

NOWROSJEE WADIA COLLEGE, PUNE

Experiment Incomplete For

Diagram _____

Obs. Table _____

Calculations _____

Graphs _____

Results _____

Unit _____

Name VRUSHIL SONI

Class XI Sci

Roll No. 4016

Batch _____

Pair No. _____



Performed On 23/08/14

Signature

Submitted On 23/08/14

Experiment Complete

Incharge

Expt. No. _____ Title INTRODUCTION TO COMPUTERS.

INTRODUCTION.

The word computer comes from the word 'compute' which means to calculate. Hence a computer is normally considered as a calculating device which can perform arithmetic operations at enormous speed.

CHARACTERISTICS OF COMPUTER:

1) Automatic: A machine is said to be automatic if it works by itself without human interventions. Computers are automatic machines because, once started on a job, they carry on until the job is finished normally without any human assistance.

2) Speed: A computer is a very fast device. It can perform in a few seconds, the amount of work that a human being can do in an entire year.

3) Diligence: Unlike human beings, a computer is free from monotony, tiredness and lack of concentration. It can continuously work for hours without creating an error and without grumbling. In this way, a computer scores over human beings in doing routine type of jobs which requires great concentration & accuracy.

4) Accuracy: In addition to be very fast, computers are very accurate. The accuracy of computer is very high and degree of accuracy of particular computer depends on its design. However, for particular computers,

every calculation is performed with the same accuracy.

5) Versatility: It is one of the most wonderful things about the computer. A computer can perform multiple tasks simultaneously.

6) Power of Remembering: As human beings acquire new knowledge, brain sub-consciously tends to select only the important details and forgets them after a certain span of time. This is not a case with computers. Computers can store and recall any amount of information because of its secondary storage capacity.

7) No I.Q.: A computer is not a magical device. It possesses no intelligence of its own. Its I.Q. is zero atleast until today. It has to be told what to do and in what sequence. Hence, only the user can determine what task a computer will perform. A computer cannot take its own decisions.

8) No feelings: - Computers do not have feelings, emotions and instincts because they are machines.

Computer Generations:-

Generation in computers, is a further step in technology. It provides framework for the growth of computer industry. Originally, the term generation was used to distinguish between various hardware technologies. Now-a-days, it has been established to include both hardware and software which together make up the computer system.

1) First Generation - (1942-1955) :-

The memory of these computers was constructed by using electromagnetic relays and also all data and instructions were fed into the system by using punch cards. The instructions were written in machine language.

and assembly language because during the first generation, programming languages were not introduced. First generation computers were manufactured by using vacuum tubes.

2) Second Generation (1955- 1964).

These computers were manufactured by using transistors instead of vacuum tubes. Due to the properties of transistors, these computers were much more reliable, powerful, less expensive, small and easy to operate than first generation computers. The memory of these computers was composed of magnetic cores. Magnetic disk and magnetic tape were the secondary storage media used in these computers. Punch cards were used to feed the input in these computers.

3) Third Generation (1964- 1975).

The machines of these computers were constructed by using integrated circuits, commonly known as (IC's). IC's consists of several electronic components on a single chip of silicon. The integrated circuit technology is also known as micro-electronics. It made it possible to integrate large number of circuit components on a very small surface of silicon chip. IC's were much smaller, less expensive and reliable. They were faster in operations, dissipated less heat and consumed less power.

4) Fourth Generation (1975- 1985).

The average number of electronic components packed on silicon chip doubled after 1965. This process soon led to the era of Large Scale Integration (LSI). It was possible to integrate one million electronic components on a single chip. During this generation, magnetic core memories were replaced by semi-conductor memories resulting in large random access memory (RAM) which with very fast accessing time. During this generation, the

UNIX operation and C programming language became very popular.

5) Fifth Generation - (1989 - Present).

The ^{VLSI} technology (Very Large Scale Integration) became ULSI (Ultra Large Scale Integration). This resulted in production of micro-processor chips having ten million electronic components on a single chip. Storage technology advanced very fast making larger and larger main memory and storage available in newly introduced system. During this generation, optical disks also emerged as a powerful, portable mass storage media. During this generation, there was tremendous outgrowth of computer networks. Communication technology became faster day by day and large amount of computers were networked together. The tremendous processing power and massive storage capacity of fifth generation computers also made them a very useful and popular tool for a wide range of multimedia applications which deals with information containing text, graphics, animations, audio and video data.

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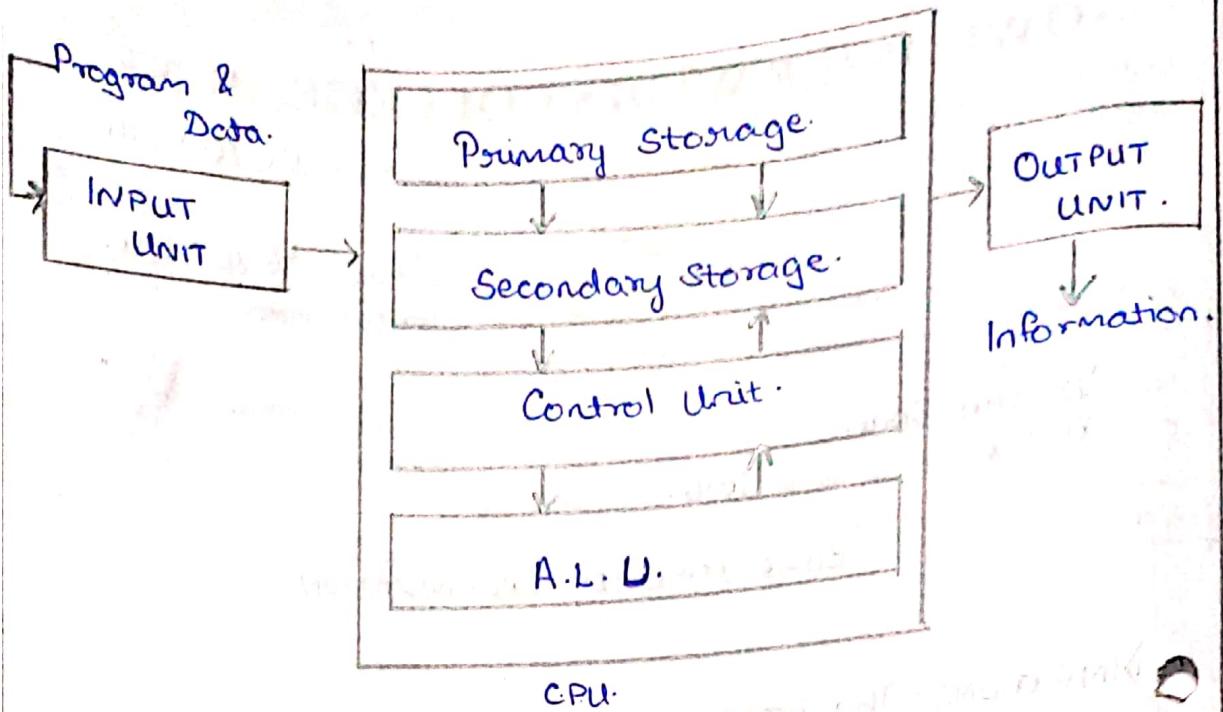
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Expt. No. _____

Title BASIC COMPUTER ORGANIZATION



- ①) INPUTTING: The processes of entering data and instructions into the computer system is known as inputting.
 - ②) Storing: Saving data and instructions into the computer system to make them available for processing as and when needed is known as storing.
 - ③) PROCESSING: Performing arithmetic operations (addition, subtraction, multiplication & division) & logical operations on data to convert them into useful information is known as processing.
 - ④) Outputting: The process of producing useful results for the users such as printed reports or visual display is known as outputting.
 - ⑤) CONTROLLING: Directing the manner and sequence in which all the above operations are performed is known as controlling.
- * Block diagram of Basic Computer System -



* I] INPUT UNIT: Data and instructions must be entered into the computer system before any computations are performed on the data. This task is performed by input unit which links the external environment to the computer system.

Example: Data entered from keyboard.

The functions of Input Unit are :-

- i] It accepts the instructions and data from outside world.
- ii] It converts these instructions and data into computer acceptable form.
- iii] It supplies the converted instructions & data to computer system for processing.

Examples of input unit:- keyboard, mouse, scanning, joysticks, touchscreens, microphone.

* ii] Output Unit: The job of output unit is just the reverse of input unit. It supplies the information obtained from data processing to the outside world.

The functions of output unit are:-

- i] It accepts the result produced by the computer which is in coded form.
- ii] It converts the coded results into human acceptable form.

iii) It supplies the converted result to the outside world in the form of information.

- ⇒ Storage Unit or Memory Unit :- The data and instructions entered into computer system through input unit have to be stored inside the computer before actual processing starts. Similarly, the results produced by computer after processing must also be preserved. The functions of storage unit are:-
- i) To store data and instructions required for processing.
 - ii) To store the intermediate result before the final result is produced.
 - iii) To store the final result of processing before the result is released to the output unit.

The storage unit of all the computers has following types of storage :-

⇒ Primary Storage /Memory - The primary storage is known as main memory. It is used to hold program instructions & data, intermediate result of processing and other jobs which the computer system is currently working on. Primary storage can hold information only when the computer system is on. As soon as the computer system is switched off or reset, the information held in the primary storage disappears. Primary storage normally has limited storage capacity. Primary storage of modern computer system is made up of semiconductor devices.

⇒ Secondary Storage /Memory - The secondary storage is also known as auxiliary storage. It is used to overcome the drawbacks of primary storage i.e. to supplement the limited storage capacity & volatile characteristics of primary storage. The secondary storage is less expensive and it can retain information even when the computer system is switched off or reset. Eg:- Hard disk

⇒ Control Unit :- The control unit acts as central nervous system for other computer components of computer system. It manages & co-ordinates the entire computer system.

⇒ A.L.U. (Arithmetic and Logic Unit) :- The A.L.U. is the place in computer system where the actual execution of instructions takes place during the processing of an operation. To be more precise, all the calculations and logical comparisons are done in A.L.U.

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Experiment Complete



Expt. No. _____ Title Computer Software.

AIM:- COMPUTER SOFTWARE.

Theory :-

1] Hardware :-

Hardware , is the term given to machinery and various individual pieces of the computer system. It refers to the physical devices of the computer system. Hence input, output, storage, and control processing are hardware devices.

2] Software :-

The term software refers to a set of computer programmes , procedures associated documents (flowcharts, manuals,etc.) which describe a program and how they are used. To be precise , software means a collection of programs , where objective is to enhance the capabilities of the hardware.

TYPES OF SOFTWARE

1] System Software.

2] Application Software.

1] System Software :-

System software is a set of one or more programs designed to control the operation and extend the processing capability of computer system.

2] Application Software:-

Application software is set of one or more programs designed to solve a specific problem or to do a specific task.

Example:- An application software for pay roll produces pay slips as major output.

SOFTWARE DEVELOPMENT STEPS:-

- 1) Analysing the problem at hand, planning the program to solve the problem.
- 2) Coding the problem.
- 3) Testing, debugging and documenting the program.
- 4) Implementing the problem.
- 5) Evaluating and maintaining the problem.

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Expt. No. _____ Title Operating Systems.

Aim: Operating Systems.

Theory:

* Operating System :-

An operating system is an integrated set of programs which controls the resource [C.P.U., memory, input unit, Output unit] of a computer system and provides its user with an interface or virtual machine which is more convenient to use than a bare machine.

Two primary objectives of an Operating System:

1) Making a computer system convenient to use.

2) Managing the resource of a computer system.

* Main function of an operating system:

1) Process Management:

The process management module of an operating system takes care of creation & deletion of processes, scheduling of various system resources to the different mechanisms for synchronization & communication among processes.

2) Memory Management:

The memory management of an operating system takes care of allocation & deallocation of memory space to various program in need of these resources.

3) File Management:

The file management of an operating system takes care of file-related activity such as organisation, storing, retrieval, naming, sharing and protection of files.

4) Security:

The security module of an operating system (OS) protects the resources and information of a computer system against destruction and unauthorised access.

5) Command Interpretations:

The command interpretation module of an operating system takes care of interpreting user command and diverting the system resources to handle the request.

* Some Popular Operating Systems:-

1) Unix: Unix is a multi-user timesharing operating system. Although it can be used on a wide variety of computers ranging from notebook computers to super computers. Unix was developed in the early 1970's at Bell Laboratories by Ken Thompson and Dennis Ritchie for a small PDP-11 computer. It was the first operating system to be written in a high level language C.

2) MS-DOS: MS-DOS stands for Microsoft disk operating system. It is a single user operating system for IBM and IBM compatible personal computers. It was introduced in 1981 jointly by Microsoft and IBM and was the most popular operating system for personal computers in 1980's. Its popularity started reducing with the launch of windows operating system.

3) MICROSOFT WINDOWS: Microsoft Windows operating system was developed by Microsoft to overcome the limitation of its own MS-DOS operating system. The first successful version of these operating system was Windows 3.0, which was released in 1990. The subsequently released version were windows 95, windows 98 and windows 2000.

It is a single-user, multi-tasking operating system.

4) MICROSOFT WINDOWS NT:

Microsoft Windows NT is a multi-user, time sharing operating system developed by Microsoft. It was designed to have Unix like features, so that it can be used for powerful workstations, networks and database servers.

5) LINUX:

Linux is a open source operating system enhanced and backed by thousands of programmers world-wide. It is a multi-designed, to be used on personal computers. The name Linux is designed from its inventor Linus Torvalds of Helsinki, Finland in ~~early~~ 1990's when he wrote the first version of an Unix like kernel as a toy project.

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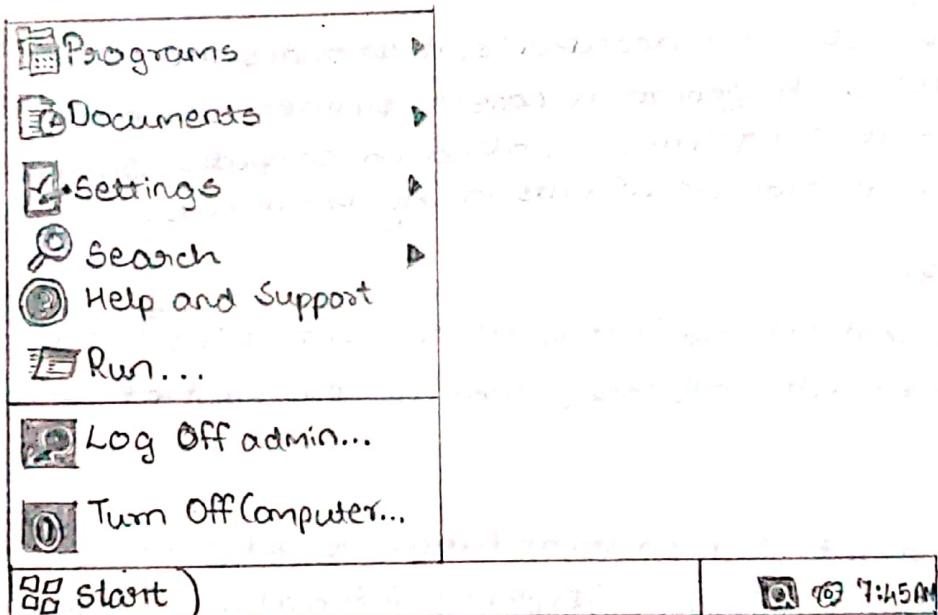
Incharge H.P.

Name VRUSHIL SONI
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Expt. No. _____ Title INTRODUCTION TO START MENU

Start Menu -

It is an important interface of Microsoft Windows operating system. It is used to access various programs and facilities available in our computer system.



When we left click on start button, we get the above utility list. The options in the list are as follows:

1) Turn Off Computer...

When we click on turn-off option, we get three more sub-options i.e. i) Stand-By ; ii) Turn Off and iii) Restart.

This utility is used to switch-off or restart or to keep computer system on stand-by mode.

2) When we Log Off admin...

When we click on log off admin, we get two more sub-options i.e. i) Switch User and ii) Log Off.

3) Run...

It is used to run the program. If we type the name of a program from a folder or document, the operating system opens it for the user.

4) Help and Support

It provides help and support on various topics and tasks.

5) Search

It opens a window where we can pick search options. This option is used to search for files, folders, images, sounds and videos.

6) Settings →

Settings contains important options as control panel. It provides options to customize the appearance and functionality of the computer system. We can add or remove programs, set up network connections, user accounts, etc. We can also add hardwares such as printers, modems, etc.

7) Documents.

When we click on documents, it provides the option 'My Documents' which generally consists pictures, sound files and other default programs installed on computer system. We can also save our documents in My Documents.

8) Programs.

Programs contains the list of various softwares installed by user or default softwares that are the part of operating system.

When we right click on start button, we get the following list of utilities - i) Open ; ii) Explore ; iii) Search... ; iv) Open All Users; v) Properties ; vi) Explore all users.



1) Open

It opens the start menu and displays list of programs in start menu.

2) Explore

It opens the start menu and displays list of programs in start menu along with Tree Structure of Files and Folders.

3) Search...

It opens a window where we can pick search options. This option is used to search files, folders, images, sounds & videos.

4) Properties

Using this option, we can change the properties of start menu as well as the task bar.

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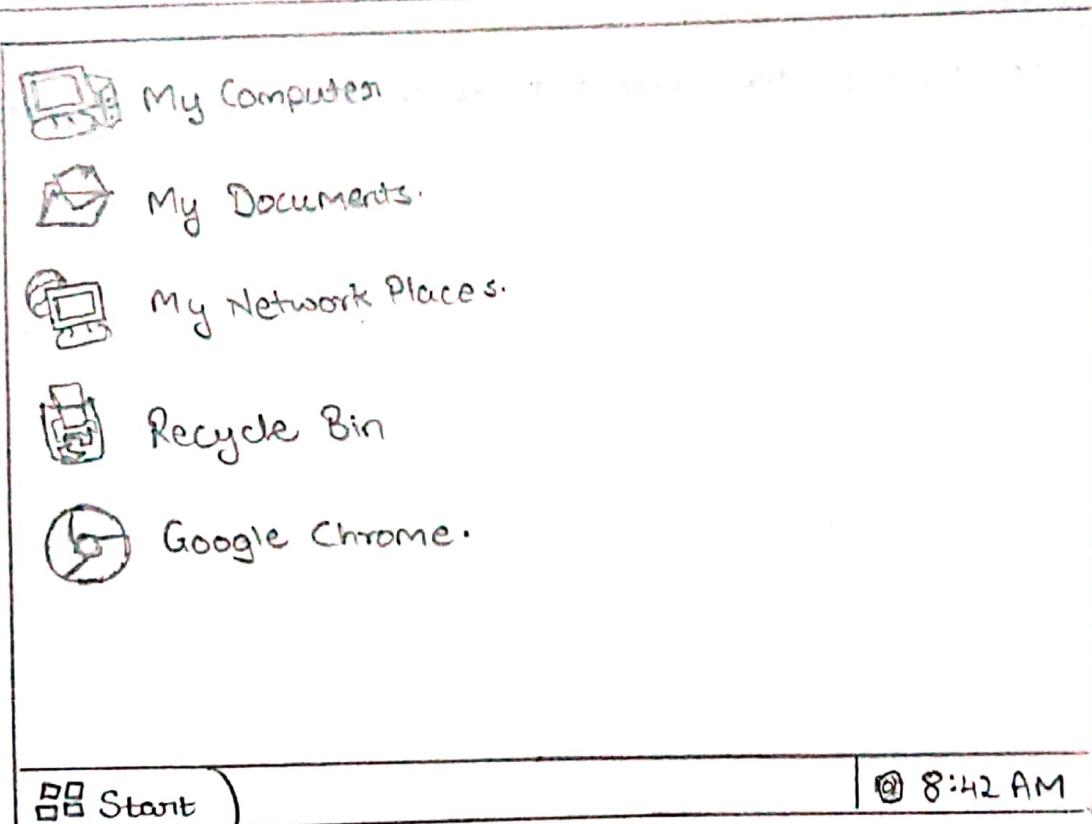


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Incharge Jitendra

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Expt. No. _____ Title INTRODUCTION TO DESKTOP



My Computer.

It displays the list of disk drives available on computer system. It also displays list of hardwares and external memory devices attached to the computer system.

Recycle Bin.

It contains list of files and folders that have been deleted from the computer system. We can restore the items available in recycle bin.

3) Google Chrome Browser.

It opens the google chrome browser to access the internet

4) My Network Places.

It displays the list of computers connected via LAN along with their IP addresses.

5) My Documents.

It displays the list of files, images and music files saved by user.

6) Taskbar.

It displays the current tasks that the user is performing.

F.Y.J.C.(Computer Sc. Paper- II) P

Sr.No.	Name of Experiment	Page No.
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Name VRUSHIL SONTI

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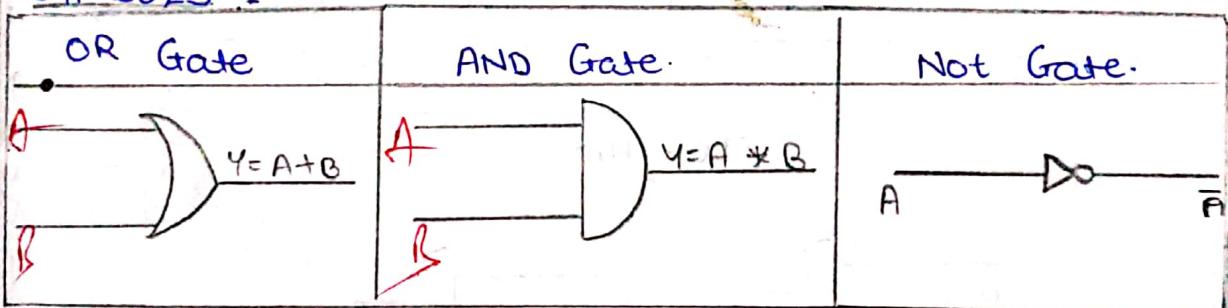
COMPUTER SCIENCE PART II.

Expt. No. 1 Title Study of basic gates.

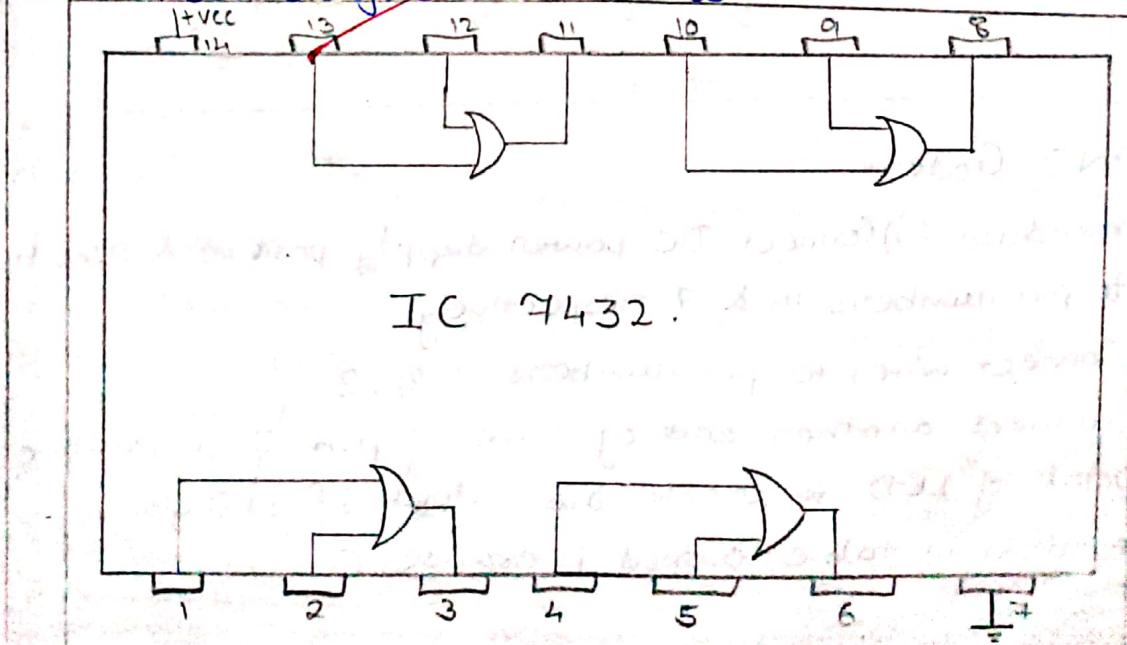
AIM: Study of basic gates (OR, AND, NOT) to verify their truth tables using IC's 7432 (OR), 7408 (AND) & 7404 (NOT).

APPARATUS - IC's 7432, 7408, 7404, DC power supply, LED & connecting wires, etc.

SYMBOLS :-



IC Pin-out diagram for OR Gate.

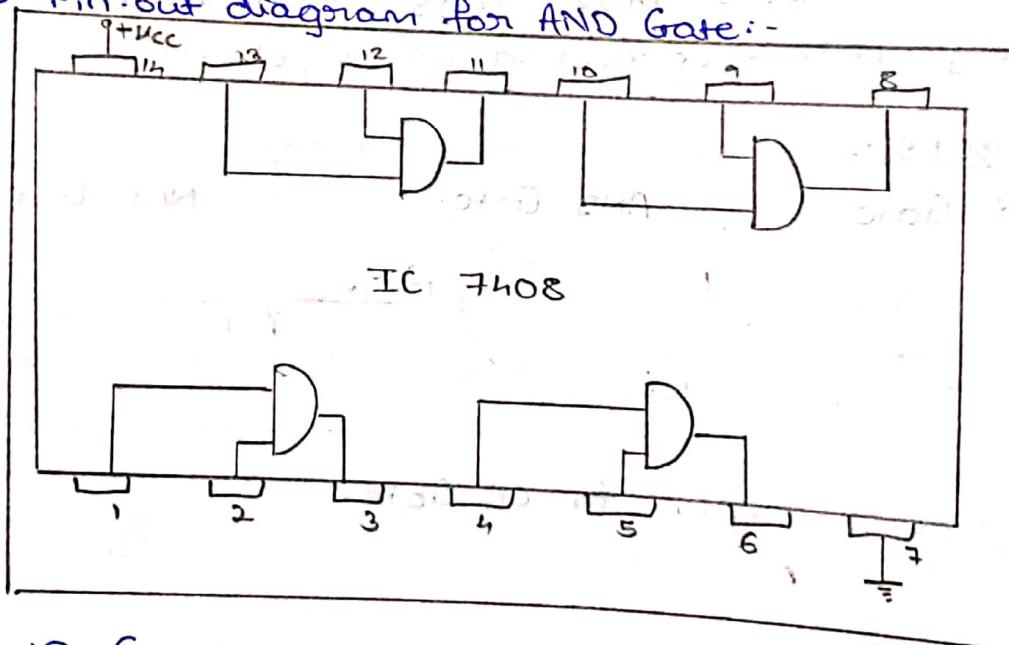


1) OR Gate:-

- Procedure -
- 1) Connect DC power supply positive & negative to pin numbers 14 & 7 respectively.
 - 2) Connect wires to pin numbers 1, 2, 3.
 - 3) Connect another end of wire of pin 3 to positive point of LED to check the output. If output LED glows, mention in table output 1 otherwise 0.
 - 4) Connect wire in between points positive of LED & negative power supply.
 - 5) Apply logic combinations of on pins 1 & 2, observe Outputs on LED & mention the same in truth table.

A	B	$Y = A + B$
0	0	0
0	1	1
1	0	1
1	1	1

IC Pin-out diagram for AND Gate:-



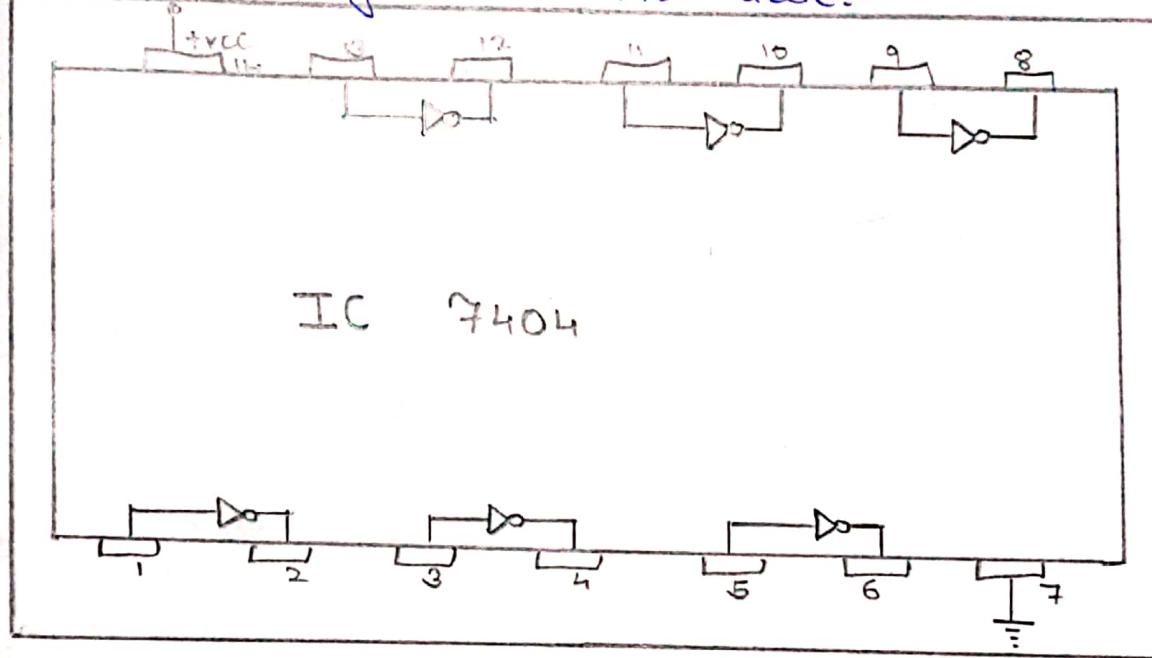
2) AND Gate:-

- Procedure :-
- 1) Connect DC power supply positive & negative to pin numbers 14 & 7 respectively.
 - 2) Connect wires to pin numbers 1, 2, 3.
 - 3) Connect another end of wire of pin 3 to positive point of LED to check the output. If LED glows, mention in table output 1 otherwise 0.

- (2)
- 4) Connect wire in between points positive of LED & negative power supply.
 - 5) Apply logic combinations on pins 1 & 2, observe outputs on LED & mention the same in truth table.

A	B	$Y = A \cdot B$
0	0	0
0	1	0
1	0	0
1	1	1

IC Pin-out diagram for NOT Gate:-



NOT Gate :-

- Procedure:-
- 1) Connect DC positive power supply + & - to pins 14 & 7 respectively.
 - 2) Connect wires to pin 1 & 2.
 - 3) Connect another end of wire to pin 2 to LED to check the output.
 - 4) Connect wire in between negative point of LED & negative power supply. (Crossed out)
 - 5) Apply logic gates on pin 1. observe corresponding outputs & mention in truth table.

A	$Y = \bar{A}$
0	1
1	0

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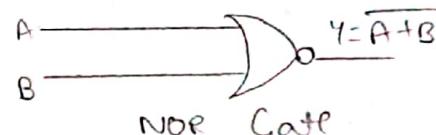
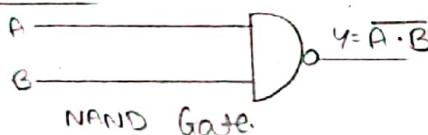
Expt. No. _____

Title Study of Universal Gates.

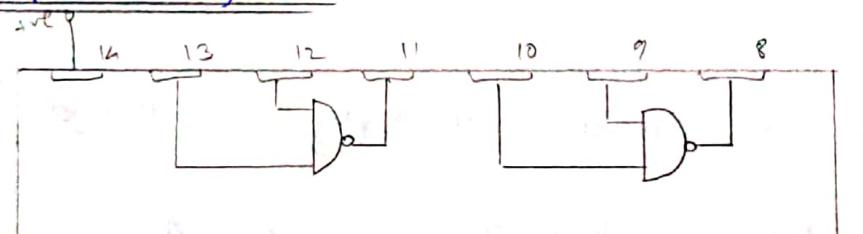
Aim:- To study universal gates for construction of basic gates.

Apparatus:- IC 7400, IC 7402, DC power supply, LED, wires, etc.

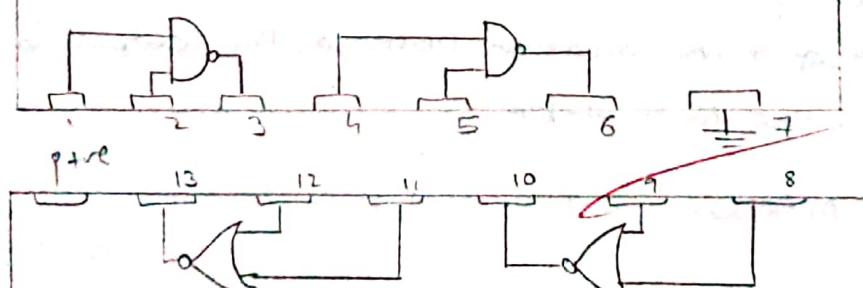
Symbols:-



IC pinout diagram.



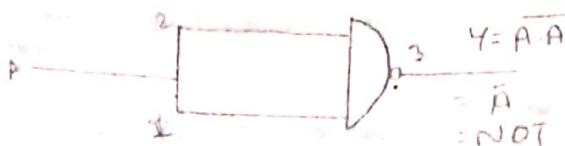
NAND Gate



NOR Gate

① NAND as a universal gate.

DNOT using NAND

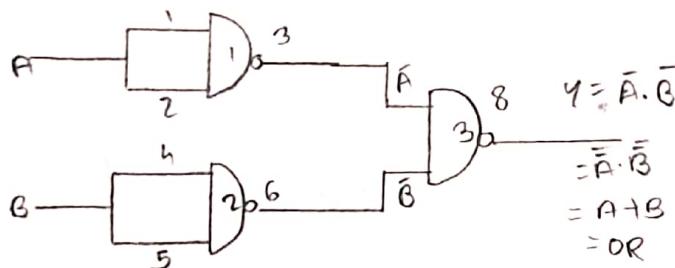


A	Y = A-bar
0	1
1	0

Procedure:-

- 1) Connect power supply +ve & -ve to pins 14 & 12 respectively.
- 2) Connect wires to no 1 & 2 to apply input A.
- 3) Connect wires from pin 3 to LED +ve point to observe the output connect from -ve point of LED to -ve power supply point.
- 4) Apply logic states, 0 & 1, observe corresponding output & mention the same in truth table.

2) OR Using NAND:-

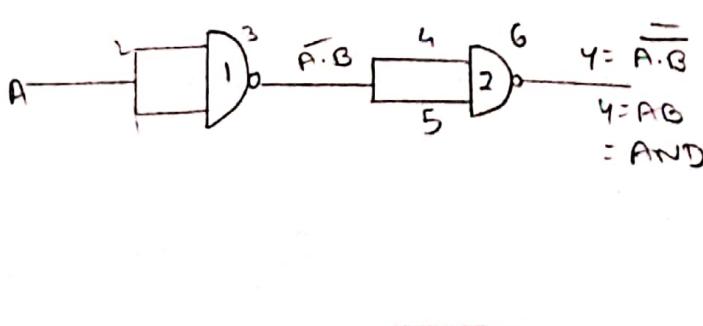


A	B	Y = A + B
0	0	0
0	1	1
1	0	1
1	1	1

Procedure:-

- 1) Connect wires to pins 1 and 2 to apply input A and from 3 to 9.
- 2) Connect wires for pins 4 and 5 to input B and wires in between pins 6 and 10.
- 3) Finally attach pin 8 to the point of LED.
- 4) Apply input/output combination observe the output and list them in the truth table.

3) AND using NAND.

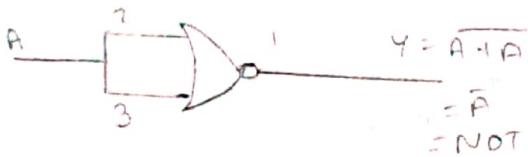


A	B	Y = A * B
0	0	0
0	1	0
1	0	0
1	1	1

- 1) Apply wires to 1 and 2 to provide logic combination A and B respectively.
- 2) Connect wires from pin 4 to 5 and b. Finally connect wire to pin 6 and LED +ve point.
- 3) Applying input, list them in truth table.

B) NOR as Universal Gate.

1) NOT using NOR.

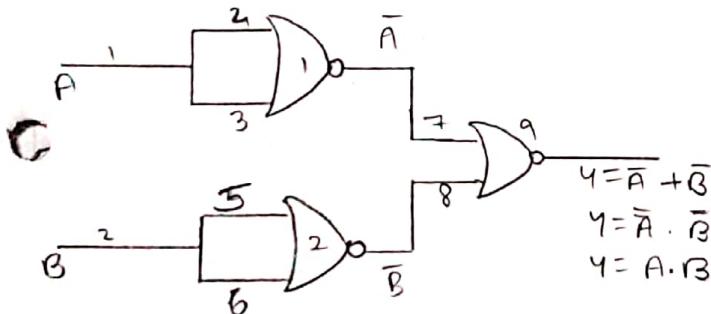


A	$Y = \bar{A}$
0	1
1	0

Procedure:-

- 1) Connect power supply to +ve and -ve to 14 and 7 respectively of IC 7402.
- 2) Connect wires to pin 2 and 3 to apply input A.
- 3) Connect wires from pin 1 to LED +ve point to observe the output.
- 4) Apply logic g states, observe the output and write the truth table.

2) AND using NOR.

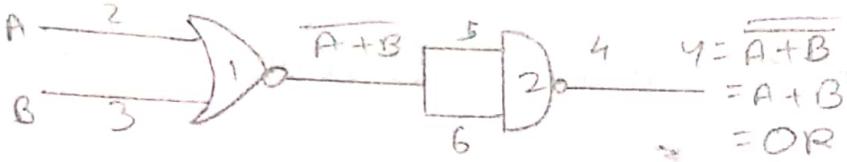


A	B	$Y = A \cdot B$
0	0	0
0	1	0
1	0	0
1	1	1

Procedure: 1) Connect wires to 2 and 3 to input A and from 1 to 8.

- 2) Connect wires to pins 5 and 6 to apply input 13 and from pin 4 to 9.
- 3) Finally connect wire from pin to LED +ve point.
- 4) Applying input combination, we can observe the output on LED on pin 2 and 3 in T.T.

3) OR Using NOR.



A	B	$Y = A+B$
0	0	0
0	1	1
1	0	1
1	1	1

Procedure :-

- 1) Connect wires to pin 2 and 3 to apply inputs A and B respectively.
- 2) Connect wires from pin 1 to 5 and 6.
- 3) Connect wires from pin 4 to LED +ve point.
- 4) Apply logic combinations on 2 and 3 observe the corresponding output and list in truth table.

Conclusion:-

Using IC 7400 (NAND), 7402 (NOR) Basic gates can be constructed to verify truth tables.

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Name VRUSHILO SONI.Class XI Roll No. 4016 Batch Saturday Pair No. _____Expt. No. _____ Title Half Adder.Performed On 27/12/14.

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Experiment Complete

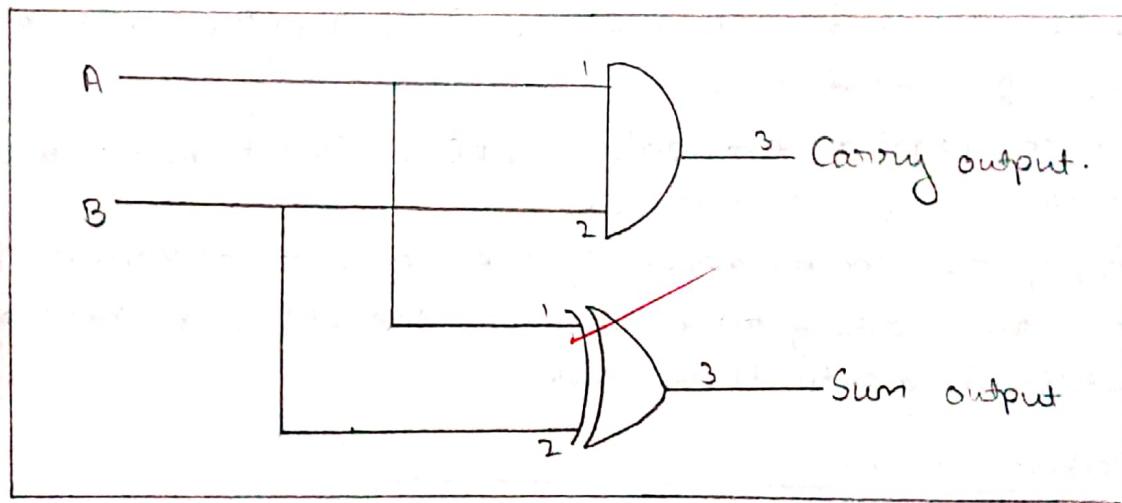
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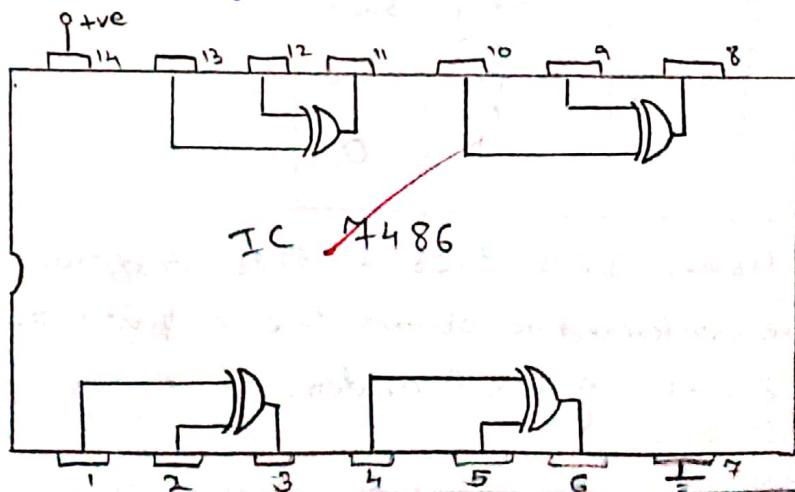
AIM: To study working of half adder for addition of 2 digits to obtain sum & carry output.

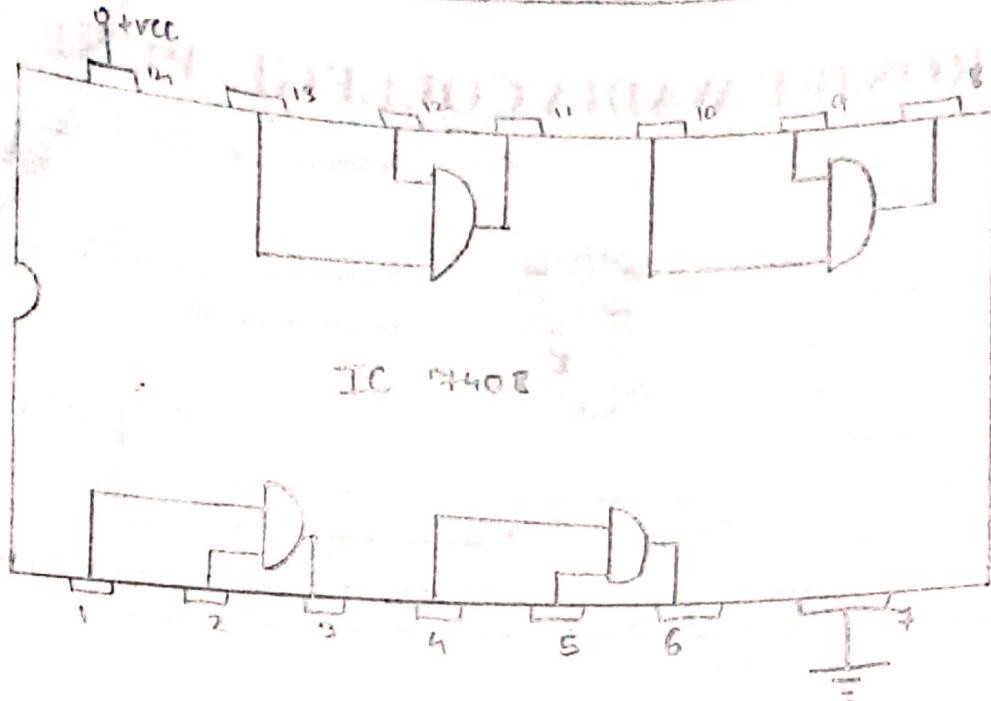
APPARATUS: IC's 7486 (EX-OR), 7408 (AND), DC power supply, LED's & connecting wires, etc.

Logic Diagram -



IC's pinout diagram 7486.





PROCEDURE :-

- 1) Connect power supply +ve & -ve to pins 14 & 7 of both IC's
- 2) Connect wires to pins no. 1, 2, 3 of both IC's.
- 3) Take together pin of wire 1 of both IC's to apply input A as well wires of pin no 2 to apply input B.
- 4) Connect wire of pin no 3 of IC 7408 to LED labelled as 'c' i.e. carry output & wire of no. 3 of IC 7486 to the LED labelled as 's' i.e. sum output.
- 5) Connect negative terminals of LED's (black points) to power supply -ve terminal.
- 6) Apply the combinations of the digits to be added as per the working table, observe the LED's & mention corresponding outputs in table.

Working table.

INPUT		OUTPUT	
A	B	Carry	Sum
0	0	0	0
0	1	0	1
1	0	1	1
1	1	0	0

Conclusion :- Using IC's 7408 & 7486, Addition of 2 digits can be performed to obtain the outputs as per the working table of half adder.

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Experiment Incomplete For
 Diagram _____
 Obs. Table _____
 Calculations _____
 Graphs _____
 Results _____
 Unit _____

Performed On 27/12/14.
 Signature



Submitted On 27/12/14.
 Experiment Complete

Incharge

311115

Name VRUSHIL SONI.

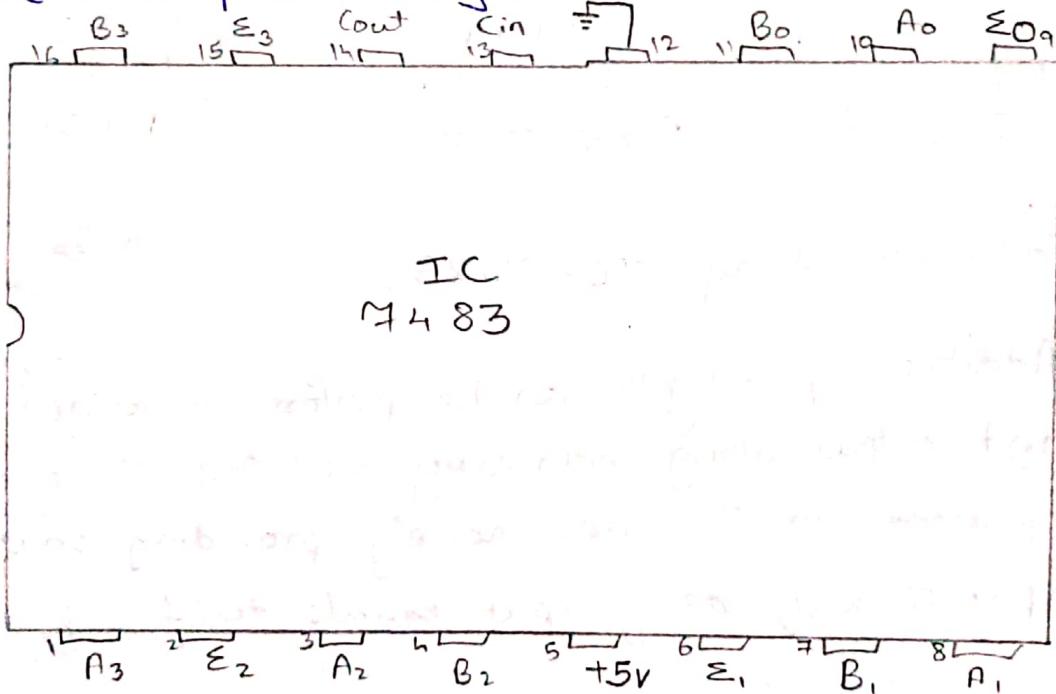
Class XI Roll No. 4016 Batch Saturday Pair No. _____

Expt. No. _____ Title Full Adder.

AIM: To study working of 4 bit adder using IC 7483.

APPARATUS: IC 7483, LED's, connecting wires, DC power supply, etc.

IC-7483 pinout Diagram :-



Working table:-

$$Cin = 0$$

Sr.no.	A₃A₂A₁, A₀	B ₃ B ₂ B ₁ , B ₀	$\Sigma_3 \Sigma_2 \Sigma_1, \Sigma_0$	Cout
1	0001	0001	0010	0
2	1111	1111	1110	1
3	1110	1110	1100	1

Calculation -

$$\begin{array}{r} \textcircled{1} \quad 0001 \\ + 0001 \\ \hline 0010 \end{array}$$

$$\begin{array}{r} \textcircled{2} \quad 1111 \\ + 1111 \\ \hline 1110 \end{array}$$

$$\begin{array}{r} \textcircled{3} \quad 1110 \\ + 1110 \\ \hline 1110 \end{array}$$

$$C_{in} = 1$$

S.no.	A ₃ A ₂ A ₁ A ₀	B ₃ B ₂ B ₁ B ₀	S ₃ S ₂ S ₁ S ₀	Cout.
1	0001	0001	0011	0
2	1111	1111	1111	1
3	1110	1110	1101	1

Calculation -

$$\begin{array}{r} \textcircled{1} \quad 0001 \\ + 0001 \\ \hline 0011 \end{array}$$

$$\begin{array}{r} \textcircled{2} \quad 1111 \\ + 1111 \\ \hline \cancel{1111} \end{array}$$

$$\begin{array}{r} \textcircled{3} \quad 1110 \\ + 1110 \\ \hline 1101 \end{array}$$

Conclusion: Using IC-7483.

Addition of 4 digits can be performed to get 4 digit output along with carry and the IC can be operated in 2 modes namely providing carry input 0 and carry input equals to 1.

Procedure :-

- 1) Connect power supply +ve & -ve to pin no 5 & 12 respectively.
- 2) As per the pin-out diagram, connect wires between switches & pins of 7483 to apply 4 digit input A, 4 digit input B & to obtain 4 digit sum.

(a)

(8)

- 3) Connect wire from the switch C_{in} to pin no 13 to apply carry input as 0 or 1. & wire from pin no. 14 to LED labelled as C_{out} .
- 4) Apply any 3 combination of digits with the help of switches for both modes of IC ($C_{in} = 0, C_{in} = 1$)
~~Observe the output on LED's & mention the same on working table which may be similar as per the calculation part using rules of binary addition.~~

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Experiment Incomplete For
 Diagram _____
 Obs. Table _____
 Calculations _____
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Performed On 17/1/15
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Submitted On 17/1/15
 Experiment Complete

Incharge b

Name VRUSHIL SONI
 Class XI Roll No. 1016 Batch Saturday Pair No. _____

Expt. No. _____ Title To study addressing concept and diode.

Aim: To study addressing concept using diode matrix ROM.

Apparatus:- PN junction, diodes, DC power supply, LED, wires.

Procedure:-

- 1) Observe the components as shown in circuit diagram.
- 2) These are 4 switches named as S_1, S_2, S_3 and S_4 , and 4 columns A, B, C, D.
- 3) For each switch attach cathodes of each diode vertical lines and observe corresponding output for LED. If particular LED ~~glows~~ glows as mentioned in the observation table Q_1, Q_2, Q_3, Q_4 is equal to i.e. $Q_1, Q_2, Q_3, Q_4 = 1$.
- 4) Applying various 16 inputs we can observe output on LED.

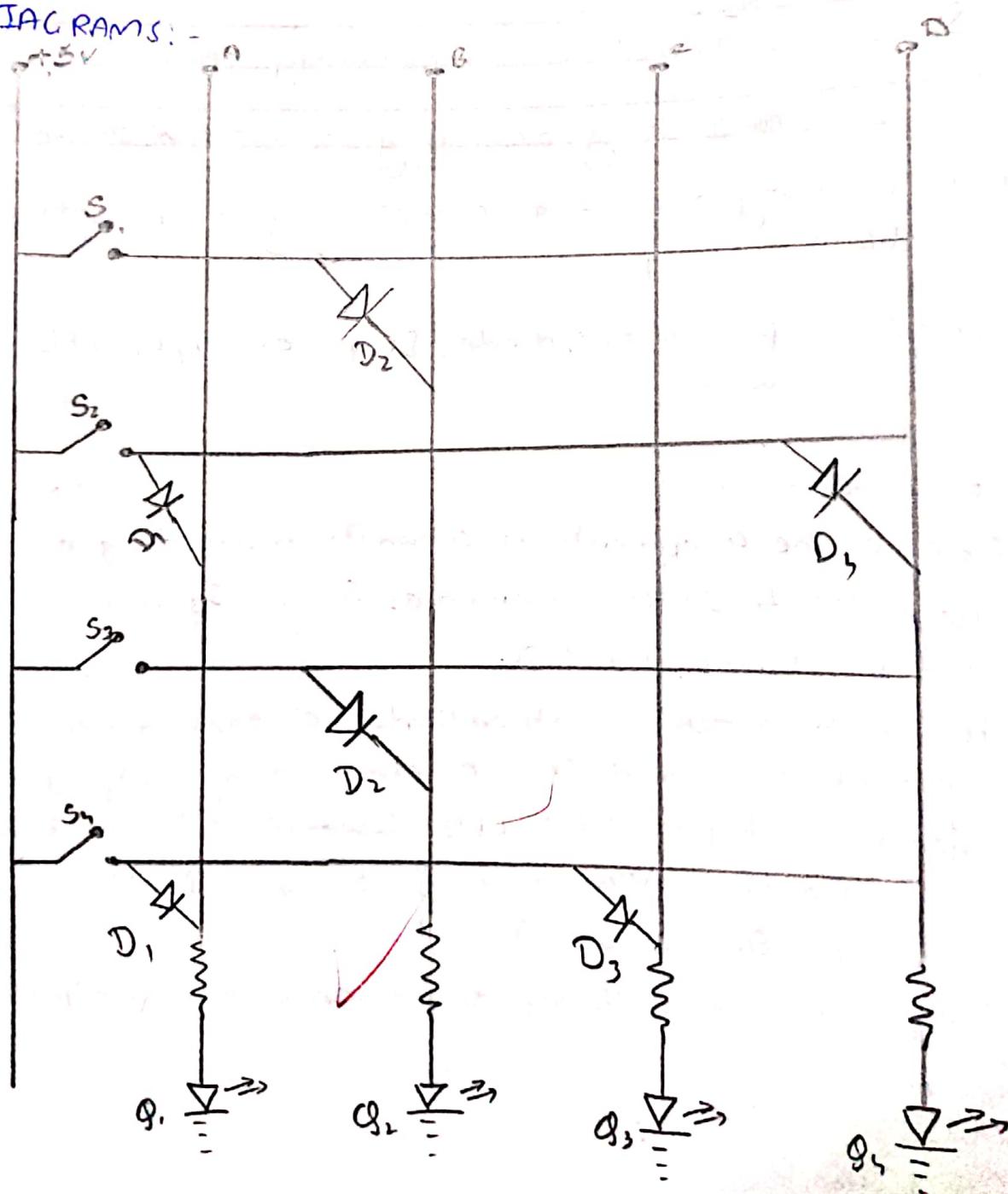
Conclusion:-

Using PN junctions, diodes with 4 rows & 4 columns memory of capacity (4×4) can be designed to store anyone binary input among 16 no. of input.

Memory:-

We know memory is one kind of memory which is useful to write the information's permanent form. Once the contents are stored we cannot alter them. In this diode matrix, Rom using pn junction diodes Rom of 4×4 configuration can be constructed by addressing concept.

DIAGRAMS:-



Observation table:-

(10).

Obs. No.	Row Selected.	Diode Selected				Address Selection			
		D ₁	D ₂	D ₃	D ₄	Q ₁	Q ₂	Q ₃	Q ₄
1	S ₁ = 1	-	✓	✓	-	0	1	1	0
2	S ₂ = 2	✓	✓	✓	-	1	1	1	0
3	S ₃ = 3	-	✓	-	✓	0	1	0	1
4	S ₄ = 4	✓	✓	✓	✓	1	1	1	1

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Experiment Incomplete For _____
Diagram _____
Obs. Table _____
Calculations _____
Graphs _____
Results _____
Unit _____

Performed On _____

Signature _____



Submitted On _____

Experiment Complete

Incharge

Name VRUSHIL SONI

Class XI Roll No. 9016 Batch Saturday Pair No. _____

COMPUTER SCIENCE PART II.

Expt. No. _____ Title MOUSE AND KEYBOARD.

MOUSE :-

INTRODUCTION :- In computing, a mouse is a pointing device that detects 2 dimensional motion relative to a surface. This motion is typically translated into the motion of a pointer on a display which allows for fine control of a graphical user interface. Physically a mouse consists of an object held in one's hand with one or more buttons. Mouse often also feature other elements such as touch surface and wheels which enable additional control and dimensional output.

History :- The trackball, a related pointing device was invented in 1946 by Ralph Benjamin as a part of post World War II era radar plotting system called Comprehensive Display System (CDS). Benjamin was then working for the British Royal Navy Scientific Service. Benjamin's project used analog computers to calculate the future position of target aircraft based on several initial input points provided by a user with a joystick. Benjamin felt that a more elegant input device was needed & invented a ball tracker called roller ball for this purpose.

Operation : Different ways of operating the mouse cause specific things to happen in the GUI.

- Click : pressing and releasing button.

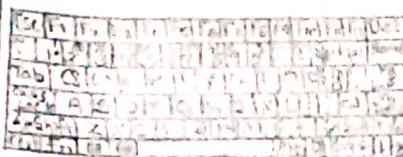
- (left) Single click: clicking the main button.
- (left) Double click: clicking the button 2 times in quick succession counts as a different gestures than 2 separate single click.
- (left) Triple click: Clicking the button four times in quick succession.
- (left) Quadruple click: clicking the button 4 times in quick succession.
- Right Click: clicking the secondary button.
- Middle click: clicking the tertiary button.
- Drag: pressing and holding a button then moving the mouse without releasing. (Using the command "drag with the right mouse button" instead of just "drag" when one instructs a user to drag an object while holding the right mouse button instead of more commonly used left mouse button).

TYPES OF MOUSE:-

- 1) Wireless Mouse:- Wireless mouse transmit data via infrared radiation (see IRDA) or radio (including bluetooth & Wi-Fi). The receiver is connected to the computer via a serial or USB port or can be built in (as is sometimes the case with bluetooth & wi-fi).
- 2) Optical Mouse:- Optical mouse make use of one or more light emitting diodes (LED's) and an imaginary array of photodiodes to detect movement relative to the underlying surface, rather than internal moving parts as does a mechanical mouse. A laser mouse is an optical mouse that uses coherent (laser light).
- 3) 3-D Mouse :- It is also known as bats, flying mice or wands, these devices generally function through ultrasound & provide at least three degrees of freedom. Probably the best known example would be 3D connection/ Logitech's space mouse from the early 1990's.
- 4) Gaming Mouse:- These mouse are specifically designed for use in computer games. They typically employ a wide array of controls and buttons & have designs that differ radically from traditional mouse.

KEYBOARD -

INTRODUCTION:- In computing, a keyboard is a typewriter-style device, which uses an arrangement of buttons or keys to act as mechanical levers or electronic switches. Following the decline of punch cards & paper tapes, interaction via teleprinter style keyboards became the main input device for computers.



A Laptop Keyboard.

A keyboard typically has characters engraved or printed on the keys and each press of a key typically

corresponds to a single written symbol. However to produce some symbols requires pressing & holding several keys simultaneously or in a sequence. While most keyboard keys produce letters, numbers or signs (characters) other keys or simultaneous key presses can produce actions or execute computer commands.

HISTORY:- While typewriters are the definitive ancestor of all key based text entry devices, the computer keyboard as a device for electromechanical data entry and communication devices largely from utility of 2 devices: teleprints (or teletypes) & keypunches. It was through such devices that modern computer keyboards inherited their layouts.

Earlier, Herman Hollerith developed the first keypunch devices, which normally soon evolved to include keys for text & number entry akin to normal typewriters by the 1930's.

TYPES OF KEYBOARDS:-

1) Wireless Keyboard : A wireless keyboard is a computer keyboard that allows the user to communicate with computers or tablets or laptops with the help of radio frequency, infrared or bluetooth technology. It is common for wireless keyboards available these days to be accompanied by a wireless mouse. Wireless keyboards based on infrared technology use light waves to transmit signals to other infrared-enabled devices. But in case of radio frequency technology a wireless keyboard communicates using signals which range from 2.7 MHz to up to 2.4 GHz. Most wireless keyboards work on 2.4 GHz radio frequency.

2) Ergonomic Keyboard: An Ergonomic Keyboard is a computer keyboard designed with ergonomic considerations to minimize muscle strain and a host of related problems. Typically such keyboards for two handed typists are constructed in a V shaped, to allow right & left hands to type at a slight angle more natural to human form.

3) Bluetooth Keyboard: A bluetooth keyboard is a keyboard that connects and communicates to its parent device via bluetooth protocol. These devices are widely used with other portable devices such as tablets and smart phones through they are also used with laptops & ultrabooks. Bluetooth keyboards have become popular only since 2011. with the popularity of portable devices. Most bluetooth keyboards have standard qwerty layouts through some mini bluetooth keyboards have a different layout.

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(13).

Experiment Incomplete For

Performed On 3/01/15.

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Diagram _____

Submitted On 3/01/15

Obs. Table _____

Experiment Complete

Calculations _____

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Graphs _____

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Results _____



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Name VRUSHNIL SONI.

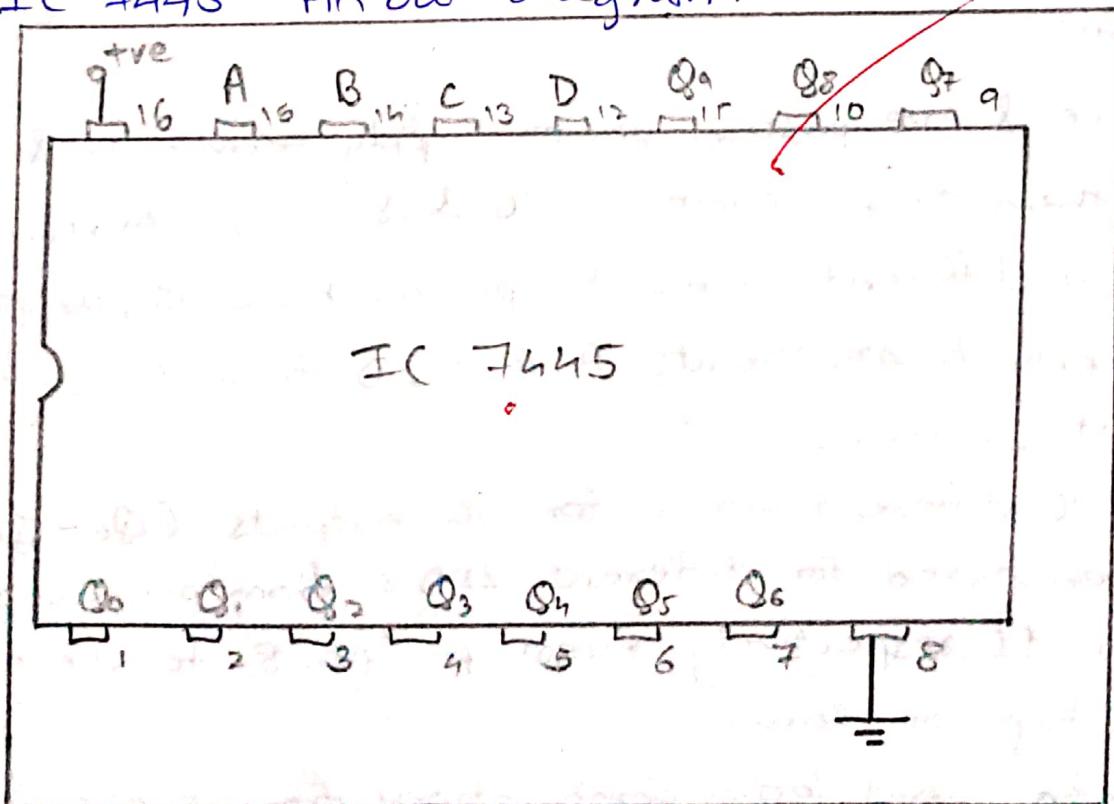
Class XI. Roll No. 7016 Batch. Saturday. Pair No. _____

Expt. No. _____ Title Study of Decoder using IC 7445

Aim: To study working BCD to decimal decoder using IC 7445.

APPARATUS: IC 7445, DC power supply, LED's and connecting wires.

IC 7445 Pin out diagram.



Observation Table.

Sr.No.	BCD input				Output = 1
	D	C	B	A	
1	0	0	0	0	Q_0
2	0	0	0	1	Q_1
3	0	0	1	0	Q_2
4	0	0	1	1	Q_3
5	0	1	0	0	Q_4
6	0	1	0	1	Q_5
7	0	1	1	0	Q_6
8	0	1	1	1	Q_7
9	1	0	0	0	Q_8
10	1	0	0	1	Q_9

Procedure:

- 1) Identify +ve & -ve positive power supply terminals & connect them to pin numbers 16 & 8 respectively.
- 2) Connect 4 different wires for pin numbers 15, 14, 13, 12 to apply binary inputs A, B, C, D from 4 different switches.
- 3) Connect 10 different wires for 10 outputs ($Q_0 - Q_9$) to be connected for different LED's from pin numbers one to 11 respectively except pin no. 8. to check the output high or low.
- 4) By applying input logic combinations from 0,0,0,0 to 1,0,0,1 observe the output on LED's and mention the same in working table.

(14)

Conclusion:-

By applying 10 different binary logic combinations (0000 - 1001) only one of the output line among 10 is selected for high state logic. Using IC 74LS that is the function of a decoder.

(IS)

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Experiment Incomplete For
Diagram _____
Obs. Table _____
Calculations _____
Graphs _____
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Submitted On 17/11/15

Experiment Complete

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Name VRUSHIL SONI.

Class XI Roll No. 7016 Batch Saturday Pair No. _____

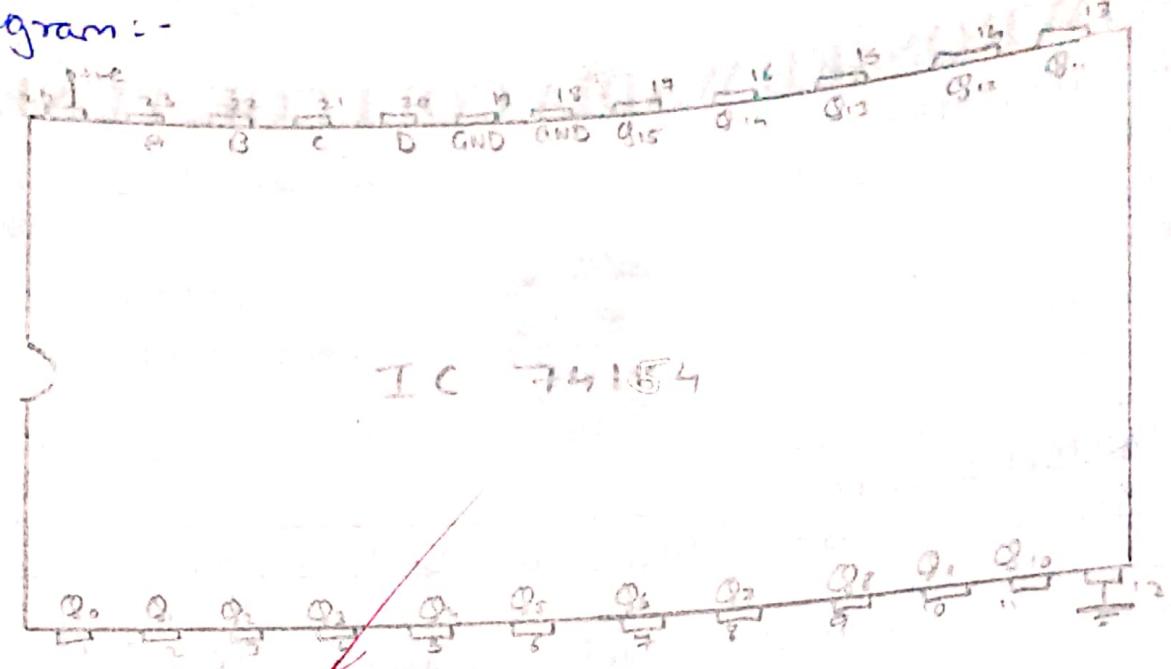
Expt. No. _____ Title To study DEMUX using IC 74154

AIM: To study the function of DEMUX using IC 74154

Procedure:-

- 1) Identify Vcc (+ve) and GND (-ve) terminals and the respect power supply available on the board.
- 2) Identify binary i/p terminals A, B, C, D available on pin 23, 22, 21, 20 respectively and connect them with 4 different wires of i/p switches.
- 3) Connect 16 wires in between Q0 and Q5 o/p terminals and corresponding ~~input~~ lines.
- 4) Apply 16 different i/p logic combinations and observe their corresponding o/p is in the observation table.

Diagram:-



Observation Table:-

Sr.No.	Binary i/p				o/p $Q = 1$
	D	C	B	A	
1	0	0	0	0	Q_0
2	0	0	0	0	Q_1
3	0	0	1	0	Q_2
4	0	0	1	1	Q_3
5	0	1	0	0	Q_4
6	0	1	0	1	Q_5
7	0	1	1	0	Q_6
8	0	1	1	1	Q_7
9	1	0	0	0	Q_8
10	1	0	0	1	Q_9
11	1	0	1	0	Q_{10}
12	1	0	1	1	Q_{11}
13	1	1	0	0	Q_{12}
14	1	1	0	1	Q_{13}
15	1	1	1	0	Q_{14}
16	1	1	1	1	Q_{15}

Conclusion: By applying 16 different binary i/p logic combinations to construct o/p IC 74154 (ABCD). Only one o/p line among 16 lines can be selected only 1 line can be kept at logic among 16 o/p lines using logic ~~constructor~~ to control i/p of IC 74154 (16)

17

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Experiment Incomplete For
 Diagram _____
 Obs. Table _____
 Calculations _____
 Graphs _____
 Results _____
 Unit _____

Performed On 3/01/15
 Signature _____



Submitted On 3/01/15
 Experiment Complete

Incharge

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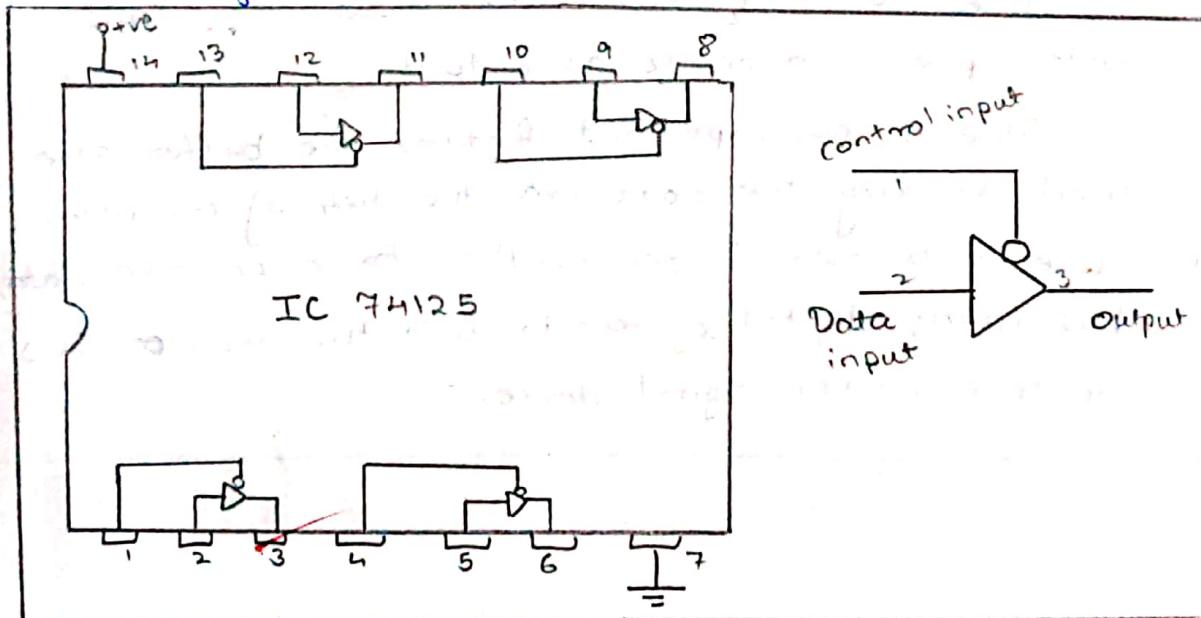
Name VRUSHI SONI.
 Class XI. Roll No. 7016 Batch Saturday Pair No. _____

Expt. No. _____ Title Tri State Buffer.

Aim: To understand the principle and working of tri-state buffer working on IC 74125 with active low inputs.

Apparatus: IC 74125, AC power supply & wires.

Pin out diagrams:-



Procedure:-

- 1) Identify Vcc and ground on the board and connect it to DC power supply available on the board.
- 2) Connect wire in between and data input switch.
- 3) Connect wire in between pin 8 and control input switch, connect wire in between pin 3 and only one LED to check output high and low.
- 4) Apply input as listed in the working table on control an

data input terminals with the help of switch and check the output.

Observation table :-

Sr. No.	Control input	Data input	Output
1	0	0	0
2	0	1	1
3	1	0	0
4	1	1	0

Conclusion:- When the control input is low the data is available as an output i.e. if data is 0 then output is 0. if the data is 1, output is 1. For control input high, whether data input is low or high, output attended is low.

Due to active low control input of IC 74125 data input is available as output.

Due to this important features, the buffers are used to carry the data with the help of common line in between 2 devices. Also for a common data bus carry digital system in both the register IC's to or any other digital device.

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Experiment Incomplete For

Diagram _____

Obs. Table _____

Calculations _____

Graphs _____

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Unit _____

Name VRUSHIL SONI.

Class XI

Roll No. 7016 Batch Saturday. Pair No. _____

Expt. No. _____ Title Square wave generation.



Performed On 17/1/15

Signature

Submitted On 17/1/15

Experiment Complete

Incharge

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Aim: To study schmitt gate, as a squarewave oscillator using IC 7414.

Procedure:-

- 1) Connect +ve and -ve power supply to pin 1 & 2 respectively.
- 2) Connect any 2 resistors with the help of pins 1 & 2 with help of wires.
- 3) Connect any capacitor with the help of wires between 1 & 2.
- 4) Connect CRO probe +ve and -ve in pin 2 and B7.
- 5) Switch off power supply of experiment board and C.R.O.
- 6) Measure the time period required to complete one cycle for the wave.
- 7) Measure the amplitude of the wave.
- 8) Take 2 more readings for different resistors and capacitors and not their amplitude and time period.
- 9) Calculate the frequency (F) and factor 'K' using formula

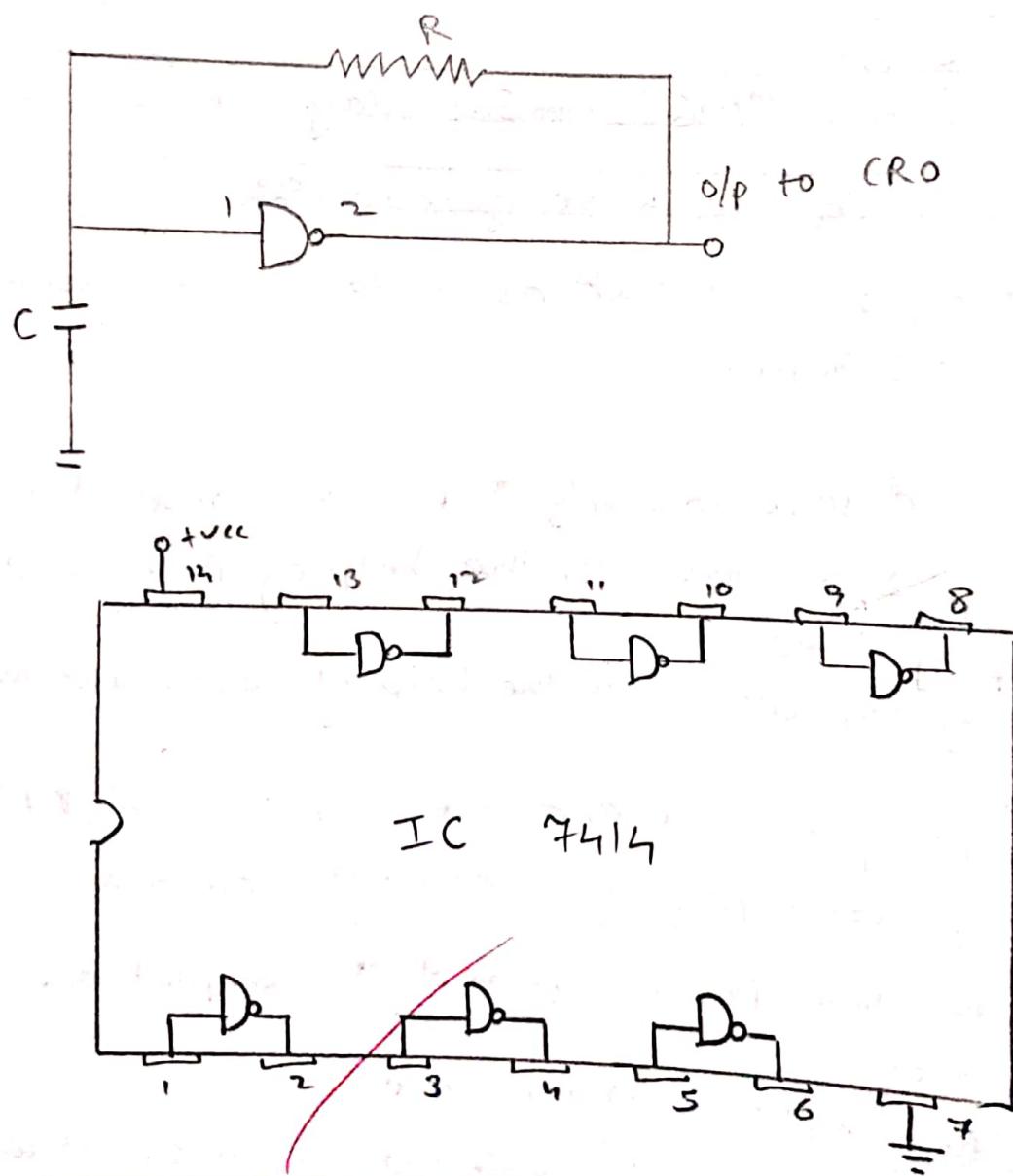
$$f = \frac{1}{\text{time period}}$$

$$K = \frac{1}{RC}$$

Observation table:-

Resistor	Capacitor	Amplitude	Time	Frequency	K
$R = 1000\Omega$	$0.1\mu F$	3.2 V	140usec	7.14 KHz	0.15
$R = 1500\Omega$	$0.47\mu F$	4.4 V	120usec	8.333 KHz	1.702×10^{-3}

Pinout diagram -



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Experiment Incomplete For

Diagram _____

Obs. Table _____

Calculations _____

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Name VRUSHI L SONT.

Class XI Roll No. 7016 Batch Saturday Pair No. _____

Expt. No. _____ Title Scanner.



Performed On 17/1/15

Signature

Submitted On 17/1/15

Experiment Complete

Incharge

b

Aim: To study input device scanner.

Procedure:-

- 1) Switch on the scanner & computer & keep the paper to be scanned on the glass plate of the scanner.
- 2) Select an application to take a scanner image. Eg -
 - ADOBE PHOTOSHOP
 - COREL PHOTO PAINTER.
 - DISK START MENU.
- 3) After the second image is available on the monitor send the image for photo editing software.
- 4) Save the scanned image file.

IMAGE SCANNER.

In computing, an image scanner is often abbreviated to scanner that optically scan images, printed text, handwriting or an object and converts it to a digital image. Common example found in offices are the gradations for the desktop scanner where the document is placed on a glass window for scanning. Hand-held scanners, where the device is moved by hand, have evolved from text scanning "words" to 3D scanners used for industrial designs, reverse engineering, gait and measurements, orthotics, gaming and other applications. Mechanically drawn scanners can move the document and are typically used for large format documents, where a flat bed design would be impractical.

Modern scanners typically use a charge couple device (CCD) or a contact image sensor (CIS) on the image sensor, whereas older drum scanners use a photo multiplier tube as the image sensor. A rotary

scanner, using a CCD array instead scanner of a photo multipliers.

Other types of scanners are planetary scanners, which takes photographs of books and documents and 3D scanners, for producing 3D models of objects.

Another category is digital camera scanner, which are based on the concept of rephotographic cameras. Due to increasing resolution and new features such as anti-shake, digital cameras have become an alternative to regular scanners while still having disadvantage compared to traditional scanners, probability and gentle digitalizing of thick documents without damaging the ~~book~~ book spine. New scanning technologies are combining 3D scanners with digital scanners to create full colour photo relish's 3D models of objects.

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Experiment Incomplete For

Diagram _____

Obs. Table _____

Calculations _____

Graphs _____

Results _____

Unit _____

Name VRUSHIL SONT .

Class XI Roll No. 7016 Batch Saturday Pair No. _____

Expt. No. _____ Title MULTIMEDIA.



Performed On 17/1/15

Signature

Submitted On 17/1/15

Experiment Complete

b)

Incharge

Aim - To study the recording of a voice and play the AVI file.

Procedure-

- 1) Switch on a computer for which mic is attached.
- 2) Click ON → START Menu → Programs → Accessories → Entertainment → Sound Recorder.
- 3) Click on Record button and start speaking on the mic for a while.
- 4) Click on STOP button.
- 5) To listen to the recorder voice, click on play.
- 6) Save the file.

MULTIMEDIA

Multimedia is media and constant that uses a combination of different content forms. This term is used in contrast to media which use only rudimentary computer display such as text-only or traditional forms of printed or hand produced material. Multimedia includes a combination of text, audio, still images, animation, video or interactivity content forms.

Multimedia is usually recorder or played, displayed or accessed by information content processing devices such as computerized and electronic devices, but can also be a part of a live performance. Multimedia also describes electronic media devices used to store and experience multimedia content. Multimedia is distinguished

from mixed media is fine art; by including audio. The "rich Hypermedia can be considered as a particular ~~multimedia~~ application.

The major characteristics are:-

- 1) Multimedia presentations can be viewed by a person on stage, projected, transmitted or played locally with a media player.
- 2) Media games and simulations may be used in a physical environment with special efforts, with multiple users in an online network or locally with an online computer game system or a simulator.

The term multimedia thus refers to an electronics-delivered combination of media including videos, still images, audio, text in such a way that can be accessed interactively.

Much of the content of the web today fails within this definition as understood by millions. Some computers which were marketed in the 1990's were called multimedia computers because they incorporated the CD Rom ~~drive~~ drive which allowed for the delivery of several hundred megabytes of video, audio, data and pictures.