Operating System acts as the manager of resources such as
 - ❖ CPU time
 - ❖ memory space
 - ❖ file storage
 - ❖ I/O devices
- ✓ The Operating System also provides the means for the proper use of hardware, software and data in the operation of the computer system.
- ✓ A control program controls the execution of user programs to prevent errors and improper use of the computer.
- ✓ It is especially concerned with the operation and control I/O devices.

5. Explain the process and memory managements.**Process management**

Process management undertakes the allocation of processors to one program.

Several algorithms are used to allocate the job to the processor. Algorithm is a step-by-step method to solve a given problem.

- ❖ FIFO.
- ❖ SJF
- ❖ Round Robin.
- ❖ Based on Priority.

FIFO (First In First Out)

- ✓ This algorithm is based on queuing.
- ✓ The process (A process is basically a program in execution) that enters the queue first is executed first by the CPU, then the next and then the next and so on.
- ✓ The processes are executed in the order in which they enter the queue.

SJF (Shortest Job First:)

- ✓ This algorithm is based on the size of the job.
- ✓ Take two jobs A and B.

$$A = 5 \text{ kilo bytes}$$

$$B = 8 \text{ kilo bytes}$$

- ✓ Kilo literally means 1000 but here kilo means 1024. A byte consists of eight bits.
- ✓ A bit can store either TRUE (1) or FALSE (0).
- ✓ First the job A will be assigned processor time after which B gets its turn.

Round Robin

- ✓ Jobs are assigned processor time in a circular method.
- ✓ For example take three jobs A, B, C.
- ✓ First the job A is assigned to CPU then job B and after B job C and then again A,B and C and so on.

Based On Priority

- ✓ In this method each job is assigned a Priority.
- ✓ The higher Priority job is awarded favorable treatment.
- ✓ Take two jobs A and B. Let the priority of A be 5 and priority B be 7.
- ✓ Job B is assigned to the processor before job A.

Memory Management

- ✓ Any error in the user program should not be allowed to spoil the entire memory.
- ✓ Operating System divides the main memory into user memory and reserved memory.
- ✓ User memory is divided into many partitions to accommodate various jobs.
- ✓ Operating System provides virtual (imaginary) memory to include the entire program.
- ✓ Operating System should manage the devices also.
- ✓ It is not uncommon for several processes to run simultaneously.

6. Explain the input / output managed by operating system.

- ✓ Application software does not allocate or de-allocate the storage area on the disk for different files belonging to various users.
- ✓ If the application software is allowed to allocate or de-allocate.
- ✓ Even a single user may try to write in some sector, which may contain valuable information.
- ✓ Only the Operating System is empowered to make such an allocation or de-allocation.
- ✓ This arrangement safeguards the loss of data. Such safeguarding of data is called **Data Security**.
- ✓ Operating System alone should be empowered to instruct the hardware to write data from memory Onto a Pre-specified location on the disk.
- ✓ The application program is not allowed to read data from the disk.
- ✓ For example, banks will have precarious existence.
- ✓ An application program can do all the operations with the exception of input/output operations.
- ✓ When the application program is translated into the machine code, the request for reading or writing will not be translated into the machine code, instead a system call is given.
- ✓ We cannot fool the system by writing the I/O code in machine language. User code will not be entertained for input/output at any circumstance.

7. Write note on User Interface.

- ✓ Interface should be designed in such a manner as to master the interface. As already stated, people are hard pressed for time.
- ✓ The speed of response should play a vital role in designing the user interface. The speed of response is nothing but the time taken to execute a particular task.
- ✓ The user interface should reduce the number of errors committed by the user. With little practice, the user should be in a position to avoid errors.

- ✓ The user interface should be pleasing to the senses. Vivid colours, enchanting music may achieve this.
- ✓ The user interface should enable the people to retain this expertise for a longer time.
- ✓ The ultimate aim of any product is to satisfy the customer. The user interface should also satisfy the customer.

8. List out advantages of the Distributed Operating System over the Network Operating System.

- ✓ If we want to make use of the Network, you must know the machine address and the variety of services provided by that machine.
- ✓ But Distributed Operating System ensures that the entire network behaves as a single computer.
- ✓ Getting access to the remote resources is similar to access to local resources.
- ✓ The user's job is executed in an idle machine and the result is communicated to the user machine.

9. Name some of the required features of Operating System.

- ❖ User Interface
- ❖ Memory management
- ❖ Process management
- ❖ File management
- ❖ Networking Capabilities management
- ❖ Security Management
- ❖ Fault tolerance
- ❖ Application Base
- ❖ Distributed Operating System.

Extras:

1. What is the reason for the denial of the access?

If the access is not denied unless the user is hard working, one of the two alternatives can happen.

- 1) The user may be forced to conclude that computer is not for him / her.
- 2) The user may damage the computer hardware.

2. What is file access level?

- 1) In order to access the files created by other people, we should have the requisite permission.
- 2) Permissions can either be granted by the creator of the file or by the administrator of the system.

3. What is workstation?

- 1) Work stations are also desktop machines mainly used for intensive graphical applications.
- 2) They have more processor speed than that of personal computers.
- 3) Workstations are used for executing numeric and graphic intensive application such as computer Aided Design (AD).

4. What is personal computer?

- 1) Today the personal computers are the most popular computer systems simply called PCs.
- 2) These desktop computers are also known home computers.
- 3) They are usually easier to use and more affordable than workstations.

5. What is buffer?

A buffer was allowed to store Input. When the CPU needed the data, buffer sends the data immediately. The next input might be ready in the buffer before the CPU processed the earlier data. When the processing was completed, the CPU send the output to the buffer.

6. What is Direct Memory Access (DMA)?

Direct Memory Access (DMA) mechanism was created, to allow transferring of data to and from memory without the intervention of the CPU.

7. What is Spooling?

Spooling is superior to the buffer, because in spooling I/O operations can be overlapped with the working of other jobs but that is not possible with the buffer. While executing one job,

the OS, reads next job from card reader into a storage area on the disk and outputs print-out of previous job from disk to the printer.

8. What is Multiprogramming?

In multiprogramming, memory is divided into many partitions. Multiprogramming allows many programmers to load their programs in the different partitions.

9. What is Data Security?

A single user may try to write in some sector, which may contain valuable information. In order to avoid such an awkward situation, only the Operating System is empowered to make such an allocation or de-allocation. This arrangement safeguards the loss of data. Such safeguarding of data is called Data Security.

10. What is System Call?

A set of extended instructions providing an interface between the Operating System and the user programs, is called a System Call. The Operating System will then generate suitable input/output command to the hardware to replace this system call.

11. What is Fault Tolerance?

The Operating Systems should be robust. When there is a fault, the Operating System should not crash , instead the Operating System should have fault tolerance capabilities.

CHAPTER 6**COMPUTER COMMUNICATIONS****1. What are the reasons for networking?****Sharing of resources:**

- ❖ Primary goal of a computer network is to share resources.
- ❖ For example several PCs can be connected to a single expensive line printer.

• Sharing information:

- ❖ Information on a single computer can be accessed by other computers in the network.
- ❖ Duplication of data file on separate PCs can be avoided.

• Communication:

- ❖ When several PCs are connected to each other, messages can be sent and received.
- ❖ From a remote location, a mobile salesman can relay important messages to the central office regarding orders.
- ❖ Relevant databases are updated and the business commitments are fulfilled.

2. Mention a few areas, where computer networks are employed

- ❖ Electronic data interchange
- ❖ Tele-conferencing
- ❖ Cellular telephone
- ❖ Cable Television
- ❖ Financial services, marketing and sales
- ❖ Reservation of Airlines, trains, Theatres and buses
- ❖ Telemedicine
- ❖ ATM
- ❖ Internet banking

3. What are the elements that a computer communication should ensure?**Safe :**

The data received is the same as the data sent

Secure :

The data being transferred cannot be damaged either will fully or accidentally.

Reliable:

Both the sender and the receiver knows the status of the data sent. Thus the sender knows whether the receiver got the correct data or not.

4. List the general types of networks used today.

- ❖ Local Area Network (LAN)
- ❖ Metropolitan Area Network (MAN)
- ❖ Wide Area Network (WAN)

5. Explain WAN.

- ✓ A WAN is typically two or more LANs connected together across a wide geographical area.
- ✓ The individual LANs separated by large distances may be connected by dedicated links, fiber optic cables or satellite links.

6. How data is transmitted in different forms?

Data is transmitted in two forms

1. Analog data transmission
2. Digital data transmission

Analog data transmission:

- ✓ Analog data transmission is the transmission of data in a continuous waveform.
- ✓ The telephone system, for instance, is designed for analog data transmission.
- ✓ Analog signals are sometimes modulated or encoded to represent binary data.
- ✓ Digital data transmission is the widely used communication system in the world.
- ✓ The distinct electrical state of ‘on’ and ‘off’ is represented by 1 and 0 respectively.

Digital data transmission:

- ✓ Digital data transmission is the widely used communication system in the world.
- ✓ The distinct electrical state of ‘on’ and ‘off’ is represented by 1 and 0 respectively.

7. What are the transmission modes?**Simplex mode:**

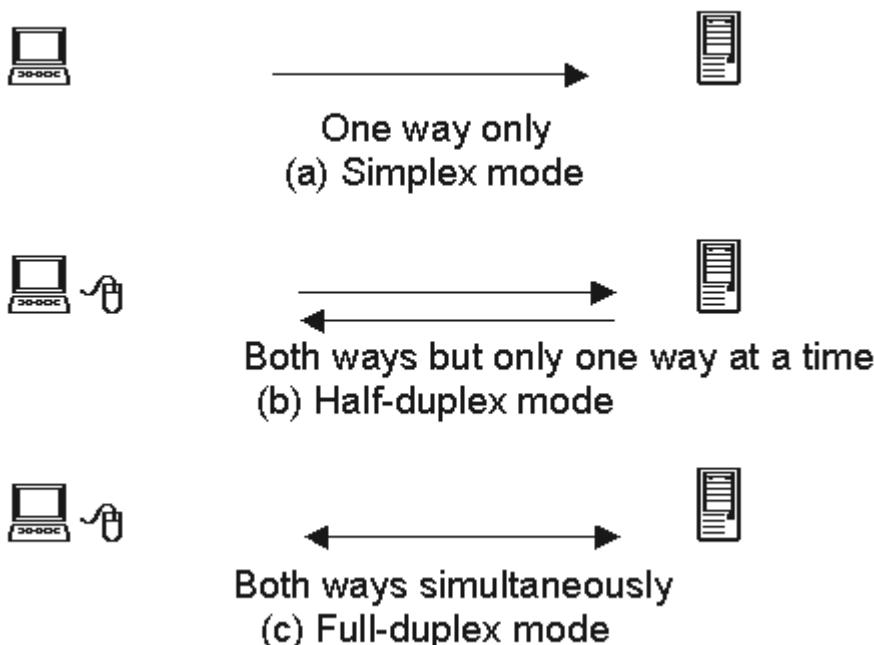
- ✓ In simplex mode, data can be transmitted in one direction as shown in the figure.
- ✓ The device using the simplex mode of transmission can either send or receive data, but it cannot do both.
- ✓ An example is the traditional television broadcast, in which the signal is sent from the transmitter to the TV.
- ✓ There is no return signal.

Half duplex mode:

- ✓ In Half duplex mode data can be transmitted back and forth between two stations. But at any point of time data can go in any one direction only.
- ✓ This arrangement resembles traffic on a onelane bridge. When traffic moves in one direction, traffic on the opposite direction is to wait and take their turn.
- ✓ The common example is the walkytalky.

Full duplex mode:

- ✓ In full duplex mode a device can simultaneously send or receive data.
- ✓ This arrangement resembles traffic on a two-way bridge, traffic moving on both directions
- ✓ An example is two people on the telephone talking and listening simultaneously.

**8. What is TCP?**

- ✓ The software that is responsible for making the Internet function efficiently is TCP.
- ✓ TCP stands for transmission control protocol and IP stands for Internet Protocol.
- ✓ TCP breaks up the data to be sent into little packets.
- ✓ It guarantees that any data sent to the destination computer reaches intact.
- ✓ It makes the process appear as if one computer is directly connected to the other providing what appears to be a dedicated connection.

9. What is the role of ICANN?

- ✓ Internet Corporation for Assigned Names and Numbers (ICANN).
- ✓ ICANN administers the domain name registration, it helps to avoid a name which is already registered.

10. Explain URL?

- ✓ Every web page has a unique address called the Uniform Resource Locator or URL.
- ✓ The URL locates the pages on the Internet.

An example of URL is

[http:// google.com](http://google.com)

Extras:

1. What is LAN?

A network connecting systems and devices inside a single building or buildings close to each other is called Local Area Network (LAN).

2. What is MAN?

A Network that spans a geographical area covering a Metropolitan city is called a Metropolitan Area Network (MAN).

3. What is Network Topology?

A Network Topology is the structure or layout of the communication channels that connects the various computers on the network. Each computer in the network is called a node.

4. What are the types of Topology?

* Star * Ring * Bus * Hybrid * FDDI

5. What is Star Network?

In a star network all computers and other communication devices are connected to central hub. Such as a file server or host computer usually by a Unshielded Twisted pair (UTP) cables.

6. What is Ring Network?

In a Ring Network computers and other communication devices are connected in a continuous loop. Electronic data are passed around the ring in the one direction with each node

serving as a repeater until it reaches the right destination. There is no central host computer or server.

7. What is Bus network?

In a bus network all communication devices are connected to a common cable called bus. There is no central computer or server. The data transmission is bidirectional.

8. What is computer network?

A system consisting of connected nodes made to share data, hardware and software is called a computer network.

9. What is a node?

The network topology is the structure or layout of the communication channels that connects the various computers on the network. Each computer in the network is called a node.

10. What is UTP?

UTP stands for Unshielded Twister Pair. UTP cables are used as communication channels in a network. In a star network all computers and other communication devices are connected to a central hub. Such a file server or host computer usually by a Unshielded Twisted Pair (UTP) cables.

11. What are network services?

Network services are provided by numerous combinations of computer hardware and software. Depending upon the task, network services require data, input / output resources and processing power to accomplish their goal.

12.What is protocol?

A protocol can be one rule or a set of rules and standards that allow different devices to hold conversations.

13. What is OSI?

The International Standards Organization proposed protocol known as Open System Interconnection (OSI). The OSI provided a network architecture with seven layers.

14. What is Modem and Modulation?

The device that accomplishes modulation – demodulation process is called a modem. Telephone wire is called modulation.

15. What is Data Transmission rate?

The speed at which data travel over a communication channel is called the communication rate. The rate at which the data are transferred is expressed in terms of bits per second (bps).

16. What is Internet?

Several networks, small and big all over the world, are connected together to form a Global network called the Internet.

17. What is the future of Internet?

The popularity of Internet is growing ever since its evolution 20 years ago. This will bring out.

1. New standard protocol.
2. International connections.
3. Consumer civilization.
4. Data sharing in research and Engineering.

18. What is hyperlink?

When the mouse pointer moves over an underlined or highlighted words and images change to a hand icon. This is called a hyperlink. This indicates the link to other sites. To go to one of the linked sites, just click the mouse on the hyperlink.

19. What is user network?

Usenet New groups are Electronic discussion groups that focus on specific topic forms, computer forums. User network abbreviated as usenet is essentially a giant disbursed bulletin board.

20. Define FTP.

File Transfer Protocol, abbreviated as FTP is used by the net user for transferring files around the world. The transfer includes software, games, photos, maps, music and such other relevant materials.

21. What is Telnet?

Telnet is a protocol that allows the user to connect to a remote computer. This feature is used to communicate a microcomputer with mainframe.

22. What is Intranet?

Many organizations have Local Area Network that allows their computers to share files, data, printers and other resources. These private networks uses TCP/IP and other Internet standard protocols which they are called intranet.

23. What is Extranet?

Intranet connecting selected customers, suppliers and offices in addition to the internal personnel, is called Extranet.

CHAPTER 7**INTRODUCTION TO WINDOWS XP****1. What is Windows XP?**

- ✓ Windows XP Professional is a user-friendly operating system designed for popular use. The most important advantage of using Windows is its GUI.
- ✓ Windows XP Professional combines all the positive aspects of its Microsoft predecessors.

2. Write a short note about the evolution of Windows operating system.

- ✓ Windows XP is the latest version in the series of Windows products in the Operating System.
- ✓ The first version which became reasonably popular was Windows 3.0.
- ✓ Windows 3.0 was followed by Windows 3.1, which offered better features. Windows 3.1 used a window called Program Manager to launch applications.
- ✓ Almost at the same time, Microsoft introduced Windows 3.11 for workgroups.
- ✓ It was easier to start applications in Windows 95. The Program Manager of Windows 3.1 was hidden from the user.
- ✓ In the meantime Microsoft produced Windows NT(New Technology) independent of 9x(95 or 98) versions.
- ✓ The windows 9x line gave a new offspring Me (Millennium edition) which provided some of the much needed stability. NT line of development resulted in Windows 2000 professional.

3. What are the advantages of using Windows XP?

- ✓ Windows XP Professional is a user-friendly operating system designed for popular use.
- ✓ The most important advantage of using Windows is its GUI.
- ✓ Windows displays all the information on the screen and all you have to do is to point and select using the mouse, with its GUI.
- ✓ Windows XP Professional combines all the positive aspects of its Microsoft predecessors.
- ✓ This satisfies all the users who want to prevent frequent crashing of software and want to use easy techniques.

4. What is a mouse? What are the different mouse actions that you are familiar with?

- ✓ The mouse is an input device that you move on a flat surface (usually a mouse pad.).

- ✓ When you move the mouse, a pointer moves on the screen. This pointer, called the Mouse Pointer, is used to point to things on the screen.

Move: Moving the mouse is simply dragging the mouse on the mouse pad.

Click: Clicking is used to select objects on the Windows screen.

Double-click: Double-click is most often used to start applications.

Click and drag: This mouse action is used to move an object from one place to another.

5. What is desktop? What are the things you see on the desktop?

- ✓ The opening screen of Windows XP is called the **Desktop**.
- ✓ Windows XP allows you to change the appearance of the desktop.
- ✓ The desktop has several **Icons**. Each icon has a label telling you the name of the application it represents.
- ✓ **My Computer, My Documents, My Recent Documents** are some of the standard icons that you can see on the Windows desktop.
- ✓ Each of these icons represents an application that is frequently used.

6. What is the Control Panel? Describe briefly some of the icons found on the Control Panel.

The **Control Panel** window displays several icons. Using these icons, you can modify the system and hardware settings of your computer.



Accessibility Options This allows you to adjust your computer settings for vision, hearing and mobility deficiency



Date and Time

This allows you to set the date, time and the time zone for your computer



Display

This allows you to change the appearance of your desktop, such as the background, screen saver, colour, font size and screen resolution.



Fonts

This allows you to add, change and manage fonts on your computer.



Keyboard

This allows you to customise your keyboard settings such as the blink rate and character repeat rate.



Mouse

This allows you to customise settings such as the button configuration, double click, speed, mouse pointer and motion speed.



Printers and Faxes

This allows you to install printer and fax Printer and helps you add new ones.



Regional and Language ...

This allows you to customize setting for the display of languages, numbers times and dates.



User Accounts

This allows you to change user account setting and password to people who share this computer.

7. What is Shut down? Why should you shut down your computer properly?

- ✓ We want to come out of your work, you can do either of the following two. You can close your session or you can shut down the computer.
- ✓ We want to shut down the computer you have to follow these steps, alert the other users at that time.
 - ❖ Save all your unsaved documents
 - ❖ Click the **Start** button.
 - ❖ Click **Turn Off Computer** button (or press U or u key). You will be Shown **Turn Off Computer** Window with three options, along with cancel.

- ❖ If you have changed your mind not to shut down the computer click **Cancel**, button at the bottom.
- ❖ If you want to shut down the computer click **Turn Off** button b(or press U or u key).

8. Describe the different parts of a Window.

- ✓ This rectangular area is called a **window**.
- ✓ We can have several windows on your desktop at the same time.
- ✓ These windows may be big (as big as the desktop) or small (as small as a button on the taskbar), overlapping others or one beside the other.

Minimize Button: The minimize button is used to reduce the size of the window to a button on the taskbar.

Maximize Button: Clicking on this button enlarges the window to fill the entire desktop.

Restore Button: This button is used to restore the window to its original size.

Close Button: This button is used to close a window.

9. Write a short note about the different kinds of dialog boxes that you use in Windows.

Windows XP is an inter-active operating system. Its GUI attempts to display as much information on the screen as possible.

Text Boxes: Text boxes are used to allow the user to enter some data. Every text box is accompanied by a prompt or label that tells you what should be entered in that box.

List Boxes: These boxes display a list of choices. You can select the one you want by simply clicking on it.

Drop-down List Boxes: We can select an item from this list by clicking on it. This is used when there is limited space.

Radio Buttons: These buttons are used to display multiple options. we can select one by clicking on the small white circle to the left of the option. A black dot appears at the center of the circle to indicate a selected option.

Check Boxes: These boxes are used to enable or disable options. The options in these boxes have small white squares to their left. Clicking on a square enables the option and clicking on it again disables it.

Tabs: Tabs are used to display different sets of options in dialog boxes.

Sliders : Sliders are used to enter a value by physically moving a marker over a slide.

10. Explain with an example how to start multiple applications?

- ✓ Starting multiple applications is very simple. First start one application.
- ✓ The application appears on the screen in a window. At the same time, a button with the name of the application appears on the taskbar.
- ❖ The window of the second application appears on the screen overlapping the first window,
- ❖ The button of the second application appears on the taskbar,
- ❖ The title bar of the first application and its button on the taskbar become dim.

11. How do you switch between multiple applications?

- ✓ The buttons on the taskbar are used to switch between the different applications.
- ✓ Remember that every time you start an application, its button appears on the taskbar.
- ✓ The button of the application you are currently using is highlighted and its window is called the **Active Window**.
- ✓ To switch to another application, click on any part of that application's window that is visible.
- ✓ If no part of the window is visible, click the button of the application on the taskbar.
- ✓ The application window is moved in front of all the other windows and its button is highlighted.
- ✓ If we click on the button, it will show you a list, from which you can select any one of them.

12. What is the Clipboard? How is it used? Explain.

- ✓ Windows uses a temporary storage location called the **Clipboard**.
- ✓ You can use the clipboard to store any kind of data.
- ✓ You can store text, pictures, numbers, group of files and so on.
- ✓ The information to be transferred is first copied from the source application to the Clipboard and from there to the destination application. Windows also gives the option of either copying or moving data.

13. What are the two different types of files?

All information in Windows is stored as files.

These files are broadly classified into two categories

- i) Application Files
- ii) Document Files

14. How does the computer display the correct time? How can you change time ?

- ✓ Windows has an in-built clock, which is usually displayed on the taskbar.
- ✓ To change the date or the time, double-click on the clock on the taskbar.
- ✓ The **Date and Time Properties** dialog box appears on the screen.
- ✓ To change the date or time , you should have special privilege.
- ✓ To change the time, click on the digital clock seen on the right.
- ✓ Highlight the hour, minute or second by dragging the pointer over it.
- ✓ Increase or decrease the highlighted value by clicking on the up and down arrows in the box.
- ✓ Note that the time in the analog clock also changes correspondingly.
- ✓ Analog clock is the ordinary clock with hour hand minutes hand and second hand.

15. What is Paint? Describe briefly the different parts of the Paint window.

- ✓ Paint is an application that lets you draw and colour pictures.
- ✓ To start Paint, click on **Start → All Programs → Accessories → Paint**

16. Where is the MS-DOS Prompt available? How do you use it ?

The **Command Prompt** option of windows can be used. Perform **Start → All Programs → Accessories → Command Prompt**.

The MS-DOS window is like any other window; you can move, minimize, maximize or close it like any other window. Notice that after the copyright message, the window displays the familiar C:> prompt. You can use any DOS command here.

17. Where is the Calculator available? How do you use it? Explain briefly.

- ✓ The Calculator is a useful application that comes with Windows. It can be used to perform mathematical and scientific calculations.
- ✓ To start the Calculator, execute the following action. **Start → All Programs → Accessories → Calculator.**
- ✓ The Calculator can be used in one of the two modes - **Standard** mode or **Scientific** mode , this calculator is very similar to an ordinary calculator.
- ✓ We can use the keyboard and the mouse to enter numbers and operators. If you are using the mouse, click on the number and operator buttons.
- ✓ To use the Calculator in the **Scientific** mode, click on the **View** menu and select **Scientific**.

18. What is WordPad? How do you start WordPad ?

- ✓ WordPad is a simple word processor that comes along with Windows.

- ✓ A Word processor is a program that allows you to type and store text.
- ✓ To start WordPad, click on **Start → All Programs → Accessories → WordPad**.

19. Describe briefly how to edit text entered in WordPad

- ✓ A small vertical blinking line appears at the top left corner of the work area. This is the **Cursor**.
It indicates your current position on the screen.
- ✓ Some users refer the cursor as the insertion point because it shows, on the screen, where the next text you type will be inserted.
- ✓ Use the keyboard to type in the text. Note that as you type in the text, the cursor moves.
- ✓ When you reach the end of a line, WordPad automatically moves the cursor to the beginning of the next line. This feature is called **Word wrap**.
- ✓ The Enter key on the keyboard is used to start a new paragraph to enter short line or a blank line.
- ✓ If we want to set the margin that can be done with **Page Setup** of the **File** menu.

20. How can you customize the desktop?

- ✓ One of the most attractive features of Windows XP is that it allows you to customize the desktop.
- ✓ We can change the appearance of the desktop by changing the background, adding icons, moving icons, moving and resizing the taskbar and so on. We can also add Screen Savers.

Extras:**1. What are interfaces?**

Interface lets any one connected with the machine. Actually interface is a (virtual) connection between two entities. E.g. T.V.remote is an interface which connects a user and a T.V.

2. What is the difference between Command Line Interface and Graphics User Interface?

In Command Line Interface, we have to remember cryptic commands and type them without mistakes. To make things worse some operating systems are case-sensitive also LS, Ls, IS or Is are not same. A simple spelling mistake or missed space will result in an error. Windows displays all the information on the screen and all we have to do is to point and select using the mouse, with its GUI.

3. What is network?

Two or more computers can be connected together to form a network. If our computer is in a Network, we have to do some more actions to Start our computer.

4. Define CLI.

Command Line Interface, is a kind of interface, where we have to remember cryptic commands and type them without mistakes. To make things worse some operating systems are case-sensitive also (LS, Ls, IS or Is are not the same). A simple spelling mistake or missed space will result in an error.

5. What is the advantage of Windows?

Windows advantage is that it displays all the information on the screen and all we have to do is to point and select using the mouse, with its GUI. A picture is worth a thousand of words. The Apple introduced the concept of Windows but Microsoft popularized the Windows concept.

5. What is desktop?

The opening screen of Windows XP is called the Desktop. The desktop of our computer may look different from what is seen. This is because Windows XP allows us to change the appearance of the desktop.

6. What is taskbar and start menu?

The taskbar is usually a narrow strip, present at the bottom of the screen. When you click on the Start button, the Start menu appears on the left side of the screen. Using the Start menu, we can start any application that you have currently installed.

7. What is system tray?

On the extreme right of taskbar is the Systems Tray that contains the Clock and icons for other utilities. The empty space between the Quick Launch Toolbar and the Systems Tray is used to display buttons for the applications currently being used.

8. What is Title Bar?

At the top of each window is the Title Bar. As the name indicate, the title bar tells us the name of the application.

9. What is Menu bar?

Below the title bar is the Menu Bar. This displays the different menus available to us. When we click on a menu option, say Edit, all the sub-options appear as a drop-down menu. We can select any one of them by pointing to it with the mouse pointer and clicking it.

10. What are Toolbar?

One or more Toolbars appear below the menu bar. Toolbars consist of icons representing shortcuts for the most frequently used commands. For example, to save a file, we can click on the File menu and select Save from the drop-down list. An easier method would be to click on the Save icon on the toolbar. (Ctrl + S (or Ctrl + s) combinations also will save the file).

If we save for the first time, we will be prompted to enter the name of the file.

11. How will you move a window?

Moving a Window While working with multiple windows, we need to move a window to different area of the desktop to see one of the underlying windows. We do so by clicking and dragging the title bar of the window. We cannot drag a Window when it is either maximized or minimized.

12. What are Radio buttons?

Radio buttons are used to display multiple options. We can select one by clicking on the small white circle to the left of the option. A black dot appears at the center of the circle to indicate a selected option. In radio button option, we can select only one of the buttons.

If we select a second radio button, the previously selected button is automatically deselected. If we have to answer multiple choice questions with several options in which we have only one correct answer then Radio Buttons are the suitable candidates.

13. What is a Screen Saver?

In old monitors, if we had left the images on the screen unchanged for long, the characters would burn-in, leaving a permanent impression on the screens. To avoid this screen savers were used. Constantly moving technology has improved so much that screen savers are no longer necessary.

14. What is Control Panel?

The Control Panel allows us to install and manage the different hardware components attached to our computer. We can open the Control Panel window by clicking on the Start button, and then Control Panel.

15. What are the two types of files?

All information in Windows is stored as files. These files are broadly classified into two categories:

- (i) Application Files
- (ii) Document Files.

16. What is Digit grouping?

We have selected Digit grouping under View menu, the numbers are separated by comma following the European convention. The numbers that appear to the left of decimal places are separated by comma for every three digits starting from the right. The leading comma (if any) is suppressed.

17. What is WordPad?

WordPad is a simple word processor that comes along with Windows. A word processor is a program that allows us to type and store text.

18. What is Wordwrap?

When we reach the end of a line, WordPad automatically moves the cursor to the beginning of the next time. This feature is called Word wrap.

19. What is overwrite mode?

If we are in insert mode, pressing the Insert key will take you to the overwrite mode and vice versa. If we are in overwrite mode the text we enter will overwrite the existing text (if any).

20. What is Clipboard?

Windows uses a temporary storage location called the Clipboard. We can use the clipboard to store any kind of data. We can store text, pictures, numbers, and group of files and so on.

21. What is the difference between copying and moving the data?

The difference between copying and moving data is that moving removes the data from the source location and places them in the destination location. Copying leaves the source data untouched and makes a new copy in the destination location.

22. What is Application files?

Application files are files with which you can do something. For example, files that allow you to draw and paint, enter and save text, calculate and play games are application files.

23. What is a Document file?

- ✓ Document files are files that are created by the user using an application.
- ✓ We can start an application by clicking on its icon on the desktop or by using the start menu.
- ✓ At the same time, a button representing the application also appears on the taskbar.
- ✓ This button stays on the taskbar as long as the application is active and disappears only when we close the application.

CHAPTER 8**WINDOWS EXPLORER****1. Write short notes about opening explorer window in explorer bar and folders bar?**

- ✓ **Windows Explorer** is a program that helps us to manage our files and folders.
- ✓ To start Windows Explorer, click on **Start → All Programs → Accessories → Windows Explorer**.
- ✓ We can also start **Windows Explorer** by right clicking on the **Start** button and then selecting **Explore** from the short cut menu.

2. What is run command used for?

- ✓ The **Run** command on the Start menu offers an alternate method to start applications or open data files.
- ✓ When we use the Run command to open a data file, say a word processing document or a paint picture, it automatically starts the corresponding application also.
- ✓ The Run command is most often used to install new software or games from a CD or a floppy disk.

Example:

c:\Mycomputer \cs.doc .

3. What are files and folder?

- ✓ All information on disks are stored as files.
- ✓ A collection of files is called a folder.

4. Write a short note on file names.

- ✓ All information in computers is stored in Files.
- ✓ Every file has a unique name that helps we to identify it.

A file name is made up of two components:

1. Main Component
2. Extension

Main Component:

- ✓ The first part of the file name is the main component.
- ✓ This part precedes the dot and is also called the primary name.
- ✓ This is the name given to the file by the user.
- ✓ The dot (or full stop) separates the main component from the extension.
- ✓ The main component can contain alphabets, numbers, spaces and other characters.

Extension:

- ✓ This is the second part of the file name.
- ✓ That is, the part that succeeds the decimal point is called the extension or the secondary name.
- ✓ When a file is created using an application, the extension is automatically added to the file's main component by the application itself.
- ✓ Some examples of file extensions DOC, .BAS, .XLS and .java.

5. Explain recycle bin. How it's used?

- ✓ Windows Explorer uses a special folder called the **Recycle Bin** to hold deleted files.
- ✓ The Recycle Bin is like the garbage can in our house that we empty once it is full. In the same way, we can empty the recycle bin when we want.
- ✓ Using the recycle bin gives we chance to get back files that we have deleted by mistake.
- ✓ We can drag the selected file / files to the Recycle Bin or to its Explorer Windows When we are in **Explorer Bar**, we can delete selected files by just clicking **Delete the selected items** from **File and Folder Tasks**.
- ✓ The **Recycle Bin** folder is available on the Desktop and can be used like any other folder. Double-click on the icon to open it and check if the deleted files are present.
- ✓ If we do not want to send the deleted items to the Recycle Bin, Shift + Delete key combination will achieve our goal.

6. How do we select files in windows explorer?

- ✓ Windows Explorer allows we to copy, move and delete files and folders.
- ✓ But, before we can do any of these, we have to select the files or folders that we want to copy, move or delete. Selecting one file or folder is very simple.
- ✓ Just click on the file or folder and it gets highlighted.
- ✓ If we want to select more than one file or folder.
- ✓ If the files or folders to be selected appear consecutively on the screen, then, click on the first file or folder.
- ✓ Using the scroll bars point the mouse pointer to the last file or folder in the list, hold the **Shift** key down and click.
- ✓ If the files or folders to be selected are not displayed consecutively, then, click on the first file, move the mouse pointer to the second file to be selected and click while holding the **Ctrl** key down.

7. Describe briefly the different in which we can view information in window explorer.

The Icons View - The Icons View shows each file or folder's icon and its name.

The Tiles View - In this view, the icons are a little bigger. In addition to icon and its name, this view provides some more additional information for some icons.

The Thumbnails View - The Thumbnails View works well in folders that contain pictures.

The Filmstrip View - This view is available only in folders that contain pictures such as **My Pictures Folder**.

Thumbnails View. When we click or point to a picture, an enlarged copy of the picture appears in preview area.

List View - This view retains the small icons but displays the files and folders one below the other in columns.

Details - This view displays details like file size, type, last modified date and time along with file names and small icons.

8. Describe the different parts of the Windows Explorer window.

- ✓ Windows Explorer is a program that helps us to manage our files and folders.
- ✓ To start Windows Explorer, click on Start All Programs Accessories Windows Explorer.
- ✓ The left pane displays either the **Explorer Bar** or the **Folder Bar** and the right pane always displays the contents of the currently selected folder in the left pane.
- ✓ If we click the **Search** button from the toolbar, the left pane neither shows **Explorer Bar** nor **Folder Bar**, instead it shows the **Search companion**.
- ✓ If we just double click a folder, we will see an **Explorer Bar** in the left pane.
- ✓ If we right click on the same folder and select **explore** from the ensuing shortcut menu, we will see the **Folder Bar** in the left pane.
- ✓ We right click a folder and choose **open** from the ensuing short cut menu, we will see only the **Explorer Bar** in the left pane.

9. How do we create a new folder?

- ✓ We may want to create a new folder to store some of our files.
- ✓ Creating new folders using **Windows Explorer** is very easy.
- ✓ Already we have seen a method to create a folder by simply clicking **Make a New Folder** under **File and Folder Task** in the **Explorer Bar**.
- ✓ It will create a new folder in the right pane.

- ✓ We can enter the name that we have chosen for the folder in the highlighted box and then press **ENTER** key .
- ✓ First, select the folder under which we want to create the new folder.
- ✓ Then, right click anywhere in the empty space in the right pane of the **Explorer window**.
- ✓ Click on **New** from the menu shortcut.
- ✓ Select **Folder** from the submenu that appears.
- ✓ We can also obtain the same result from the menu bar by Clicking **File New Folder**.
- ✓ In the folders bar also we can right click on the empty space on the right pane.
- ✓ Click **New** in the ensuing shortcut menu then click the **Folder** in the submenu.
- ✓ A new folder with the temporary name “*New Folder*” is created.

10. What is the difference between copying and moving files?

The difference between copying and moving files is that moving removes the files or folders from the source location and places them in the destination location. Copying leaves the source files or folders untouched and makes a copy in the destination location.

11. Describe the different methods to copy the selected files.

We can move or copy them using **Cut,Copy** and **Paste** in three different ways.

- 1) Click on the Edit menu and make appropriate choice.
- 2) Right click on any one of the selected folders or files, in the ensuing short cut menu and make suitable selection.
- 3) We can use the keyboard combinations Ctrl+X (Ctrl+x) to cut, Ctrl+C (Ctrl+c) to copy and Ctrl+V (Ctrl+v) to paste.

Method 1:

- ✓ Click on the folder **Test**.
- ✓ When we want to copy files or folders to a disk in A or B drive, we can use the **Send To** option in the popup menu, which appears when we right click on the file or folder.
- ✓ For example, we want to copy the files **chandru** and **mohit**, from the folder **My Documents**, to a floppy in drive A.
- ✓ To do so, first select the file and then, right-click on the selected files.
- ✓ Click on **Send To** and **3 ½ Floppy [A]**
- ✓ Click on **3 ½ Floppy [A]** in the left pane to check that the files have been copied.

Method 2:

- ✓ Copy the selected files from the Explorer Bar.
- ✓ We can copy selected files easily in the explore bar.
- ✓ If we are not in explorer bar, click the folders in the toolbar, we will be shown the explorer bar with five options under file and folder tasks, if we select more than one item.

12. How will we Rename a group of Files ?

- ✓ If we want to rename a group of files or folders, there is no special help from Explorer Bar.
- ✓ In fact, Explorer Bar misleads us. When we select files or folders to Rename, Explorer Bar will not show anything about renaming the group of files or folders.
- ✓ If we use the rightclick method the file or folder that we have chosen to right-click, will get the name that we have chosen.
- ✓ For example, we have selected kumar.doc, student.doc, exam.xls and raj.xls.
- ✓ If we have chosen the name “rajan” to rename the group of files or folder, the item that gets focus is named as raja, the other file are named as raja (1), raja (2) and raja (3).
- ✓ If we follow the menu method, we will have the same result.

13. How will we Copy files to CD?

Coping files to a CD is often referred to as burning the CD, because a laser actually burns the information on to the disk.

General Method for Copying to CD

Insert a suitable blank CD into the suitable drive and wait for a few seconds.

In the ensuing dialog box click, open writable CD folder using **Windows Explorer** and click OK.

Here CD-RW Drive is used.

1. If dialog box does not appear on the screen within a few seconds of inserting the blank disk, open our My Computer folder. Then right –click the drive’s icon and choose Open, then follow the previous step.
2. Go to the source folders.
3. Select items we want to copy to the CD. Right click any selected item and choose Send to à CD –RW Drive.
4. Each item to be copied will appear as a temporary file, with black arrows pointing downwards.
5. Check whether all files that we want to copy are there and verify that the data capacity of the combined files is less than the capacity of the disk. Then click write these files to the CD under CD Writing Tasks in the Explorer bar of the CD’s folder Window.

6. In the first page of CD writing wizard, we can enter a new name for CD. It is just like a label to the floppy disk. Delete the date that appears.

7. Wait until the wizard burns the data to the CD. Then click Finish button on the last page of the CD Burning Wizard.

14. Distinguish between CD-RW and CD-R ?

S.NO	CD –R	CD- RW
1	This could be written only once.	The CD- RW disk could be written and used as an ordinary floppy.
2	CD-R is used to burn data to blank CD-R disk.	The CD- RW burner is used to burn data to either a blank CD-R or CD-RW disk.
3	We can make use of the resultant disks in any computer that has CD drive it. If it is an audio CD we can use it in any standard stereo.	The resulting disk can be used only in computer that have a CD drive.

15. What are the special features available in Windows XP Professional alone?

Backup and Automated System Recovery (ASR)

Windows XP Professional includes a Backup utility and an ASR feature that can be activated from boot up to restore a damaged system.

Offline Files

Offline files allows we to store copies of files located on network drives on our local drive so that we can work with them when our computer is no longer connected to the network.

Remote Desktop

Remote Desktop allows us to access the Desktop of the computer connected remotely as if we are accessing the Desktop of our own computer.

If we need to connect to our computer remotely via Remote Desktop Connection, we need Windows XP Professional rather than Windows Home.

So far, we have seen features that caught our eyes. Now, we are going to see the facilities hidden in Windows XP Professional.

Protected Memory Management

Windows XP offers fully protected memory management.

With this facility, Windows XP can handle memory errors effortlessly.

System File Protection

Windows XP offers a feature called System File Protection that protects our system files from inadvertent mistakes on our part.

System Restore

Windows XP provides a System Restore feature. This is more effective than System Restore feature found in Windows Me.

We can use System Restore to rollback the changes to an earlier point at which the system was working properly.

Device Driver Rollback

Windows XP tracks the drivers we install and let us roll back the installation of the driver. In other words, we can revert to the driver our using before.

CHAPTER 9**LINUX****1. Who is the super user?**

The system administrator is a (SA) is a super user or root user.

2. How will you change your current password?

A user can change his/her password with the **passwd** command.

Example:

```
[mohit@localhost mohit]$ passwd ( the user enters his/her password)
```

```
Changing password for mohit (current ) password: (User enters the current password)
```

```
New password: (User enters the new passeord)
```

```
Retype new password: (User re-enters the new password)
```

```
passwd: all authentication tokens updated successfully
```

```
[mohit@localhost mohit]$ _
```

The **passwd** command asks for the old password.

This command is essential to check up the authenticity of the user, otherwise the mischief mongers will play havoc on the work of the other people.

3. What are the rules that you should follow when you change your password?

Some of the rules for changing the password:

1. The password should not be less than six characters in length.
2. When changing a password, the new password should differ from the old password by at least three positions.
3. The password should be different from the user's Login name.
4. The new password cannot be the same as the old password.
5. It is ridiculous to change the password with same password.
6. Since the SA can execute control over the entire system, SA can change the password of any user of the Linux system.

4. How will you know your working directory?

We may not know where you are in the directory system. At such times **pwd** (print working directory or path of your working directory or the present working directory).

```
[mohit@localhost mohit] $ pwd
```

```
/home/mohit
```

```
[mohit@localhost mohit] $
```

5. What are the privileges of the root user?

- ✓ The System Administrator (SA) is primarily responsible for the smooth functioning of the system.
- ✓ The SA also creates /home directories for the users and he/she does the service to groups of users for the system.
- ✓ He/she is the only one to use floppy disk and CD-ROM in the system and takes backups to prevent loss of data due to system breakdown.
- ✓ In Linux, he/she is also known as the root user or super user.

6. How will you know a hidden file name?

The **-a** option with **ls** will list all the files and the sub-directories including the hidden files. We can combine the options **-a** and **-l** in any one of the following ways **-al , -la , -a, or -l - a**.

7. How will you sort your files by size?

One can sort the files by size using (**ls-s**) command.

8. What are the essential conditions to remove a directory using rmdir command?

The essential conditions to remove a directory using **rmdir** are:

The directory

- 1) Should be empty and
- 2) Should not be the current directory.

9. How will you execute a file in a floppy disk with the help of SA?

System administrator (**SA**) is the only one to use floppy disk and **CD-ROM** in the system and takes backups to prevent loss of data due to system breakdown.

10. How will you create a directory?

- ✓ We can make use of **mkdir** (make directory) command.
- ✓ This command creates the directory specified after the **mkdir** command, under the current directory.
- ✓ But the newly created directory will not become the current directory automatically.

11. how will you display the files, directories and subdirectories and explain with options?

- ✓ To find out the name of the files and the subdirectories of a directory, **ls** is the only candidate to achieve this.
- ✓ For example the user Mohit wants to know the names of the files and directories of /home/mohit, he must give the following command.

```
[mohit@localhost mohit] $ ls /home/mohit
```

Health cprogramming c++programming personal.

```
[mohit@localhost mohit] $ ls -F
```

health / cprogramming c++ programming personal /

The option **-F** adds / at the end of the directories and sub-directories.

- ✓ If we want to have the information about the current directory, simple **ls** command fulfills your requirement.
- ✓ If we want to have more information about the files and sub-directories you should give **-l** option with **ls** command.
- ✓ The option **-l** will not list any hidden files but **-a** option with **ls** will list all the files and the sub-directories including the hidden files.
- ✓ We can combine the options **-a** and **-l** in any one of the following ways **-al**, **-la**, **-a -l** or **-l -a**.

12. Explain the function of man.

- ✓ When we want to have help for some command say **ls** you have to use the command **man** (**manual**).
- ✓ The **man** command works as Man Friday (a general servant or employee who does all kinds of jobs)

Example:**\$ man ls**

- ✓ We can also specify the level of help you need from **man**, the level number should be specified in between **man** and the command for which the help is sought.

13. What is the difference between the commands rm-r and rmdir?

- ✓ **rmdir** command removes a directory which is empty and that which is not the current directory.
- ✓ To delete existing files or directories, the **rm** command is used. This is superior to **rmdir**.
- ✓ In case if the files are not in the current directory then the complete path name has to be given.
- ✓ To delete a directory which is not empty, the **rm** command is employed with **-r** or **-R** (for recursion) option.

14. How will you display your name like My name is x ?

If we want to display a message to the user you can make use of **echo** command.

Example:**\$ echo -n "Please enter your name"****15. How will you delete a directory along with its sub directories?**

rm can be employed in such conditions with the **-r** or **-R** (for recursion) option to remove the directory.

Example:**\$ rm -r SRV**

The above command removes SRV directory along with its subdirectories.

16. What does cat command do? Write and discuss all the variations of cat command.

- ✓ The **cat** command lets the cat (contents of the file) out of the bag.
- ✓ The **cat** command shows the contents of the specified file normally on the screen.
- ✓ If the file is lengthy. it will run so quickly, what we see, in the end, is the last page.

- ✓ It will show one page at a time, if we want to move to the next page or the previous page we have to press **f**(forward) or **b**(backward) keys respectively.

\$ cat file1 – displays the contents of file1 on the screen.

\$ cat file1 > file 2- the contents of the file1 is copied into the file 2.

\$ cat file1 > file1 – when the above command is tried, since the file1 exists and the right hand side is executed first, ,file1 is destroyed.

Then the left hand side is executed; now the file contains nothing.

Example:

- ✓ **\$cat** – The **cat** command without any arguments takes the input from the standard input.
- ✓ We have to enter the data for **cat** command through keyboard, which is taken to the command through the standard input.

17. Distinguish between pipes and redirection.

- ✓ The redirection operator (>), “greater than” symbol achieves output redirection.
- ✓ The redirection operator (<), “less than” symbol achieves input redirection.
- ✓ The output redirection operator, redirects the contents of the left hand side file (that is the file name before the “>” symbol) to the file in the right hand side (that is the file name after the “>” symbol).

\$ cat file1 displays the contents of file1 on the screen

- ✓ The pipes send the output of the command to another command.
- ✓ The pipe receives the data from the command, placed before the pipes and sends the data as input to the command placed after the pipe.
- ✓ The piping symbol is the vertical bar.

18. Distinguish between mv and cp commands.**Move:**

The **mv** (move) command is used for

- ✓ To move a file or directory from one location to another.
- ✓ To change the name of a file or a directory.
- ✓ Moving a file from one location to another is different from copying a file in that no file is created while moving a file.

Syntax:

mv [options] <source> <destination>

Example:

```
$ mv temp temporary
```

Here the temp directory is renamed into a temporary directory.

Copy

- ✓ The **cp** (copy) command copies the contents of source file after creating destination file.
- ✓ If the destination file already exists then the existing file is destroyed then a new file with same name is created.
- ✓ We should add option – **i** in the above command for getting a warning from the system before overwriting, so we can stop the copying process.

Syntax:

```
$ cp [options] <source file/s> <destination directory/file>
```

19. How will you copy contents file1 into file2 in different ways?

To copy the contents of the file1 into file6. The command is

```
$ cp file1 file2
```

- ✓ The file1 is the source file (that is data emanate from file1) and file2 is the destination file (that is data go to file2).
- ✓ The above command will not affect the contents of the file1.

If file2 already exists its contents will be overwritten by the contents of file1.

Example:

```
$ cp -i file1 file2
```

Overwrite file2 ? **n** \$

- ✓ If files are not in the current directory, then the full path should be given.
- ✓ If you want to establish a link between file1 and file2, you should replace **-i** by **-l**.

20. How can you copy a directory along with all files in the directory?

One can also copy a directory recursively using **cp** command with the **-r** option.

Example:

```
$ cp -r SRV SRV1
```

This command copies all the files and sub-directories of the SRV directory to the SRV1 directory recursively.

Extras:**1. List out the options available with ls command?**

The options available with ls command

OPTION	FUNCTION
-a	Lists all the files including hidden files.
-F	Shows the file type along with the name ('/' is added at
-R	Lists Working Directory as well as all sub-directories..
-r	Displays files and sub-directories in the reverse order.
-s	Sorts by file size.
-A	Displays the files of almost all directories except the . and ..(dot) directories.

2. What are the options available with date command?

OPTION	FUNCTION
%d	Day of the month(in digits)
%m	Month of the year (in digits)
%y	Year(last two digits)
%D	Date as mm/dd/yy
%H	Hour(00 to 23)
%M	Minutes(00to 59)
%S	Seconds(00 to 59)
%T	Time as HH:MM:SS
%a	Abbreviated weekday(sun to sat)
%h	Abbreviated month(jan to dec)
%r	Time in the AM/PM notation

3. List out the features of linux system.**Reliability:**

- ✓ Linux is a highly reliable system.
- ✓ Linux servers are not shut down for years together.
- ✓ Normally operating failures are unknown to Linux systems.
- ✓ It does not mean that you need not be vigilant.
- ✓ Do not forget the computer adage. If something can go wrong, it will.

Backward Compatibility:

- ✓ Linux has excellent support for older hardware.
- ✓ It can run on different types of processors including the older ones.
- ✓ It can run the commands of its earlier version successfully.

Simple Upgrade and Installation:

- ✓ The installation procedure of most Linux versions is menu driven and easy.

Suitable to any machine:

- ✓ Suitable Linux version can run on any machine available now.
- ✓ This allows low investment for the hardware.
- ✓ The users, who have low configuration machines, prefer to use Linux OS compared to other OSs that require higher configurations.

GUI Interface:

- ✓ The graphical interface for Linux is the KDE, GNOME.
- ✓ It is divided into two sub systems consisting of a server and a client.
- ✓ The KDE, GNOME provides nearly all the comforts of the Windows 98 system.

Multiple Distributors:

- ✓ There are multiple distributors for Linux.
- ✓ Each one provides one's own added facilities.
- ✓ This results in the buyer's market. Some distributors of Linux are Red Hat, Caldera, Mandrake, Debian, and Slackware.

No Virus Attack:

- ✓ Virus is the most dreaded word in the Computer industry.
- ✓ Virus actually decelerated the spread of the internet.
- ✓ Linux is said to be free of any virus attack.
- ✓ It is rumoured only now that a kind of virus attacks Linux system also.

Security Features:

- ✓ Internet mischief mongers play havoc on other people's work.
- ✓ Linux provides excellent security features.
- ✓ This is the reason why many Internet Service Providers (ISPs) switch over to Linux systems.

Can Support a High User Load:

- ✓ Linux can support a large number of users working simultaneously.

Development Libraries:

- ✓ Linux offers an excellent platform for many development languages like C++ and Perl.

CHAPTER 10**PROBLEM SOLVING TECHNIQUES AND C PROGRAMMING****1. What is a Flowchart?**

The flows of computational paths are depicted as a picture; it is called a flow chart.

2. What are the advantages of flowchart?

The advantages of the flow charts are:

- ✓ They are Precise. They represent our thoughts exactly.
- ✓ It is easy to understand small flowcharts.

3. What is sequencing?

The calculations are done one after another, in a sequence. This is one of the fundamental control structures.

4. What is pseudo code?

Pseudo code is in-between English and the high-level computer languages. In English the sentences may be long and may not be precise. In the computer languages the syntax has to be followed meticulously. If these two irritants are removed then we have the pseudo code.

5. What is Walkthrough?

When a pseudo code or flow chart for an algorithm is given a method of checking the way in which a computer will work using this is called a walkthrough.

6. What is Tokens? Give examples.

The elements are collectively known as **tokens**. A token is a source program text that the compiler does not break down into component elements.

Consider the statement: `number = number + 1;`

The tokens are,

Number	-	identifier
=	-	operator
+	-	operator
1	-	constant
;	-	punctuation

7. What are constants?

A constant is of numeric or non-numeric type. It can be a number, a character or a character string that can be used as a value in a program. As the name implies, the value of a constant cannot be modified. A constant is immutable.

8. Define character constant.

A character is a letter, numeral or special symbol, which can be handled by the computer system. These available symbols define the system's character set. Enclosing a single character from the system's character set within single quotation marks forms a character constant.

Example: ‘A’

9. What is an escape sequence?

An escape sequence may be used to represent a single quote as a character constant. Character combinations consisting of a backslash “\” followed by a letter are called escape sequences. ‘\’ is a valid single quote character constant.

10. What is string literal?

A string literal or a string constant is a sequence of characters from the system's character set, enclosed in double quotes. By default, the null character ‘\0’ is assumed as the last character in a string literal

Examples: “mohit”

11. What is Data?

Data can be defined as the raw information input to the computer.

12. How will you declare pointer variable? Give example.

```
int *m;
```

The above declaration is a pointer variable declaration. Here, y is a pointer variable whose type is an **integer pointer (int*)**.

13. What are pointer variables?

- ✓ A pointer variable assumes only address as its value.
- ✓ Each variable takes some locations in the main memory according to its type.
- ✓ Every location in the main memory is addressable.

14. What is an operator?

An operator is defined as a symbol that specifies an operation to be performed. Operators inform the computer what tasks it has to perform as well as the order in which to perform them.

15. What are the types of operators in ‘C’?

There are three types of operators in C.

- ✓ Unary operators,
- ✓ Binary operators
- ✓ Ternary operator

17. Define assignment operators. Give Example

The assignment operator (=) assigns the value of the right-hand operand to the left-hand operand.

Example : int m= 50;

18. What is ternary operator? Give examples

‘C’ has one ternary operator, which is a conditional operator. The symbol used for this operator is ?: and it has three operands.

The syntax of the conditional operator is:

- ✓ If the conditional expression is true, expression 1 is evaluated.
- ✓ If the conditional expression is false, expression 2 is evaluated.

Example:

j = i < 0? - i: i;

19. What is a program?

A program is defined as a set of instructions to be executed sequentially to obtain the desired result.

20. What are functions?

A function is a program, which is being used to carry out a small task.

21. What is an expression?

An expression occurs usually on the right-hand side of an assignment statement. It has a value when it is evaluated.

22. What is calling function?

The function which calls another function is termed as calling function and the other is termed as called function.

23. What is function call?

The function call specifies the function name and provides necessary information as parameters that the called function needs in order to perform its specific task.

24. What is a local variable?

Local variables are the variables those are declared, defined and used within a function.

25. What is actual parameter?

Actual Parameters are the parameters defined in the calling function and they have the actual values to be passed to the called function.

26. What is formal parameter?

Formal Parameters are the parameters defined in the called function and they receive the values of the actual parameters when the function is invoked.

27. What is Call by Value?

The values of the actual parameters are copied to the formal parameters on one to one correspondence basis and this mechanism is called as “call by value”.

28. What is call by address or reference?

The called function knows the address of the local variable of the calling function then the called function can modify the local variable's value of the calling function. This can be achieved by the “call by address” concept.

29. What is storage class?

Storage class is one of the attributes that is associated with the variable.

C provide four stage classes

- ✓ Auto
- ✓ Static
- ✓ register
- ✓ Extern.

30. What is static variable?

The static variables are created only once during the first call of the function. The main advantage of static variables is that their values are retained even after execution of the function.

31. What are register variable?

The register variables behave like auto variables. If a variable is declared with register storage class, its value is placed in one of the computer's high-speed hardware registers. If the compiler does not find sufficient registers to use, it may ignore register declarations. The register variables are used to speed up operations, by reducing memory access time.

32. What is switch statement?

The switch – case statement is the modular replacement of the cumbersome nested if.... else structure. The switch statement transfers control to a statement within its body.

Syntax:

```
switch (condition)
```

```
{
```

```
case 1:
```

```
    statement ;
```

```
    break;
```

```
case 2:
```

```
    statement ;
```

```
    break;
```

```
default :
```

```
}
```

33. What is break statement?

- ✓ A break statement transfers the control out of the body.
- ✓ The default statement is executed if no case is equal to the value of switch (conditional expression).

34. What is a loop?

A loop is a part of a program that comes back and repeats itself as many times as necessary.

In C programming, there are three control statements namely,

- ✓ while
- ✓ for
- ✓ do while.

35. What is the difference between for loop and while loop?

FOR	WHILE
The for loop is a definite repetition loop where we know in advance exactly how many times the loop will be executed.	The while loop is preferred when the number of repetitions is not known before the loop begins executing.
It's otherwise called as entry controlled loop.	It's otherwise called as entry check loop.

36. What is the difference between while and do - While statement?

WHILE	DO – WHILE
In the while loop, the condition is tested at the entry level.	In case of do While statement, the condition is tested at the exit level and hence the body of the loop is executed at least once whether the condition is true or false.
It's otherwise called as entry check loop.	It's otherwise called as exit check loop.

37. What is an array? Give example?

An array is a collection of homogeneous elements i.e., elements of similar data type.

An array declaration specifies the name of an array and the type of its elements.

Example: int cs [10].

38. What is string constant?

A string can be defined as a collection of characters terminated by a null character ('\0').

All the characters entered by the user will be stored from the starting address specified by the identifier and a null character '\0' will be automatically appended at the end.

Example: " mohit "

39. What are structures?

Structures are used to create user-defined types. Structures are commonly used to define records to be stored in files. A structure is a collection of elements of different data types.

40. What is file?

A file is a collection of records.

41. What is a record?

A record is a collection of field of information.

42. What is the difference between an array and a structure?

No.	Array	Structure
1.	An array is a collection of elements Of same data type.	A structure is a collection of elements of different data types.
2.	An array is a homogeneous collection.	A structure is a heterogeneous Collection of elements.

43. Declaration of Multidimensional Array?

A multidimensional array has been considered as an array of arrays in C language. A two dimensional array has the following declaration:

Example:

```
int a[3][3];
```

FIVE MARK QUESTIONS:

1. Explain switch statement with a suitable example:

- ✓ The switch – case statement is the modular replacement of the cumbersome nested if-else structure.
- ✓ The switch statement transfers control to a statement within its body
- ✓ It is a **multiple branching statement** where based on a condition, the control is transferred to one of the many possible points.

Syntax: -

```
switch (condition)
{
    case 1:
        statement ;
        break;
    case 2:
        statement ;
        break;
    default :
}
```

Example:

```
# include <stdio.h>
# include <conio.h>
void main()
{
int a, remainder;
printf ("\\nEnter a number ...");
scanf ("%d", &a);
remainder = a % 3;
switch (remainder)
{
case 1 : printf ("\\nRemainder is one");
break;
case 2 : printf ("\\nRemainder is two");
break;
default: printf ("\\nThe given number is divisible by 3");
break;
}
getch();
}
```

The above program displays

- ✓ Remainder is **two** if $a = 5$ or so
- ✓ The given number is divisible by 3, if $a = 9$ or so

Or in other words the above program checks for divisibility by 3 and prints messages accordingly.

2. Explain Entry-check loop with example? Or Explain while loop with example?

- ✓ In the while loop, the condition is tested at the entry level.
- ✓ The while loop is preferred when the number of repetitions is not known before the loop begins executing
- ✓ While loop is called as the **entry-check** loop.
- ✓ The body of the while loop will be executed only if the condition is true.
- ✓ The control exits the loop once the condition is evaluated to false.

Syntax:-

```
while (condition)
{
    control variable;
}
```

Example:-

```
#include<stdio.h>
#include<conio.h>
main()
{
    clrscr();
    int num=2;
    while(num <6)
    {
        printf( num * num);
        printf("\t");
        num = num + 1;
    }
    getch();
}
```

Output:-

4 9 16 25

Working of loop:-

- ✓ Initializes the control variable num=2
- ✓ num<6 is evaluated, control is transferred to step 3, if the condition is TRUE
- ✓ Print the square of the value stored in num
- ✓ Increment num by 1
- ✓ Control is transferred to step 2
- ✓ End

3. Explain Exit-check loop with example? Explain do...while loop with example?

- ✓ In case of do While statement, the condition is tested at the exit level and hence the body of the loop is executed at least once whether the condition is true or false

- ✓ Do....while is called as **exit-check** loop.
- ✓ The condition marks the last statement of the body of the loop.

Syntax:

```
do
{
    control variable;
}

} while (condition);
```

Example:-

```
# include <stdio.h>
# include <conio.h>
void main()
{
    clrscr();
    int num = 2;
    do
    {
        printf ( num * num);
        printf("\t");
        num = num + 1;
    }
    while (num < 6);
    getch();
}
```

Output:-

4 9 16 25

Working of loop:-

1. Initializes the control variable num=2
2. num<6 is evaluated, control is transferred to step 3, if the condition is TRUE
3. Print the square of the value stored in num

4. Increment num by 1
5. Control is transferred to step 2
6. End

4. Explain Entry-controlled loop with example? or Explain For loop with example?

- ✓ The loop is terminated and the execution continues with the statement that immediately follows the loop.
- ✓ After the body of the loop has been executed, the control is transferred to the **for** statement, where the control variable is updated and then retested.
- ✓ The loop continues till the condition remains true.
- ✓ It is used when an action is to be repeated for a predetermined number of times.

Syntax:

```
for(initialization; condition; updation)
{
    body of the loop;
}
```

Working of loop:-

- ✓ The control variable is initialized first.
- ✓ Test condition is evaluated.
- ✓ The body of the loop is executed only if the condition is true.
- ✓ The control variable is incremented and the test condition will be evaluated before the body of the loop is executed.
- ✓ The loop is terminated when the test condition is false

Example:-

```
# include <stdio.h>
# include <conio.h>
void main()
{
int i,fact = 1;
for(i = 1; i < 6; i++)
fact *= i;
printf ("\\nThe factorial of the number is .." , fact );
}
```

Output:**120**

CHAPTER 11

INTRODUCTION TO WEB DESIGN

1. Explain Internet.

Internet is a network of networks. It has no central control. All the nodes in the network are equal in status to all other nodes. Each node has the authority to originate, pass and receive messages.

2. Give a brief description on WWW.

The World Wide Web is a collection of documents. The World Wide Web is most often called as Web.

3. Differentiate between World Wide Web and net.

The World Wide Web is a collection of documents:

- ✓ We can find documents on the World Wide Web, We can find computers on the net.
- ✓ The connections are cables between computers on the net. The connections are hypertext links on the web.

4. What is a web server?

Hypertext documents that are shared on the Internet are called web pages. Web pages are files stored on computers called Web Servers.

5. What do you mean by HTTP?

Hypertext Transfer Protocol (HTTP) is the communication protocol used by the Internet to transfer hypertext documents.

6. Define the term protocol.

A protocol is a formal description of message formats and the rules that two computers must follow to exchange two messages.

7. What is URL?

The location address of the hypertext documents (Web Pages) is known as a Uniform Resource Locator.

Example : www.google.com

8. What are the two most commonly used browsers?

The two most commonly used browsers are Microsoft Internet Explorer and Netscape Navigator.

9. What is a tag?

The Hypertext Markup Language is composed of tags. Tags are all the instructions given to a Web browser on how to format and process a hypertext document. The HTML elements are defined using HTML tags. Example : ...

10. What do you mean by meta tags?

Meta tags are tags used to provide additional information about the page that is not visible in the browser. The meta tags are always placed within the heading section of the Web page.

Example:

```
<meta http-equiv="refresh" content="30">
```

11. What is a keyword?

Keywords are the group of words that are frequently used in the document to clearly indicate the context of the document. Keywords are used by search engines to group the web sites.

Example:

```
<meta name = "Author" content = "chandru">
```

12. What is the use of Style tag?

A style tag is used to change the default characteristics of a particular tag in the entire web document wherever that tag is used. The style tag is used within the heading section.

13. Write a short note on heading tags.

Heading tags in the body section are different from the head tag of the Web document. If it is needed to provide a heading for the Web document, heading tags can be used. There are six heading tags with different font characteristics, <h1>, <h2>, <h3>, <h4>, <h5> and <6>. The <h1> tag specifies the use of first-level heading in a body of text. The closing tag is must for heading tags.

14. Give the general syntax of any HTML tag.

The general syntax of any HTML tag is:

```
<tagname attribute=value>element content</tagname>
```

Example : <Body TEXT = RED><BODY>

15. Explain break tag.

The break tag
 is used to insert line break. The break tag need not have any attributes and a corresponding closing tag. The
 tag is an empty tag and it does not have a closing tag.

16. Briefly explain the attributes of font tag.

The face attribute directs the browser to render text in a specified font face or font family. The size attribute is used to change the relative size of the font. The color attribute specifies the color of the text rendered.

Example :

17. What are the acceptable audio file formats.

The acceptable audio file formats are: .au, wav, and .mid.

18. Write a short note on <bgsound> tag.

The bgsound <bgsound> tag directs the browser to play a sound file. The audio file should be specified using the src attribute. The number of times the audio file to be played can also be specified. The acceptable audio file formats are: .au, .wav, and .mid.

19. What are three kinds of list in HTML?

There are three kinds of lists in HTML.

- ✓ Unordered list
- ✓ Ordered list
- ✓ Definition lists <dl> </dl>

20. What is protocol?

Protocol is a system of rules and procedures governing communications between two devices.

21. What is the purpose of using <td> tag?

The table data <td> tag inserts a new cell inside a table row to represent an entry (value) in the table.

22. Briefly explain the uses of forms.

Forms are used to receive information from the user. Forms are commonly used to allow users to register on a Web site, to log in to a Web site, to order a product, and to send feedback.

23. Explain the action attributes of the form tag.

The action attribute identifies the server side program or script that will process the form. The action will be the name of a Common Gateway Interface (CGI) program written in programming language called Perl or Java servlets or Active Server Pages.

24. What are frames? How are they useful?

Frames divide a web page into sections that each has a different HTML source page and their own set of scroll bars. They can be useful for any site that requires part of the screen to remain static while the remainder of the screen can be scrolled.

25. Give the advantages of HTML Frames.

- ✓ The main advantage of HTML frames is that documents can be presented in multiple views, which may be independent windows or subwindows.
- ✓ Multiple views offer web page designers a way to keep certain information visible, while other views are scrolled or replaced.

26. What do you mean by Navigation view and Reports view?

- ✓ Reports view identifies problems with pages and links in the Web.
- ✓ Navigation view lists the navigation order of the site and allows us to change the order that a user would view the pages.

27. What are the differences between using text in Web page and in other Word Processor?

Using text in FrontPage seems to be the same as using text in any other Word Processor. However, there are a few differences.

28. How will you create a table in MS Front Page?

- ✓ A quick way to create a small table is using the table button on the standard toolbar.
- ✓ Click the button and drag the mouse over the grid, highlighting the cells that should appear on the table.
- ✓ When the table size has been selected, click the mouse button again.

29. How will you merge and split cells?

- ✓ Select Table/Merge Cells to merge two or more selected cells.
- ✓ To split the cell again, select the cell and choose Table/Split Cell from the menu bar.

30. What are the two parts of web documents?

- ✓ Heading section
- ✓ Body section

31. Define the term web client and web browsers?

Web clients are the computers that are requesting the web pages from the web servers. Web clients can view the web pages with a program called web browser.

5 MARKS**1. What are the two parts of a web document? Explain**

There are two parts of a Web document.

- ✓ Heading Section
- ✓ Body Section
 - ❖ The heading section is identified by a pair of head tags (**<head>** and **</head>**) and the body section is identified by a pair of body tags (**<body>** and **</body>**).
 - ❖ Comments can be provided anywhere in an HTML file.
 - ❖ The comment can be included using **<!— comment —>**.
 - ❖ The comments are ignored by the browser. Comments are used only to improve the readability of the document.
 - ❖ The **<head>** tag is optional.

Heading Section**Title tag**

- ✓ The heading section can contain nested HTML tags.
- ✓ A **<title>** tag is used to provide a name to a web document.
- ✓ The title “First Web Document” is placed in the title bar on the browser.

<html>**<head>****<title>First Web Document</title>****</head>****</html>****Body Section**

- ✓ A pair of body tags **<body>** and **</body>** is used to identify the body section.
- ✓ The body section of a web document can contain many
- ✓ HTML tags. Some tags are used to format a line of text.
- ✓ Some tags are used to insert images, tables and forms and to create hyper links.
- ✓ The most frequently used tags and their attributes are described here.

Body tag

- ✓ A body tag is used to identify the body section.
- ✓ We can specify attributes to many of the HTML tags and hence enhancing the usage of those tags.

- ✓ The body tag contains several attributes.
- ✓ To change the background color of a Web page, the attribute **bgcolor** is used.

Example:

```
<body bgcolor="#FFFFFF">  
</body>
```

2. Explain some of the HTML tags?

Paragraph Tag

- ✓ The paragraph tag **<p>** defines a paragraph.
- ✓ It starts a new paragraph in a new line.
- ✓ By default, the paragraphs are aligned to the left side of the Web page.
- ✓ The align attribute of the paragraph tag allows you to align the paragraph to right, center or left or to justify it.

Example:

```
<p align=center>MOHIT</p>
```

Break Tag

- ✓ The break tag **
** is used to insert a line break.
- ✓ The break tag need not have any attributes and a corresponding closing tag.
- ✓ The **
** tag is an empty tag and it does not have a closing tag.

Bold, Underline and Italic tags

- ✓ The bold tag **** formats text in boldface.
- ✓ The tag **<u>** underlines the text and the tag **<i>** italicizes text.
- ✓ These tags must need corresponding closing tags.
- ✓ If you are not providing the closing tags, the effect will continue till the end of the Web page.

Center and Horizontal Ruler tags

- ✓ The center tag **<center>** is used to center the text, image and the other contents until a closing **</center>** tag is encountered.
- ✓ The horizontal ruler **<hr>** tag inserts a horizontal line.

Font Tag

- ✓ The **** tag can be used to render the text in specific font type, size and color.
- ✓ In most web browsers, the default font type for an HTML document is Times New Roman.

- ✓ The tag can be used with its face, size and color attributes, to change the font type of characters to be displayed by a web browser.

Example:

```
<font face="arial" size=4pt color="#000000>4PT font size rendered in Arial Type in black  
color</font>
```

Image Tag

- ✓ To insert a graphic, an tag can be used.
- ✓ This tag must have an attribute **src**. The **src** stands for “source”.
- ✓ The value of the **src** attribute is the URL of the image you want to display on your page.
- ✓ The image tag is an empty tag, ie., it does not have a closing tag.

Example:

```
<img src=tnlogo.gif>
```

Anchor Tag

- ✓ The anchor <a> tag is used to create a hyperlink to another document.
- ✓ When the user clicks the element content between <a> and tags, the browser opens the page identified by the **href** attribute.
- ✓ The **href** attribute indicates the URL for the hyperlink.
- ✓ The <a> tag links the user to another location within the same HTML document or to another URL.

Example:

```
<a href ="http://www.yahoo.com">Yahoo Home Page</a>
```

Bgsound Tag

- ✓ The bgsound <bgsound> tag directs the browser to play a sound file.
- ✓ The audio file should be specified using the **src** attribute.
- ✓ The number of times the audio file to be played can also be specified.
- ✓ The acceptable audio file formats are: **.au**, **.wav**, and **.mid**.

Example:

```
<bgsound src=music.au loop="infinite">
```

BEST WISHES

FROM

P.CHANDRASEKARAN