International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

"To Develope A Gprs Speed Control System"

Prof. Sumeet Kumar, Abhya Pratap Singh, Amit Kumar, Rahul Bhadouriya, Yeshshrivastava, Satyam Singh Rajawat,

Department of Mechanical &Automobile Engineering M.I.T.S, GWALIOR-474005 (M.P)
Degree of bachelor of engineering in automobile engineering

Date of Submission: 08-08-2020 Date of Acceptance: 24-08-2020

ABSTRACT: .Mobile telephony has been the most popular application supported by mobile systems. The evolution of mobile network is due to accessing the information anytime, anywhere leads to change in generation of mobile from first generation mobile, 1G towards the fourth generation, 4G. The changes from 1G to 4G is to provide higher data rates , voice , video and image transmission. GSM is 2G technology .GPRS (General Packet radio Service) is 2.5G technology. EDGE (Enhanced data rates for GSM evolution) is 2.75G.in this paper the comparative study, performance and capacity of both the systems are described. Keywords: General Packet radio Service (GPRS), Performance, Enhanced data rates for GSM evolution (EDGE), Global System for Mobile communication (GSM)

INTRODUCTION

Proposed design is cost-effective, reliable and has the function of accurate speed tracking and controlling. It is completely integrated system so that it can be implemented in all vehicles, then it is easy to track and control vehicles at any time. The accidents can be avoided if we control the speed of the vehicle. The use of GSM and GPS technologies allows the system to track object and provides up-to-date information about ongoing trips. If a password like SMS is sent by the owner, it automatically stops the vehicle or we can use it for different other work, it can provide real time control.

This system finds its application in real time traffic surveillance. It could be used as a valuable tool for real time traveler. The current system can be able to provide monitoring process from anywhere. The purpose of this system is to design and integrate a new system which is integrated with GPS- GSM to provide following feature:

a) Location information, b) Real time tracking using SMS, c) track bus driver activity d) Communication is instantaneous therefore we can receive running report quickly.

Another feature that has been implemented is vehicle Crash Detection framework. Once a collision is detected, this approach provides a warning to local emergency authorities and local guardian.

CHAPTER 1

INTRODUCTION

1.1 GLOBAL SYSTEM FOR MOBILE (GSM):

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone . From the mobile operator, just like a mobile phone. From the mobile operators perspective, a GSM modem looks just like a mobile phone.

A GSM modem can be dedicated modem device with a serial,USB or Bluetooth connection ,or it may be a mobile phone that provides GSM modem capabilities.

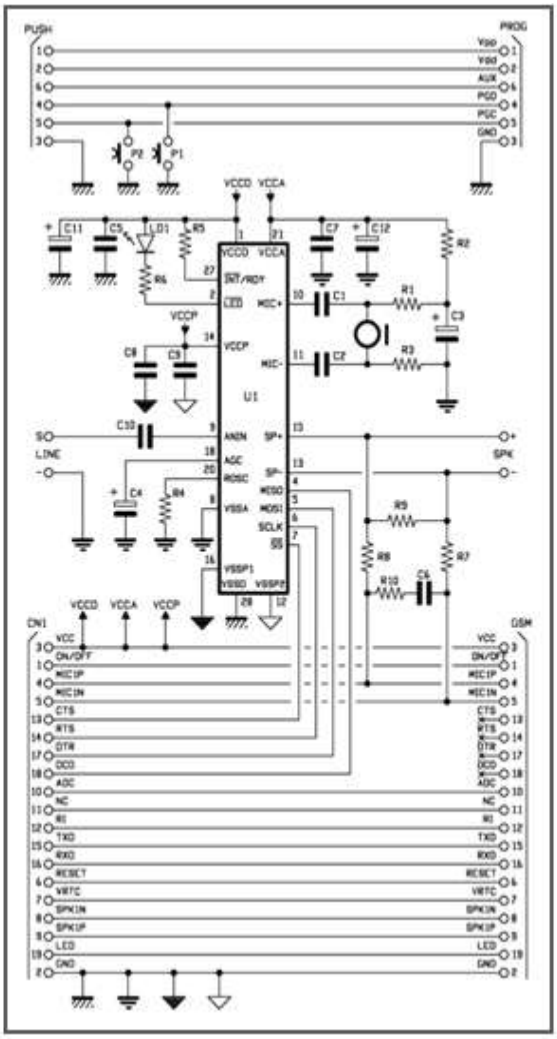
For the purpose of this document , the term GSM modem is used as a generic term to refer to any modem that supports one or more of the protocols in the GSM evolutionary family , including the 2.5G technologies GPRS and EDGE, as well as the 3G technologies WCDMA, UMTS, HSDOA and HSUPA.

For this project we used GSM modem as a main component, we send the sms via mobile phone to particular GSM modem. Data from the modem is connected to the microcontroller Via SERIAL PORT. .Data is get in to the microcontroller and store in the memory and then after in to the microcontroller. This project is to be divided into two parts, One is GSM modem connectivity and second is microcontroller.

A GSM modem exposes a interface that allows applications such as Now SMS to send and receive message over the modem interface. The mobile operator charges for this message sending and receving as if it was performed directly on a mobile phone.To perfom these tasks, a GSM modem must support an 'extended AT command set' for sending/receving SMS messages, as defined IN the

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

ETSI GSM 07.05 and 3GPP TS 27.005 specifications.



GSM Diagram

1.2 KEY ELEMENT LIST:

- IC 89S52
- IC 7805 Power Regulated
- LCD 16x2
- GSM Modem
- IC Max 232
- Optocoupler
- Oscillator
- LED
- CAPACITORS
- Resistors
- Transistor
- Transformer
- Switch
- Soldering Iron
- Copper Plate
- P.C.B

CHAPTER 2

NEED FOR PROJECT

In 2018, over 1 million people worldwide died in motorcycle & car accidents.

1. **Safety purpose**
2. **Life Gaurd**
3. **Fall down in accident ratio**
4. **Location Tracker**
5. **Optimistic**

CHAPTER 3

WORKING&CONSTRUCTION

In this project we interfaced 8051 microcontroller with GSM modem to decode the received message and do the required action. The protocol used for the communication between the two is AT command.

The microcontroller pulls the SMS received by phone , decodes it, recognizes the mobile no. and then switches on the GSM to its port to control the vehicle.

we use 5 volt regulated supply for the LCD display and max 232 IC. For this purpose we use 7805 regulator with filter capacitor to provide a ripple free regulated voltage to controller and LCD display.

we use max232 driver IC to provide a interface between GSM modem and Controller. Max 232 IC converts the RS232 logic to TTL logic. Output of the max232 is directly connected to the RX pin of the controller.

Pin number 18 and 19 of the controller is connected to external crystal oscillator to provide a external clock to microcontroller by which we set the machine cycle of the controller.

In this project we use 5 volt supply for the circuit. For this purpose we 78c05 regulator with the circuit to provide a regulated 5 volt dc. To pin number 40 of the controller.

Regulated 5 volt supply is connected to the pin no. 14 of controller . IC 7850 is a there pin regulator . Pin no. 1 is input pin , pin no. 2 is ground pin and no.3 is output pin . Here 78 mean positive voltage and 5 means 5 volt . 79 mean negative voltage . There are so many regulator available from 7805 to 7818 volt, here 18 volt pin no. 20 of the Controller is connected to the ground pin . Pin no. 1 to 8 is for the port 1.

On this pin we connect a crystal to provide a proper clock to the Controller. In this project we use 12 mhtz crystal to pin no.18,19. Pin no.20 of the Controller is connected to the ground pin. Pin no. 21 to 28 is for the port p2 and pin no. 39 to 32 is for the port p0. Pin no. 30 is ale pin, pin no. 29 is psen and pin no. 31 is excess enable . We use these three pin

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

when we require an extra memory for Controller .if not required then we connect a pin no. 31 to the positive supply .in this project there is no need of extra memory so we connect pin no. 31 to the positive supply.

CHAPTER 4
KEY ELEMENT DESCRIPTION

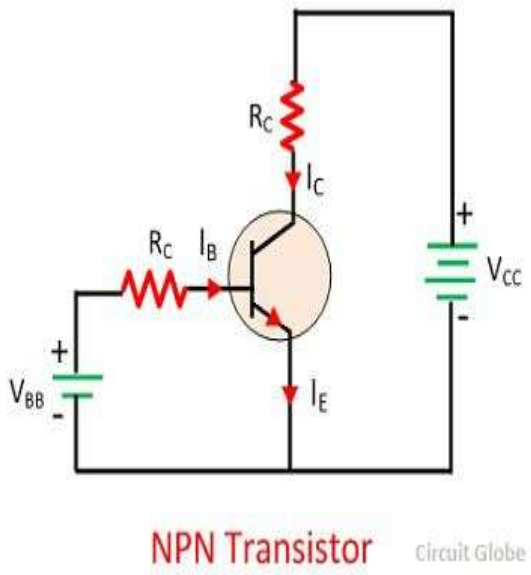
4.1 Transistor:

A **transistor** is a semiconductor device used to amplify or switch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit. A voltage or current applied to one pair of the transistor's terminals controls the current through another pair of terminals. Because the controlled (output) power can be higher than the controlling (input) power, a transistor can amplify a signal.

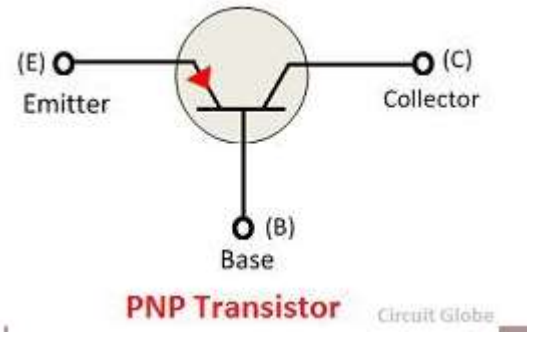
NPN Transistor

Definition: The transistor in which one p-type material is placed between two n-type materials is known as **NPN transistor**. The NPN transistor **amplifies the weak signal** enter into the base and produces strong amplify signals at the collector end. In NPN transistor, the direction of **movement of an electron** is from the **emitter to collector** region due to which the current constitutes in the transistor. Such type of transistor is mostly used in the circuit because their majority charge carriers are electrons which have high mobility as compared to holes.

PNP Transistor



Definition: The transistor in which one n-type material is doped with two p-type materials such type of transistor is known as PNP transistor. It is a current controlled device. The small amount of base current controlled both the emitter and collector current. The PNP transistor has two crystal diodes connected back to back. The left side of the diode in known as the emitter-base diode and the right side of the diode is known as the collector-base diode.Holes are the majority carriers for pnp transistors constituting the current.



4.2 Diode

DIODE

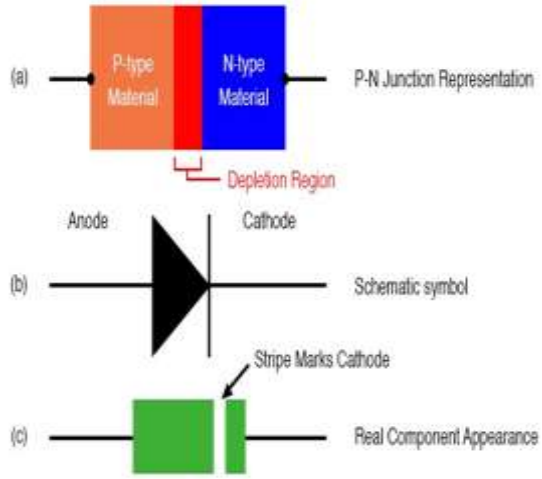
A **diode** is a two-**terminal electronic component** that conducts **current** primarily in one direction (asymmetric **conductance**); it has low (ideally zero) **resistance** in one direction, and high (ideally infinite) **resistance** in the other. A diode **vacuum tube** or **thermionic diode** is a vacuum tube with two **electrodes**, a heated **cathode** and a **plate**, in which electrons can flow in only one direction, from cathode to plate. A **semiconductor diode**, the most commonly used type today, is a **crystalline** piece of **semiconductor** material with a **p–n junction** connected to two electrical terminals.

Some of the it is a P-type region and N-type region formed in the same crystal structure hence a P-N type is produce. Some of the conduction electrons near the junction diffuse in to P-type semiconductor structure form the N-type semiconductor across the junction combing with the holes. The loss of electrons makes the N-type semiconductor positively charged and hence the neutralization of the holes on the other hand makes P-type semiconductor negatively charged. This region where positively and negatively charges develop is called region. and depletion region.

The most common function of a diode is to allow an electric current to pass in one direction (called the diode's forward direction), while blocking it in the opposite direction (the reverse direction). As such, the diode can be viewed as an electronic

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

version of a check valve. This unidirectional behavior is called rectification, and is used to convert alternating current (ac) to direct current (dc)



4.3 Resistance

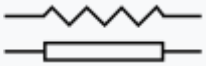
RESISTORS

A **resistor** isa passive twoterminal electrica l component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

Resistor

An array of axial-lead resistors

Type	Passive
Working principle	Electric resistance
Electronic symbol	



Two common schematic symbols

TYPES OF RESISTORS:

There are many types of resistors and they can be divided into two groups namely fixed resistor and adjustable resistor (variable resistor

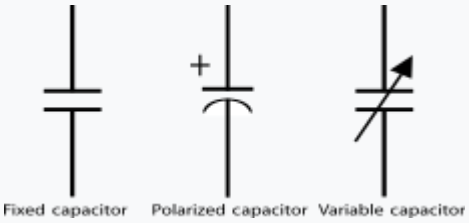
Fixed value Resistors: Fixed resistors are the type of resistors which offers a fixed amount of resistance in the circuit. A fixed resistor cannot be changed as it is set at a specific value.

Variable Resistors: Variable resistors are the type of resistors in which the value of resistance is not fixed. We can change the value of resistance in variable resistors.

capacitor

A **capacitor** is a device that stores electrical energy in an electric field. It is a passive electronic component with two terminals.

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

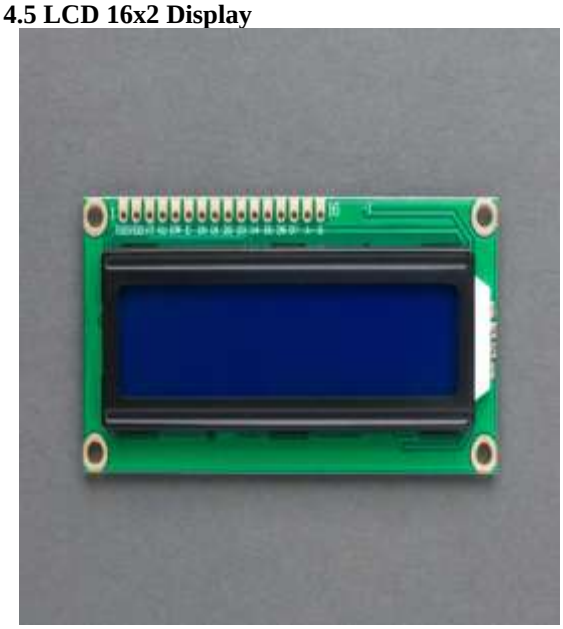
Capacitor	
	
Type	Passive
Invented	Ewald Georg von Kleist
Electronic symbol	
	

The effect of a capacitor is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to add capacitance to a circuit.

Its function is to store the electrical energy and give this energy again to the circuit when necessary. In other words, it charges and discharges the electric charge stored in it. Besides this, the functions of a capacitor are as follows:

1. It blocks the flow of DC and permits the flow of AC.
2. It is used for coupling of the two sections.
3. It bypasses (grounds) the unwanted frequencies.

4.5 LCD 16x2 Display



An LCD (Liquid Crystal Display) screen is an electronic display module and has a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. A 16x2 LCD means it can display 16 characters per line and there are 2 such

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

lines. In this LCD each character is displayed in 5x7 pixel matrix. The 16 x 2 intelligent alphanumeric dot matrix display is capable of displaying 224 different characters and symbols. This LCD has two registers, namely, Command and Data.

Command register stores various commands given to the display. Data register stores data to be displayed. The process of controlling the display involves putting the data that form the image of what you want to display into the data registers, then putting instructions in the instruction register. In your arduino project Liquid Crystal Library simplifies this for you so you don't need to know the low-level instructions. Contrast of the display can be adjusted by adjusting the potentiometer to be connected ac ross VEE pin.

4.6 Soldering Iron:

DEFINATION

A **soldering iron** is a hand tool used in soldering. It supplies heat to melt solder so that it can flow into the joint between two workpieces.

A soldering iron is composed of a heated metal tip and an insulated handle. Heating is often achieved electrically, by passing an electric current (supplied through an electrical cord or battery cables) through a resistive heating element. Cordless irons can be heated by combustion of gas stored in a small tank, often using a catalytic heater rather than a flame. Simple irons less commonly used today than in the past were simply a large copper bit on a handle, heated in a flame.

Soldering irons are most often used for installation, repairs, and limited production work in electronics assembly. High-volume production lines use other soldering methods.[1] Large irons may be used for soldering joints in sheet metal objects. Less common uses include pyrography (burning designs into wood) and plastic welding.

4.7 Oscillator: An **oscillator** is a circuit which produces a continuous, repeated, alternating waveform without any input. Oscillators basically convert unidirectional current flow from a DC source into an alternating waveform which is of the desired frequency, as decided by its circuit components.The basic principle behind the working of oscillators can be understood by analyzing the behavior of an LC tank circuit shown in Figure below, which employs an inductor L and a completely pre-charged capacitor C as its components. Here, at first, the capacitor starts to discharge via the inductor, which results in the conversion of its electrical energy into the electromagnetic field, which can be stored in the inductor. Once the capacitor discharges completely, there will be no current flow in the circuit.

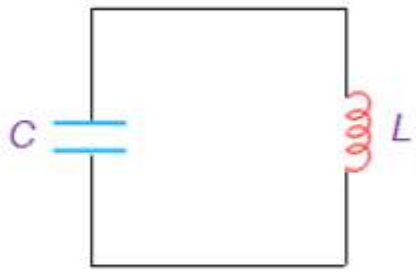


Figure 1 LC Tank Circuit

However, by then, the stored electromagnetic field would have generated a back-emf which results in the flow of current through the circuit in the same direction as that of before. This current flow through the circuit continues until the electromagnetic field collapses which result in the back-conversion of electromagnetic energy into electrical form, causing the cycle to repeat. However, now the capacitor would have charged with the opposite polarity, due to which one gets an oscillating waveform as the output.

However, the oscillations which arise due to the inter-conversion between the two energy-forms cannot continue forever as they would be subjected to the effect of energy loss due to the resistance of the circuit. As a result, the amplitude of these oscillations decreases steadily to become zero, which makes them damped in nature.

This indicates that in order to obtain the oscillations which are continuous and of constant amplitude, one needs to compensate for the energy loss. Nevertheless, it is to be noted that the energy supplied should be precisely controlled and must be

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

equal to that of the energy lost in order to obtain the oscillations with constant amplitude.

This is because, if the energy supplied is more than the energy lost, then the amplitude of the oscillations will increase (Figure 2a) leading to a distorted output; while if the energy supplied is less than the energy lost, then the amplitude of the oscillations will decrease (Figure 2b) leading to unsustainable oscillations.

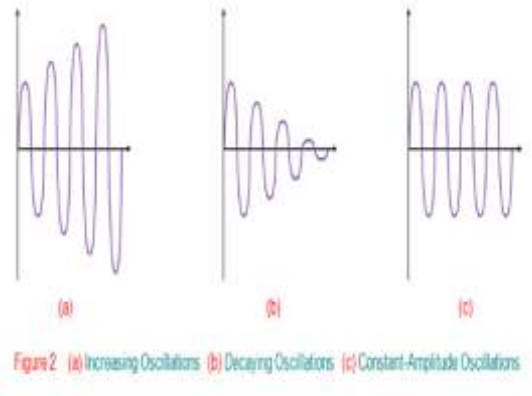


Figure 2 (a) Increasing Oscillations (b) Decaying Oscillations (c) Constant-Amplitude Oscillations

Practically, the **oscillators** are nothing but the amplifier circuits which are provided with a positive or regenerative feedback wherein a part of the output signal is fed back to the input (Figure 3). Here the amplifier consists of an amplifying active element which can be a transistor or an Op-Amp and the back-fed in-phase signal is held responsible to keep-up (sustain) the oscillations by making-up for the losses in the circuit.

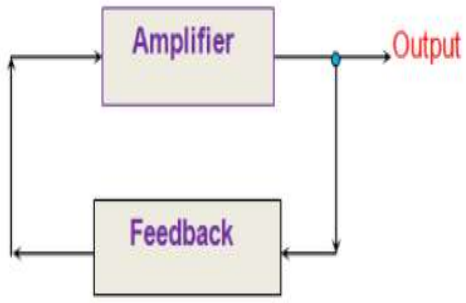


Figure 3 Typical Oscillator

4.8 TRANSFORMER:

A transformer is defined as a passive electrical device that transfers electrical energy from one circuit to another through the process of electromagnetic induction. It is most commonly used to increase ('step up') or decrease ('step down') voltage levels between circuits.

Working Principle of Transformer

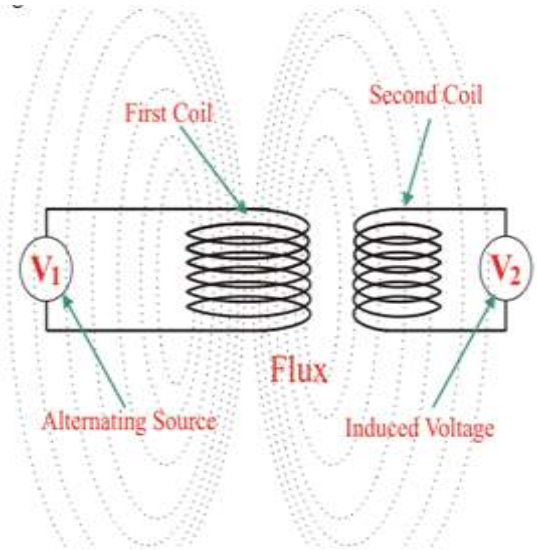
The **working principle of a transformer** is very simple. Mutual induction between two or more windings (also known as coils) allows for electrical energy to be transferred between circuits. This principle is explained in further detail below.

Transformer Theory

Say you have one winding (also known as a coil) which is supplied by an alternating electrical source. The alternating current through the winding produces a continually changing and alternating flux that surrounds the winding. f another winding is brought close to this winding, some portion of this alternating flux will link with the second winding. As this flux is continually changing in its amplitude and direction, there must be a changing flux linkage in the second winding or coil.

According to Faraday's law of electromagnetic induction, there will be an EMF induced in the second winding. If the circuit of this secondary winding is closed, then a current will flow through it. This is the basic **working principle of a transformer**.

Let us use electrical symbols to help visualize this. The winding which receives electrical power from the source is known as the 'primary winding'. In the diagram below this is the 'First Coil'.

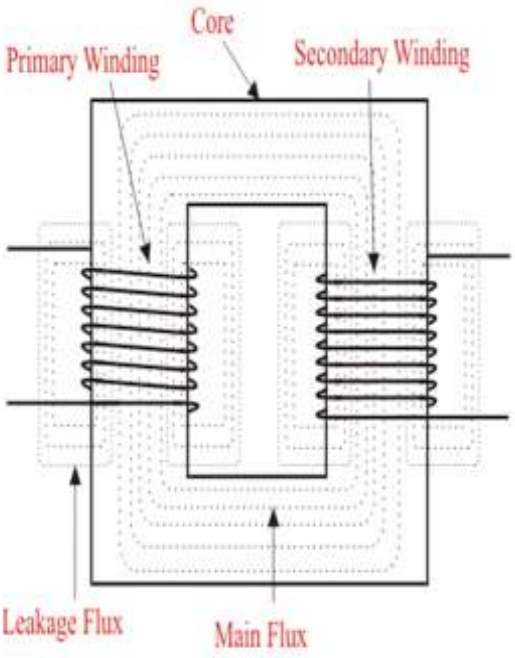


If there are less turns on the primary coil than the secondary coil than the voltage will increase (step up).

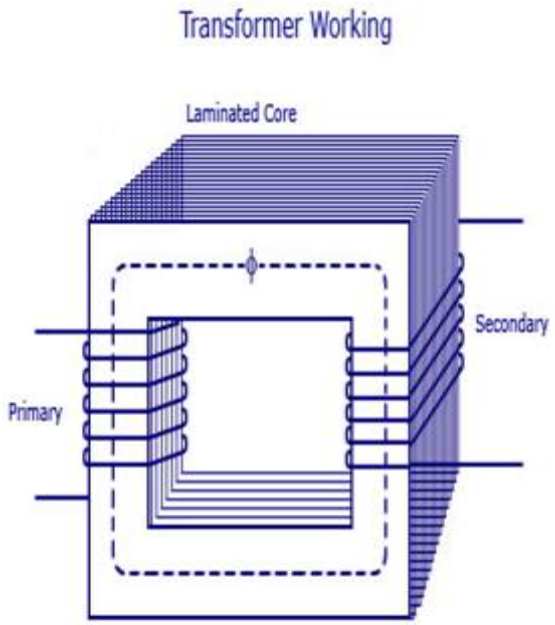
International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

While the diagram of the transformer above is theoretically possible in an ideal transformer – it is not very practical. This is because in the open air only a very tiny portion of the flux produced from the first coil will link with the second coil. So the current that flows through the closed circuit connected to the secondary winding will be extremely small (and difficult to measure).

The rate of change of flux linkage depends upon the amount of linked flux with the second winding. So ideally almost all of the flux of primary winding should link to the secondary winding. This is effectively and efficiently done by using a core type transformer. This provides a low reluctance path common to both of the windings.



The purpose of the transformer core is to provide a low reluctance path, through which the maximum amount of flux produced by the primary winding is passed through and linked with the secondary winding.



CHAPTER 6

Conclusion

In this project I have tried my best to follow all the instruction given to us for the project report as well as for the project assembling.

A GSM modem exposes an interface that allows applications such as Now SMS to send and receive messages over the modem interface. The mobile operator charges for this message sending and receiving as if it was performed directly on a mobile phone. To performe these task ,a GSM modem must support an “etended AT commend set” for sending/receiving SMS messages , as defined in the ETSI GSM 07.05 and 3GPP TS 27.005 specifications.

GSM modem can be quick and efficient way to get started with SMS, because a special subscription to an SMS service provider is not required. The mobile operator charges for this message sending and receiving as if it was performed directly on mobile phone.in most parts of the world ,GSM modem are a cost effective solution for receiving SMS messages, because the sender is paying for the message delivery.

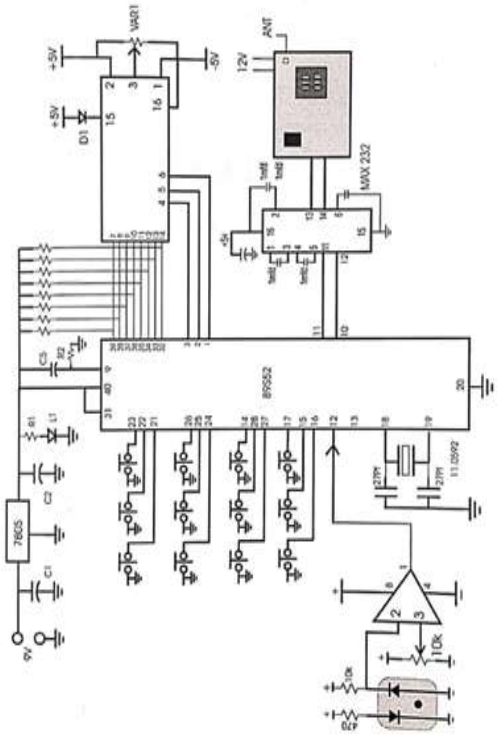
Accoding to my knowledge the report is prepared accoding to the specification given by the technical board but some mistake may be possible in this project . I have utilize my knowledge and take necessary care to avoid mistakes and tried to consist the best. Except the connecting knob and the switches, all the things used in this projest are prepared by us.

International Journal of Advances in Engineering and Management (IJAEM)
Volume 2, Issue 5, pp: 243-251 www.ijaem.net ISSN: 2395-5252

CHAPTER 7

MAIN DIAGRAM

MAIN DIAGRAM



ACKNOWLEDGEMENT

It is pleasure for us to add a few hear felt words for the people who were a part of this project in numerous ways, who gave unending support right from the stage the idea was conceived.

I greatly acknowledge my profound indebtedness towards my esteemed guide **SUMEET KUMAR,** Dept. of Mechanical & Automobile Engineering M.I.T.S, Gwalior (M.P.) for his privilege guidance, excellent supervision and constant encouragement during the entire course of work.

We are also grateful to **Dr. R K Pandit,** Director, M.I.T.S. Gwalior (M.P.) for having provided excellent academic atmosphere in this institution, which made the Endeavour possible.

We also express sincere guidance to the Librarian Staffs, Workshop Staffs and Mechanical staffs, M.I.T.S.

Gwalior (M.P.) for providing helpful materials.

Last, but not the least, we would like to thank our beloved parents for their encouragement and co-operation during the time of working through this project. Also, thanks to all the friends for their encouragement and support.