

SKILL ENHANCEMENT

SEC - I

(I) Introduction to Computer system

- (a) Basic Computer concept
- (b) Input and output Devices
- (c) Computer memory and processors
- (d) Number System and logic gates
- (e) Internet and its uses.

(II) Operating system - Windows

(III) Microsoft Office

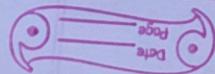
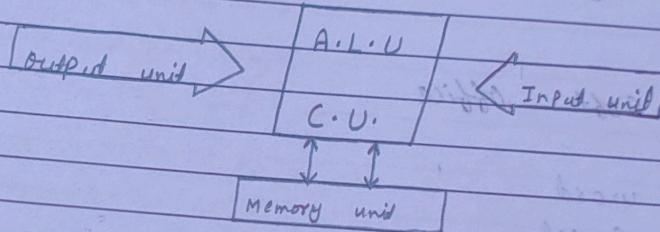
- (a) MS word
- (b) MS Excel
- (c) MS powerpoint

Date 30/05/2024

COMPUTER FUNDAMENTAL

Q. What is an operating system?

An Operating System is a program which makes an interface between a Computer and a user. It also provides the security and also manages the devices such as hardware and software. The operating system automatically update and refresh the system after several booting.



Date 31.05.2024

Q. What is Data?

Raw fact of information is called data.

Q. What is information?

Collection of data to make a sense is called information.

Q. What is C.P.U?

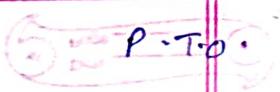
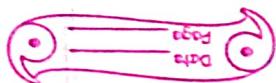
It stands for Central Processing Unit and also called a Brain of a computer. It has the electronic circuit that manipulates input data into the information.

Control Unit:

It controls all hardware operations i.e. input unit, output unit, storage and processor.

Arithmetic logic unit:

It is capable of performing addition, subtraction, division and multiplication as



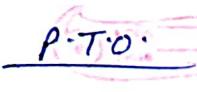
Date 20. 06. 2024

Napier's Bones:

Napier's Bones were developed by a "Scottish mathematician John Napier in 1617". This is a set of eleven bones, each bone has four faces with number inscribed on them in such a way that by placing the bones side by side, "Products and quotients" of large number can be obtained. Napier invented the "logarithm" which gave way to the invention of either "slide rule."

Oughtred slide rule:

Napier's logarithms became the basis for another famous invention namely "Slide rule". The slide rule was invented by "william Oughtred". A "British mathematician in 1620 AD (And Domony). A simple scale against the other can obtain "products, quotients or the function".



Pascal's Arithmetic Engine:

"In 1642 AD" famous French mathematician "Blaise Pascal" invented a device called "Arithmetic Engine". This was the first successful "mechanical calculator". It had a complex arrangement of wheels and gears and windows for display of numbers.

Leibnitz Stepped Reckoner:

In 1671 AD the German mathematician "gottfried von Leibnitz" invented a calculating machine called "stepped Reckoner". This machine could add, subtract, multiply, divide and find square root.

Babbage's Analytical Engine:

In 1835 AD Charles Babbage, an English mathematician designed on paper an "Analytical Engine". He could not actually produce it because the technology of that time was not advanced enough. He designed all the fundamental concepts of modern digital "computer". Due to this reason, Charles Babbage is known as "Father of modern Digital Computer."



Date 21. 06. 2024.

Generation of a Computer

Lotus (1st)

ENIAC (Three bedroom capacity)
↓ 1500 switches capacity

Wordstar (ms-word)

Vacuum tube

Transistor (heat problem outside)
↓ silicon chips

condenser/ Register

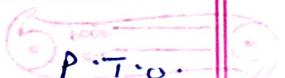
Microchip (mobile)

What is Generation?

The term Generation is used to generally characterise the measure development in the computer industry. That is generation was used to distinguish between hardware technologies.

1st Generation: (1946-1959)

- Eckert and Mauchly developed 1st electronic computer named as "ENIAC" (electronic numerical integrator and calculator) in 1946 in the U.S.A.



It used high speed vacuum tubes as switching devices and had a very small memory. The ENIAC took about "900 micro-second to add two digits and about 2400 micro-seconds" to multiply. "In 1946 Professor John V. Neumann" proposed the concept of stored programming by using this principle. "Professor Maurice Wilkes developed a computer in 1949" known as "EDSAC" (electronic delay storage Automatic calculator). It used "memory" delay lines for storage.

The First commercial production of stored electronic computer are, "UNIVAC" (Universal Automatic Computer).

2nd Generation: 1959-1965

Second Generation of computer emerged "around 1959" with the usage of "transistors instead" of vacuum tubes. Transistors made up of "germanium" semiconductor material were highly reliable as compared to vacuum tubes. They were used large "access memories". Magnetic disk storage was developed. Some high level languages like



"FORTRAN, COBOL, ALGOL, SNOBOL" etc. were developed. Second Generation computer like IBM - 7008 & 1401 ATLAS and ICL - 1901.

IBM → International business Machine

Date
22.06.2024

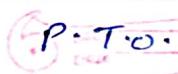
3rd Generation: (1965- 1971)

The third generation of computer began in 1965 with germanium transistor being replaced by "silicon transistor or chips". The control circuit composed small - scale integrated circuit is constructed on a thin layer of silicon. Some high level languages developed they are FORTRAN - IV, COBOL - 68, P C / I etc.

Third generation computers are IBM / 360 / 370, NCR - 2395.

4th Generation: 1971- 1985

The Fourth Generation of computer emerged with the large scale Integrated



circuit (VLSIC) which packed about 50000 transistors in a single chip. The two advantages is the development of personal computer and the floppy disk served to store the data as external device.

~~SOB&D~~

~~SOB&D~~ this is networking

Date - 24.06.2024

(IEC-201) Computer Base

What is OSI Model

OSI stands for Open system interconnection model. It has been developed by standard organisation ISO (In the year 1984).

The two main things we have to remember:

- ① It has a seven layer architecture where each layer having specific function.
- ② All the seven layers work collaboratively to transmit the data from one network to another network across the globe.



50808

* Points to remember

IP - Internet Protocol

TCP - Transfer control Protocol .. accepted as

UDP - User datagram Protocol .. not send but no idea even

OSI - Open system Interconnection

I SO - International Organisation for standardisation

∴ Two connect two different network by
the help of "bridge?"



Sorry wrong

The OSI model created in 1984 by ISO is a reference framework that explains the process of transmitting data between computers. It is divided into seven layers that work together to carryout specialised network functions. Allowing for a more systematic approach to networking.

The OSI model consists of seven abstraction layers arranged in a drop-down order:

- ① Application layer
- ② Presentation layer
- ③ Session layer
- ④ Transport layer
- ⑤ Network layer
- ⑥ Data link layer
- ⑦ Physical layer

Date 27.06.2024

Semiconductor Memories:

The IC technology was used for constructing the processor, but soon it was realised that the same technology could be used for construction of memory. The first memory chip was constructed.

Microprocessor:

The single chip processor is known as a microprocessor. The first microprocessor developed in the year 1971. The INTEL 4004 was the first microprocessor. It was a primitive microprocessor designed for specific application. "Intel 8080" which came in 1974, was the first general purpose microprocessor. It was the first 8 bits processor.

5th Generation: / Future generation of computer 1980 - till now:

In the fifth generation VLSI technology becomes ULSI technology, resulting



In the production of microprocessor chips having 10 million electronic components. This generation is based on Parallel processing hardware and "AI" software. AI is an emerging branch in computer science which is interpreted the means and method of making computer like human beings. All the high level languages C & C++, java, .net etc. are used in this generation.

AI includes - Robotics, networking, game playing etc.

In this generation RAM & ROM is used for primary and storage and HDD and SSD is used for secondary storage.

* Points to remember

VLSI - Very Large Scale Integration.

ULSI - Ultra Large Scale Integration.

AI - Artificial intelligence.

HDD - Hard disk drive.

SSD - Solid State drive.



Date 28.06.2024

Number system:

It is the system by which we "represent and manage" the number to the computer system.

In general we have four types of number system.

① Binary Number System:

It is the combination of two digits 0 & 1 with a base 2. It will represent like this.

e.g. ① $(10110)_2$

② $(100101)_2$

Rules:

- ① Multiply all the given by 2.
- ② Put the power from right hand side start from 0.
- ③ Add all the numbers.

$$\text{① } (10110)_2$$

$$\Rightarrow 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$$

$$\Rightarrow 16 + 0 + 4 + 2 + 0$$

$$\Rightarrow (22)_{10}$$



(1) $(100101)_2$

$$\begin{aligned}\Rightarrow & 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 \\ \Rightarrow & 32 + 4 + 1 \\ \Rightarrow & (37)_{10}\end{aligned}$$

Decimal to binary.

$$(32)_{10} = (?)_2$$

2	32	R
2	16	0
2	8	0
2	4	0
2	2	0
2	1	0, LSB

$$\rightarrow (100000)_2$$

$$(19)_{10} = (?)_{210}$$

2	19	R
2	9	1
2	4	1
2	2	0
2	1	0

$$\Rightarrow (10011)_2$$



Date 05. 07. 2024

Binary to octal

Rules:

- ① Make a group of three 0's and 1 for right to left.
- ② calculate individual and
- ③ Arrange them left to right.

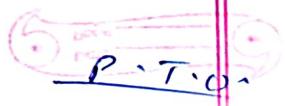
Q. 110 1101
⇒ $(155)_8$

Q. 100 1110 011
⇒ $(473)_8$

Q. 111 011 011
⇒ $(733)_8$

Binary to Hexa & Decimal

- ① Make a group of 0 and 1 for Right to left.
- ② calculate individual and Arrange them form of left to right after 0-9, 10=A, 11=B, 12=C, 13=D, 14=E.



$$\text{Q. } \begin{matrix} 0 & 1 & 1 & 0 & 1 & 0 & 1 & 1 \\ \Rightarrow & (6B) \end{matrix}$$

$$\text{Q. } \begin{matrix} 1 & 1 & 0 & 0 & 1 & 1 & 0 & 1 & 0 & 1 & 0 \\ \Rightarrow & (CEA)_{16} \end{matrix}$$

Gate: / Logical gate:

Basic logic gates are three types

$$\textcircled{1} \quad \text{AND} \quad \textcircled{2} \quad \text{OR} \quad \textcircled{3} \quad \text{NOT}$$

$$\textcircled{1} \quad A = D \quad A \cdot B$$

$$\textcircled{2} \quad B = D \quad A + B$$

$$\textcircled{3} \quad X = D \quad \bar{x}$$

Derived gate combination of two basic gates.

$$\textcircled{1} \quad \text{NAND} \rightarrow \text{NOT} + \text{AND} \quad \Rightarrow D$$

$$\textcircled{2} \quad \text{NOR} \rightarrow \text{NOT} + \text{OR} \quad \Rightarrow D$$

$$\textcircled{3} \quad \text{XOR} \rightarrow \text{AND} + \text{OR} \quad A \oplus B$$

$$\textcircled{4} \quad \text{XNOR} \rightarrow \text{OR} + \text{NOT} \quad A \oplus B$$



Date 12.7.2024

Binary Addition:

It is the application of the way to calculate the binary addition.

Rule

x	y	sum	carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

1's complement / 2's complement

1's complement :-

1. Binary no.

2. Interchange the 0's into 1's and 1's into 0's

$$17 \rightarrow 10001$$

$$38 \rightarrow 1001100$$

1's complement

$$01110$$

1's complement

$$011001$$

2's complement

$$01110$$

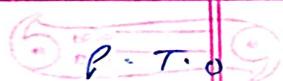
+1

$$\hline 01111$$

$$011001$$

+1

$$\hline 011010$$



Binary subtraction:

Binary subtraction is similar to decimal subtraction.

$$\begin{array}{r}
 0 & 0 & 0 & 0 \\
 0 & 1 & 1 & \\
 1 & 0 & 1 & 0 \\
 - & 1 & 1 & 0 \\
 \hline
 0 & 1 & 0 & 0
 \end{array}$$

$$\begin{array}{r}
 101 \\
 - 11 \\
 \hline
 010
 \end{array}
 \quad
 \begin{array}{r}
 11011 \\
 - 1011 \\
 \hline
 10000
 \end{array}
 \quad
 \begin{array}{r}
 1010 \\
 - 111 \\
 \hline
 0011
 \end{array}$$

Date 18/07/2024

Logic Gate:

Mainly there are three types of fundamental logic gate:

① AND

It takes the combination of two or more input variable and produce only single output.

$$\begin{array}{l}
 100110 \\
 + 11 \\
 \hline
 011110
 \end{array}$$

$$\begin{array}{l}
 0110 \\
 + 11 \\
 \hline
 1010
 \end{array}$$



Truth table

Circuit diagram

X	Y	X.Y
0	0	0
0	1	0
1	0	0
1	1	1

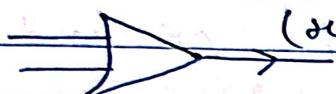


L.T.S (logical multiplication)

(ii) OR

It is the combination of two or more input variable and produce only single output.

Truth table



(or+) logic addition

Circuit diagram

X	Y	X+Y
0	0	0
0	1	1
1	0	1
1	1	1

(iii)

NOT

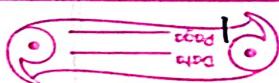
It is the circuit in which only one input and only one output.

The output is always complement value and they are represented as x' , \bar{x} .

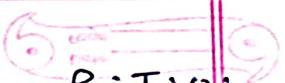
Truth table

Circuit diagram

X	X'
0	1
1	0



0



P.T.O.

Derived Gate:

Combination of two logic gate is called derived gate.

(1) NAND

It is the combination of AND and NOT gate.

Do

(2) NOR :-

It is the combination of OR and NOT gate.



Memory management

Memory :-

It is used to store data and instruction. Computer memory is the storage space in the computer system.

Mainly divided into two parts:

- (1) Primary memory
- (2) Secondary memory



① Primary Memory (main memory):

Primary memory holds only those data and instruction upon which computer is currently working. It has a limited capacity and data is lost when power is directly switched off.

Primary memory have two sub-categories:-

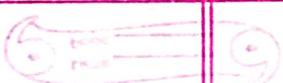
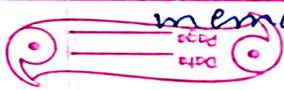
- ① RAM (Random Access memory)
- ② ROM (Read only memory)

RAM is further divided into two categories :-

- STATIC RAM (SRAM)
- DYNAMIC RAM (DRAM)

Memory is made up of small cells that store binary information in the form of Bits. If the size of computer memory is 64 kb (kilobyte) the memory unit is calculated as $64 \times 1024 = 63536$ cells.

Rom: The memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories.



DVD (Digital versatile disk)

usually for one time readable & writable but among the some are rewritable. we use optical ray for reading and writing purpose. writing process is called

usually used for storing the songs, videos and large files.

Blu-Ray:

It is also used the blu-optical ray for reading & writing but it is more expensive than other devices. It can store 25 GB to 50 GB.

Floppy Disk:

Pen drive:

It is also known as USB Drive.

It is used for data storing.

Magnetic Disk:

It is also a data storing device. It uses iron-oxide to store the data into



a magnetic disk.

Date 25/7/24

Classification of Computer

Computer can be classified in many ways - by size, by function, or by processing capacity.

Functionality wise 4 types:

(1) Micro computer:-

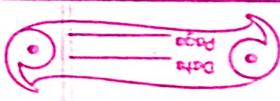
It is also a small and general purpose computer, single user can interact with it simultaneously at a time.

(2) Mini computer:-

It is also a small general purpose computer and it is more expensive than a microcomputer. It has the ability to handle multiple users.

(3) Mainframe computer:-

A very large and expensive computer capable of supporting hundreds and thousands of users simultaneously.



6
P.T.O.

(iv) Super Computer:

The fastest and most powerful type of computer. They are very expensive. It is a national resource and used for weather forecasting and other special purpose.

Processing capacity and data representation of a computer is divided into three categories:

Analog Computer:-

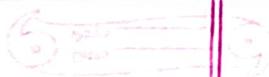
This type of computers are generally used for measuring the quantities for the continuously variable purpose - e.g. temperature, pressure, speed etc.

Digital Computer:-

This type of computer takes the input in form of numbers, letters, special characters and generally used for calculation.

Hybrid Computer:-

This type of computer can do the both work such as counting and calculation.



Components of Computer :-

Hardware:

It represents the physical and touchable component of a computer.
e.g. Input device, output device, secondary storage, Internal component.

Software:

Software is a set of program which is designed to perform a well defined function.

A program is a sequence of instruction written to solve a particular problem.

Date 8/8/2024

DOS

Windows:

① Single user O.S.

① Multi-user O.S.

② Command line Property

② Graphic user Property

③ Character user interface

③ Graphical user interface

④ only 8 character is used of Naming a file

④ we use 256 character to represent any name.

⑤ Batch file processing

⑤ multiprocessing

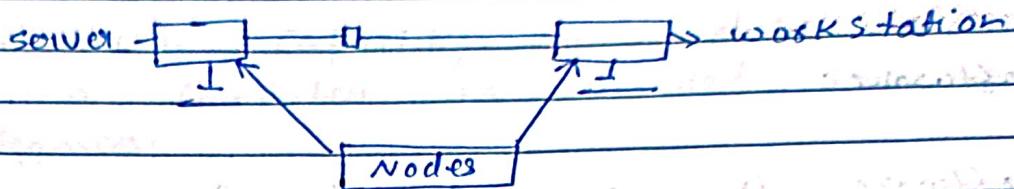


6
P.T.O.

Date 10.8.24

Networking:

When two or more autonomous computer are connect to each other to share information this is called networking.



Networking is of two modes:

- (1) wired Networking
- (2) wireless Networking:

Server:

The master computer which have a compile informations of their workstation or clients.

Workstation:

These are the places where a user or clients can use and send their information.



Nodes:

It is a section through which work-stations are connected.

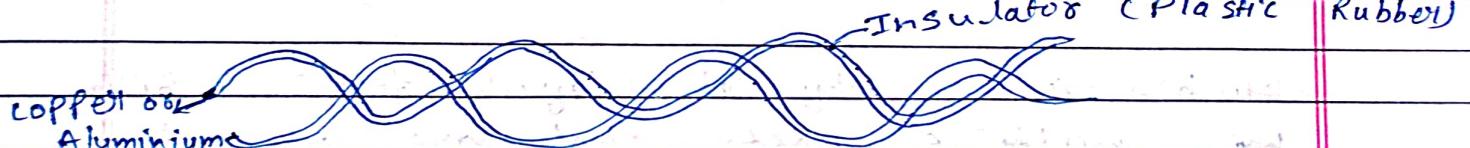
Type of Networking:

Mainly there are three types of networking:-

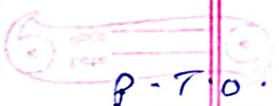
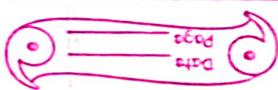
- ① LAN (Local Area Network)
- ② WAN (Wide Area Network)
- ③ MAN (Metropolitan Area Network)
- ④ PAN (Personal Area Network)
- ⑤ CAN (Campus Area Network)

Communication media

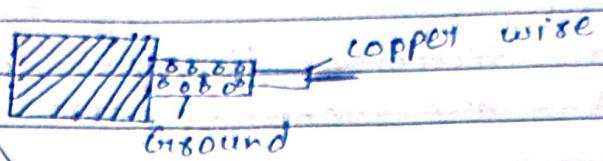
① Twisted pair cable:



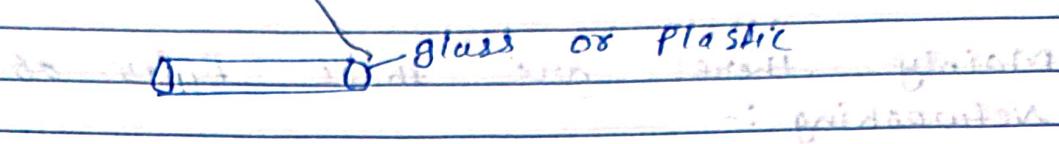
It's made up of two insulated wires that are twisted together to form a circuit that can transmit data. The twisting helps to reduce cross talk, which is noise caused by adjacent pairs of wires.



② Coaxial cable:



③ Optical fibre



④ Infra-red (Infrared)

Infrared wave (IR) (λ = 0.7 to 1.4 μm)

Electromagnetic wave of wavelength IR (λ = 0.7 to 1.4 μm)

(Visible light (λ = 0.4 to 0.7 μm)) (λ = 0.4 to 0.7 μm)

Electromagnetic wave of wavelength visible light (λ = 0.4 to 0.7 μm)) (λ = 0.4 to 0.7 μm)

Date 22/08/2024

Networking Devices

1. Hub :-

Hub is a physical layer device which has multiple ports that are used to connect multiple computer together.

It is of two types

- (i) Passive hub
- (ii) Active hub



(2) Switch :-

Hub just does the work of data forwarding. A switch ^{does} filter and forwarding which is more intelligent of dealing data packets.

(3) Router :-

Router is mainly a network layer device. It can work like a switch that route data packets based on their IP Address.

(4) Bridge :-

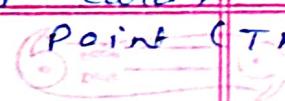
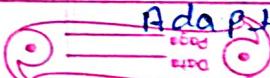
A bridge connects two or more LANs. It operates at data link layer. Bridge handle networks that follow the same protocol without trouble.

(5) Gateway :-

It is a network device used to connect two or more dissimilar networks.

(6) Network Interface card :-

These are the cards which is used for making a network device. e.g. LAN card, Network card, Ethernet card, Adapter card, Terminal Access Point (TAP).



7. Wireless fidelity (wi-fi):

It works under MAC address with 6 bits in number of data.

8. Repeater:

They are used to extend transmission so that the signals can cover long distances or be received on the other side of many obstacles.

History of Internet:

The history of Internet begins with the development of electronic computers in the year 1950's from United States, United Kingdom and France.

The U.S. Department of Defense in 1960's including fix the development of the ARPANET Project directed by ROBERT TAYLOR and managed by LAWRENCE ROBERT.

The first message was sent over the ARPANET in 1969 from computer science professor Leonard Kleinrock at University of California, Los Angeles.



WWW and Web Browser:

The world wide web (www) is a network of online content that is formatted in HTML and accessed via https.

The world wide web was originally designed in 1991 by Tim-Berners-Lee. The web is a space whose are identified by Uniform Resource Locators (URLS).

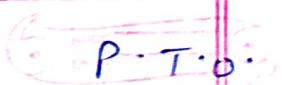
Date 30/08/2024

Microsoft Word:

Microsoft Word is widely used as word processing software developed by Microsoft. It's part of the Microsoft Office suite and is available on both Windows and Mac OS.

Word is used for creating, editing, formatting and printing documents.

It offers a variety of features:



- Text formatting
- Paragraph formatting
- Styles
- Templates
- Insert tools
- Review features
- Collaboration
- Export option

Alignment setting are of 4 types:-

- ① Right
- ② Left
- ③ Central
- ④ Justify

• Text formatting:-

Change font, size, colours and applying bold, Italic and underline.

• Paragraph formatting:-

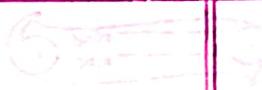
Adjust alignment, line spacing and indentation.

• Style :-

Applying predefined set of formatting to text and paragraph.

• Templates:-

Use pre design templates for various types of documents like resumes, letters, reports and many more.



- Insert tools:

Add images, chart, tables, hyperlinks, headers and footers and page numbers to documents.

- Review features:

Track changes, add comments and compare document version.

- Collaboration:

Share document with others for real-time editing.

- Export option:

Save documents in various formats, including, .docx, .pdf and .txt.

