Department of Physics

Student Study Projects

2021-2022

S.No.	Title of the Project	Students name	Hall Ticket No
1	Super Conducters	1. G.Puja	19077164468034
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		3. G.Mamatha	19077164468036
		4.Gouthami	19077164468037
		5. G.Saritha	19077164468034
2	Magnetic materials and their properties	G.Navya	19077164468039
		G.Rakshitha	19077164468040
		Sushma	19077164468041
		G.Kavya	19077164468042
		Lavanya	19077164468042
3	Artificial Intelligence	K.Sandhya	19077164468064
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		K.Srivani	19077164468066
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		K.Archana	19077164468068
4	Digital Printing Machine	Rasagna	19077164468070
		M.Sushma	19077164468078
		L.Kalyani	19077164468072
		L.Hemalatha	19077164468073
		M.Komalatha	19077164468074
5	3D Printing Xerox Mechine	M.Kalyani	19077164468080
		M.Apurva	19077164468081
		M.Vaishnavi	19077164468082
		M.Sindhu	19077164468083
		O.Narmada	19077164468085
6	Drone Technology	P.Sahithi	19077164468085
		P.Bhavya	19077164468086
		P.Sangeetha	19077164468087
		P.Akshaya	19077164468090
		Pujitha	19077164468089
7	Voice Recognition System	P.Shiresha	19077164468091
		P.Lakshmi	19077164468092
		P.Anusri	19077164468093
		P.Srividhya	19077164468094
		Rimsha Afreen	19077164468096
		Rubeena Khathan	19077164468097

8	GPS Tracking System	S.Sowmya	19077164468099
		S.Priyanka	19077164468102
		S.Anitha	19077164468103
		S.Samath	19077164468104
9	Construction of Echo friendlyt Cold storage	S.Rekha	19077164468105
		Sadiya Fathima	19077164468106
		T.Sharanya	19077164468107
		Sruthi	19077164468108
		T.Alekya	19077164468109
10	EMI - Filters	Raasi	19077164468110
		Nishitha	19077164468111
		Dhanusha	19077164468112
		P.Akhila	19077164468113
		V.Supraja	19077164468114
11	AC to DC Converters	V.Meghana	19077164468115
		Srivani	19077164468116
		Shivani	19077164468117
		Samatha	19077164468118
12	Rope way model ✓	D.Harika	19077164441001
		K.Anusha	19077164441007
		B.Harika	19077164441010
		M.Vinitha	19077164441011
		M.Tejaswvini	19077164441012
13	Nano technology ✓	Nazia Uzma Fathir	19077164441013
		P.Divya	19077164441015
		Swapna	19077164441016
		R.Nikhitha	19077164441018
		Ruksar Begum	19077164441019
14	Photo Diodes	A.Srilekha	19077164468002
		Nikhitha	19077164468003
		Rachana	19077164468004
		Akhila	19077164468005
		Nikhila	19077164468006
15	Automatic Street lights ✓	Aishvarya	19077164468007
		A.Sruthi	19077164468008
		Aisha Siddiki	19077164468009
		Akhila	19077164468010
		B.Rashmitha	19077164468011

16	Solar Cell	B.Srilakshmi	19077164468012
		Srivani	19077164468013
		Ramya	19077164468015
		CH.Ashvitha	19077164468016
		Pravalika	19077164468017
17	Glasiers	CH.Nikhila	19077164468018
		Aneela	19077164468019
		D.Charmi	19077164468020
		D.Sabana	19077164468021
		Pranitha	19077164468022
18	Origin of Quantum Mechanics	D.Nikhitha	19077164468026
		E.Shireesha	19077164468027
		Puja	19077164468028
		D.Anjali	19077164468029
		G.Manisha	19077164468031
19	Manufactoring of Glass Materials	G.Puja	19077164468034
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		G.Mamatha	19077164468036
		Gouthami	19077164468037
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Govt. Degree College for Women - Karimnagar

Department of Physics

Student Study Project

Super Conductors

Done by :- G. Puja (190771644680 34)
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Mentored by :-
N. Satyanarayana Reddy

Declaration

We hereby declare that the work presented in this study Project entitled MOBILE PHONE DIRECTORS is an original one and has been carried out by us in the department of physics, Government Degree College for women, Karimnagar and has not been submitted either in part or in full for the award of any degree or diploma of any university earlier.

Super Conductors

Abstract :-

The study of Superconductors, it concept and the various theories are still a mystery in the field of Solid state physics. Although a few theories tries to explain the working principle (i.e how and why it works) of Super Conductors scientists believed that a full acknowledgment of its energy gaps; is dependence on temperature and pressure and the effect of doping many finally unlock the door to a vast acknowledge of Super Conductivity.

This project work brings all in one piece, the various Principle and theories as derived by some renowned Scientist working to ensure full understanding in this area of physics. It is believed that high Temperature Superconductors (HTS) i.e. Super Conductors with Considerable high Critical temperature hold the key to the practical application of Super conductors.

1) Introduction :-

Super Conductivity is a fascinating and challenging field of physics. Scientists and Engineers throughout the world have been striving to develop it for many years. For nearly 75 years Super Conductivity has been a relatively obsure object. Until recently, because of the Cryogenic requirement of low temperature Conductors Superconductivity at the high school level was merely an interesting

Topic occasionally discussed in a physics class. Today however, Super Conductivity is being applied to many diverse areas such as : medicine, theoretical and experimental Science, the military, transportation, power production, electronics as well as many other areas. With the discovery of high temperature Superconductor which can operate at liquid nitrogen temperature (77k), Superconductivity is now well known within the reach of high school student.

Aims & objectives :=

The primary objective of the Study is to examine the energy gap in Superconductors. Specific objectives of the study are :

1. To critically examine the various types and properties of Super Conductors.
2. To examine energy gaps in low temperature Super Conductors.
3. To examine energy gaps in high temperature Super Conductors.

Applications of Super Conductors :

The application of Superconductors include the following.

* These are used in generators, particle accelerators, transportation, electric motors, Computing, medical, power transmission, etcs.

* Super Conductors mainly used for creating powerful electromagnets in MRI Scanners. So these are used to divide. They can also be used to separate magnetic and non-magnetic materials.

* This Conductor is used to transmit power of or long distance.

* Used in memory or storage elements.

Future Scope :-

There is a lot of Speculation about Superconductivity and its future as there is a lot we still don't know about the materials and the phenomena itself.

In the research and engineering communities there is hope that Superconductive materials will be employed in:

* long-range power transmission, without any losses along the way.

* magnetically levitating (mag-lev) trains, which will use less energy of to transport us and transport goods, as they will have much lower resistance.

Uses :-

1) ITER (International Thermonuclear Experimental Reactor) is a joint venture involving seven bodies of government. Companies like General Fusion and Lockheed martin will likely bring fusion energy to the Commercial market before ITER ever gets turned on.

2) Quantum Trains

3) MRI's

4) HTS Motor.

5) Elevators

6) Starters

7) Fun Drive

8) LHC (Large Hadron collider)

9) HTS Powercables

10) Space Travel on Earth

Department of Physics

GDC W. Karimnagar

Student Study Project

Magnetic Material and their Properties

2021-2022

Names of the participants:

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3. Sushma 190771644680 41
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5. Lavanya 190771644680 43

Name of the Supervisor:

N. Satyanarayana Reddy.

Magnetic Materials:

Ferromagnetic materials are materials that have magnetic properties similar to those of iron. They can become permanently magnetized. Examples of ferromagnetic materials are nickel, cobalt, and alnico, an aluminum-nickel-cobalt alloy.

Magnetic fields are produced by currents. Perma-nent magnets are the result of "magnetization curr-ents" flowing inside the material. The magnetization currents in materials are a consequence of the electron-s orbital motion and spin. Electrons have an intrinsic property, called spin. Because they have spin, they have a magnetic moment, similar to a small current loop. Electrons by themselves act like tiny magnets. If you pick an axis, an electron's magnetic moment can either be parallel or anti-parallel to this axis. In an atom the electrons are arranged in orbitals. If all the magnetic moments of the electrons in an atom (will act) do not completely cancel out, then the

atom will act like a tiny magnet.

Types of Magnetic Materials:

1. Paramagnetic materials: The materials whic are not strongly attracted to a magnet are known as paramagnetic materials. For example: aluminium, tin magnesium etc. Their relative permeability is small but positive. Paramagnetic materials have individual atomic dipoles oriented in a random fashion as shown. The resultant magnetic force is therefore zero. When a strong external magnetic field is appli -ed, the permanent magnetic dipoles orient themself parallel to the applied magnetic field and give rise to a positive magnetization.

2. Diamagnetic materials: The materials which are repelled by a magnet such as zinc. mercury, lead, sulfur, copper, silver, bismuth, wood etc.., Permanent magnetic dipoles are absent in them, Diamagnetic materials have very little to no applications in elec' -trical engineering.

3. Ferromagnetic materials: The materials which are strongly attracted by a magnetic field or magnet is known as ferromagnetic material for

eg: Iron, steel, nickel, cobalt, etc.. The Permea -bility off these materials is very very high.

a. Soft Ferromagnetic materials; They have high relative permeability, low coercive force, easily magnetized and demagnetized and have extremely small hysteresis.

b. Hard Ferromagnetic materials: They have relatively low permeability, and very high coer -cive force. These are difficult o' magnetize and demagnetize.

4. Ferrites: Ferrites are a special group of ferrom -agnetic materials that occupy an intermediate position between ferromagnetic and non-ferro -magnetic materials.

a. Soft Ferrites: ceramic magnets also called ferromagnetic ceramics, are made of an iron oxide, Fe_2O_3, with one or more divalent oxide such as NiO, MnO or ZnO.

b. Hard ferrites: These are ceramic permanent magnetic materials.

Magnetic Properties:

The magnetic properties of high temperature superconductors are highly anisotropic, with the magnetization and susceptibility depending on the angle the applied field makes with the c-axis. We will see in chapter.

Particles of anisotropic superconductors in a magnetic field experience a torque that tends to align them with field. Anisotropy effects can be determined by employing single crystal films with the c-axis perpendicular to the plane. It is, of course preferable to work with crystals or films, but these are not always available, and much good research has been carried out with aligned granular samples.

Grain alignment is a technique that converts a collection of randomly oriented grains into a set of randomly oriented grains into a set of grains with their c-axes preferentially pointing in a particular direction.

This alignment can be brought about by uniaxial compression, by application of a strong magnetic field to grains embedded, for example, in epoxy, or by melting a random powder sample and reforming it in the presence of a temperature gradient.

Magnetic Properties of Dislocations:

Magnetic properties are affected by plastic deformation as a result of the introduction of perfect and imperfect dislocation and of the motion of these. Magnetic moments interacting with stress and strain around dislocation change χ and Hc offering a nondestructive method to investigate dislocation structure in ferromagnetic materials. The observation of APB tube by electron microscopy shows that the large effect of plastic deformation on the magnetic properties come from the interchanges of the atoms.

Department of physics

Govt Degree college for Womens
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Student Study project

Artificial Intelligence

2021-2022

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Name of the Supervisor :-
Sri. P. Aruna

ARTIFICIAL INTELLIGENCE

What is artificial intelligence (AI)?

Artifical intelligence is the simulation of human intelligence process by machines, especially computer systems. Specific applications of AI include expert systems, natural languages processing speech recognition and machine vision.

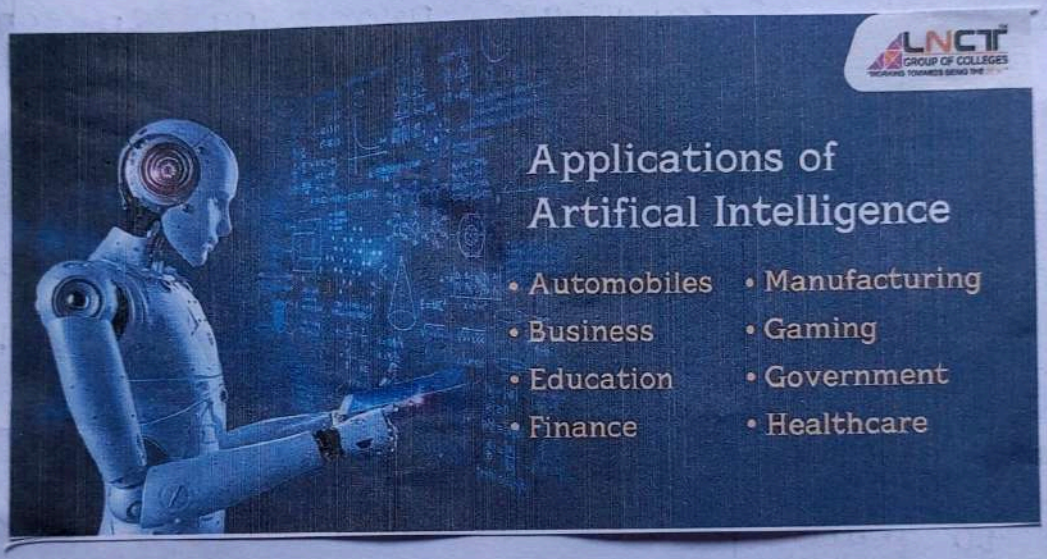
How does AI work?

In general, AI systems work by ingesting large amounts of labeled training data, analyzing the data for correlations and patterns, and using these patterns to make predictions about future states. In this way, a chatbot that is fed examples of text chats can learn to produce life like exchanges with people, or an image recognition tool can learn to identify and describe objects in images by reviewing millions of examples.

Examples of Artificial Intelligence.

* Facebook Watch

* Self - driving cars.
* Robo-advisors.
* Email spam filters
* Disease mapping.
* Social media monitoring.
* virtual travel booking agent.
* Conversational bots.



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Importance of AL ?

AL is important because it can give enterprises insights into their operations that they may not have been aware of previously and because, in some cases, AL can perform tasks better than humans - particularly when it comes to repetitive, detail- oriented tasks like analyzing large numbers of legal documents to ensure relevant fields

are filled in proply. AI tools often complete jobs quickly and with relatively few errors.

Types of Artifical intelligence?

Type 1 : Reactive machines.

These AI systems have no memory and are task specific. An example is Deep Blue, the IBM chess program that beat Garry Kasparov in the 1990s.

Type 2 : Limited memory.

These AI systems have memory, so they can cause past experience to inform future decisions. Some of the decision- making functions in self-driving cars are designed this way.

Type 3 : Theory of mind.

Theory of mind is a psychology term. When applied to AI, it means that the system would have the social intelligence to understand emotions.

Type 4 : Self - awareness.

In this category, AI systems have a sense of self, which gives them consciousness. Machines with self- awareness understand their own curre -ent state. This type of AI does not yet exist.

Ethical use of artifical intelligence.

While AI tools present a range of new function-ality for businesses, the use of artifical intelli-gence also raise ethical questions because, for better or worse, an AI-system will reinforce what it has already learned.

This can be problematic because machine learning algorithms, which underpain many of the most advanced AI tools, are only as smart as the data they are given in training. Because a human being selects what data is used to train an AI program, the potential for machine learning bias is inherent and must be monitored closely.

Advantages of AI :=

* Good at detail-oriented jobs;
* Reduced time for data-heavy tasks;
* Delivers consistent results; and
* AI-powered virtual agents are always available.

Disadvantages of AI :=

* Expensive;
* Requires deep technical expertise;
* Limited supply of qualified workers to build AI tools;
* Only knows what it's been shown; and
* Lack of ability to generalize from one task to another.

Types of Artificial Intelligence :=

* Artificial Narrow Intelligence (ANI)
* Artificial General Intelligence (AGI)
* Artificial Super Intelligence (ASI).

Robots in AI :=

The field of robotics has been advancing even before AI became a reality. At this stage, artificial intelligence is helping robotics to innovate faster with efficient robots. Robots in AI have found applications

across verticals and industries Especially in the manufacturing and packaging industries. the

AI in Everyday life :=

Here is a list of AI applications that you may use in Everyday life:

Online shopping := Artificial intelligence is used in online shopping to provide personalised recommendations to users, based on their previous searches and purchases.

Digital personal assistants := Smartphones use AI to provide personalised services. AI assistants can answer questions and help users to organise their daily routines without a hassle.

Machine translations :=

-AI- based language translation software provides translations, substitling and language detection which can help users to understand other languages.

Cybersecurity :=

AI systems can help recognise and fight Cyberattacks based on recognising patterns and backtracking the attacks.

Artifical intelligence against Covid-19 :=

In the case of Covid-19, AI has been used in the identifying outbreaks, processing healthcare claims, and tracking the spread of the disease.

What Makes AI Technology So Useful?

Artificial intelligance offers several critical benefits that Make it an excellent tool, such as:

* Automation :=

AI can automate tedious processess/tasks, without any fatigue.

* Enhancement :=

AI can enhance all the products and services effectively by improving experiences for end-users

and delivering better product recommendations.

* Analysis and Accuracy :=

AI analysis is much faster and more accurate than humans. AI can use its ability to interpret data with better decisions.

The History of AI :-

The concept of inanimate objects endowed with intelligence has been around since ancient times. The Greek god Hephastus was depicted in myths as forging robot-like servants out of gold. Engineers in ancient egypt built statues of gods animated by priests. throughout the centuries, thinkers from Aristole to the 13th century. Spanish theologian Ramon Mull to Rene Descartes and thomas Bayes used the tools and logic of their times to describe human thought processes as symbols, laying the foundation for AI concepts such as general knowledge representation.

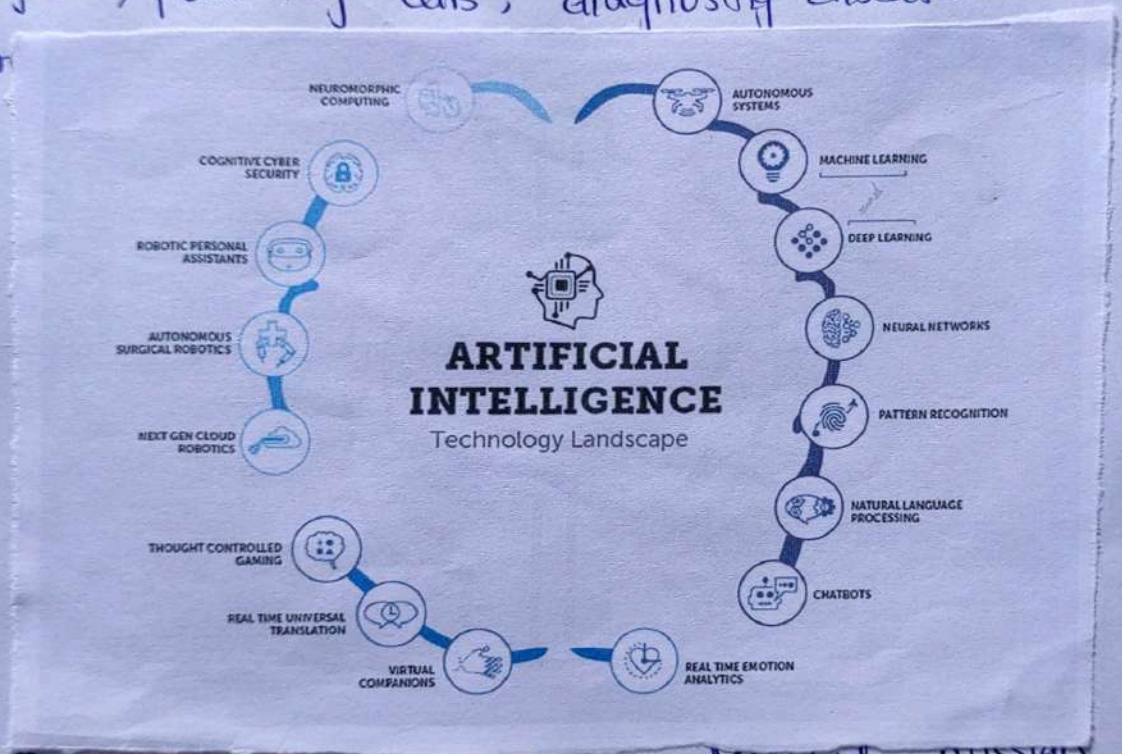
The late 19th and first half of the 20th Centuries brought forth the foundational work that would give rise to the modern computer. In 1836, Cambridge university mathematician Charles Babbage and Augusta Ada Byron, Countess of lovelace, invented the first design for a programmable machine.

1940s. Princeton mathematician John von neumann conceived the architecture for the stored program computer - the idea that a computer's program and the data it processes can be kept in the computers memory.

1950s. with the advent of modern computers, scientists could test their ideas about machine intelligence. One method for determine whether a computer has intelligence was devised by a british mathematician and world war II code-breaker alan Turning. the turing test focused on a computers ability to fool interrogators into believing its responses to their questions.

1956s. the modern field of artificial intelligence is widely cited as staring this year during a summer conference at Dartmouth College. sponsored by the defense advanced research projects agency the conference was attended by 10 luminaries.

1990s through today. Increase in computational power and an explosion of data sparked an AI renaissance in the late 1990s that has continued to present times. the latest focus on AI has given rise to break throughs on natural language processing, computer vision, robotics, moreover, AI is becoming ever more tangible, powering cars, diagnosing diseases and many mor



In 1997, IBM's Deep blue defeated Russian chess grandmaster garry kasparov, becoming the first computer Program to beat a world chess champion. 14 years later IBM's watson captivated the public when it defeated two former champions on the game show jeopardy.

Future of Artificial Intelligence :-

As humans, we have always been fascinated by technological changes and fiction, right now, we are living amidst the greatest advancements in our history Artificial Intelligence has emerged to be the next big thing in the field of technology. organizations across the world are coming up with breakthrough innovations in artificial intelligence and machine learing. Artificial intelligence is not only impacting the future of every industry and every human being but has also acted as the main drivers of emerging technologies like big data, robotics and IOT. considering its growth rate it will

continue to act as a technological innovator for the foreseeable future. Hence, there are immense opportunities for trained and certified professionals to enter a rewarding career. As these technologies continue to grow, they will have more and more impact on the social setting and quality of life.

career opportunities in AI

* AI & ML Developer / Engineer.

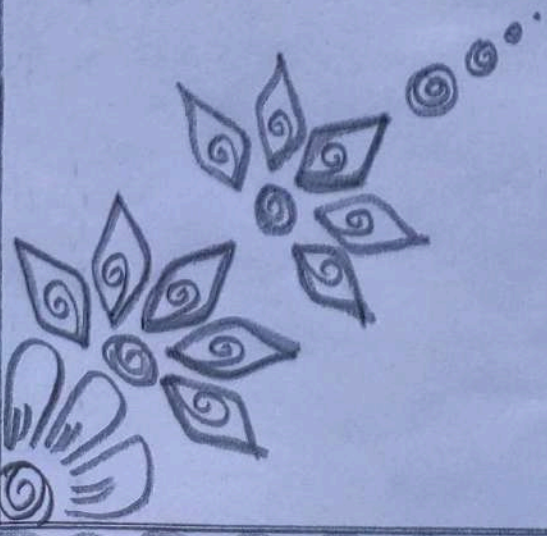
AI & ML Engineer / developer is responsible for performing statistical analysis, running statistical tests, and implementing.

Conclusion :=

AI holds the key to unlocking a magnificent future where, driven by data and computers that understand our world, we will all make more informed decisions. These computers of the future will understand not just how to turn on the switches but why the switches need to be turned on.

AI helps organizations to make better decisions, Enhancing product and business process at a much faster pace. AI is at the centre of a new enterprise to build computational models of Intelligence.

Conventional digital computers may be capable of running such programs, or we may need to develop new machines that can support the complexity of human thought.



2021 - 2022

GOVERNMENT DEGREE COLLEGE

FOR WOMEN

KARIMNAGAR

STUDENT STUDY PROJECT

DEPARTMENT OF PHYSICS

DIGITAL PRINTING MACHINE.....☺

☼ DONE BY:-

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L. Hemalatha. (190771644680 73)

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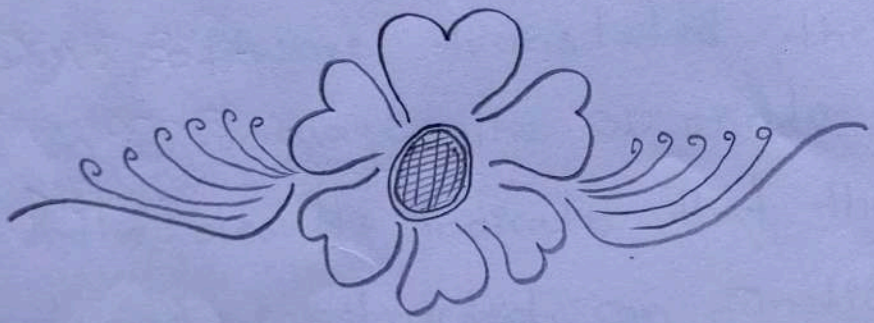
☼ MENTORED BY:-

Dr. P. Aruna

DECLARATION

We here by declare that the work presented in this study project entitled 'digital printing michene is on original one and has been carried out by us in the department of physics, Government Degree college for women's karimnagar and has not been submitted either in past or in full for the award of any degree or diplama of any university eatier.



ABSTRACT

Fused Deposition Modelling (FDM), an additive manufacturing-based fabrication approach was explored for constructing marine Engineering components in three dimensional structures using polylactic acid (PLA) as filament. Here. the author procured and assembled a Fused Deposition Modelling 3D printing Machine. this project went further to use various design softwares primarily Autodesk Fusion CAD 360 to design and model the various component model created in CAD file is converted into STL while the cura software translated the design models in a language the 3D printer would understand. the results indicate that the 3D machine designed and constructed can functionally produce three-dimensional marine engineering components with varying mechanical properties. the parts to be printed will be seen as functional prototypes parts, meening that the purpose of printing them is primarily to learn about the printing process and possibilities the purpose of printing them is primarily to learn about the printing operational service parts after the project.

INTRODUCTION :-

The 3-Dimensional printing Technology is a massive technology that has gained gsustained popularity in almost all facets of human activities- aerospace, architecture, art, engineering, fashion, humanitarian aids. medicine, manufacturing, product design, research, education, etc. the most existing manufacturing technologies for manufacturing marine engineerg components such as computer numerical control (CNC) maching, create objects by starting with a large block of material and using atool to cut pieces away until you're left with the object that you want. In existing piece of material, 3-D printing starts with a blank slate and then adds meterials to it As this technolgy is gradually comming of age in the twenty first century, it becomes imperative that the marine egineers and naval architects should plunge into the development progression of this technology with vespect to maritime world devolopament it can revolutionize the characteristics of many spare part supply chains in the maritime world supply chain can be very costly.

AIM:- The aim of this project is to build a Fusion deposition Modeling 3D printing machine that can be used to produce prototypes of marine engineering compo nents.

objective :-

⇒ To build a fusion deposition modeling 3D printing machine

⇒ Installation of cura software on a computer to comunicate with the machine.

⇒ using CAD software to design a marine engineering component like a fixed pitch propeller

⇒ using the machine to print out a prototype of the marine fixed pitch propeller.

MATERIALS AND METHOD

Extensive literature and tutorials on tips and instructions on how to build 3D printing machines from scratch were found via internet on registered websites like couvsera. org, instructables. org, autodesk. com/ designacademy etc, paid tutelage and information on these internet sites provided the basic and intermediate skills to understand the couping and assembling of the various parts and components of the machine. The components of the 3D printing machine assembled in this project was purchased from this Chinese company.

Circuit diagram:-

3D printing machine's mechanical, electro-mechanical, and electronic components interactions are enabled from electrical power source. the machine opeational valtage ranges from 110V-220V power input. the power unit has rectifier unit which helps in regudating the amount of valtage required by the electvonics and electvonics mechanical devices.

uses:- 3D printing has a tremendous power as an educational tool in Banivesties this research project understant this, and intends to make sure that 3D printing and education have the chance to come together the Naval Architecture and marine Engineering (NAME) Department of Akwa Ibom state university could invest in a 3D printer that could beused to produce models to teach courses like "marine Engineering components Design", "ship Design", Computer Aided Design In Naval Architecture', 'ship Dynamics' themetiral used for manufacturing and be used as operational service parts for ship.

conclusion :- The purpose of this project was to design and construct a 3D printing machine that was capable of producing marine components. this was to help in exploring the opportunity 3D printing provides in the maritime industy, while at the same time passing time raising the awaveness and level of knoweldge about 3D print and additive manufactiv ing whthin the industry. the hope of the author is that this article will spark the imagination of readers and generate new ideas for using 3D printing in naval architecture.

Future scop :- since PLA was the meterial used inthis project for printing, reaserch could be conduct ed into using other kinds of printing meterial with much better structural integrity with aview

i) understahding the basic physics and chemistry of 3D printing processes

ii) investigate why some meterials can be used in 3D printing and others cannot

iii) Develop sustainable meterials

iv) other research option in 3D include understa nding the fundamentals of meterials, processes, and applications.

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Huang. S. Liu, P. Mokasdar A4 Hou. L. Additive manufacturing and its spedetal impact a Literature Review. the international journal of Advanced Manufacturing Technology.

2021 - 2022

Government Degree College For Women

Karimnagar

STUDENT STUDY PROJECT

MOBILE PHONE DETECTOR
3D PRINTING XEROX MISSION

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Mentored by:
Smt. P. Aruna

DECLARATION

We hereby declare that the Work presented in this study project entitled MOBILE PHONE DETECTOR is an original one and has been carried out by us in the department of physics, Government Degree college for Women, Kasimnagar and has not been submitted either in part or in full for the award of any degree or diploma of any University earlier.

Abstract :=

In this project, we have focused on the design and fabrication of a portable 3D printer of bed volume (220 x 220 x 250 mm 3) which can be constructed economically. We are using 4 axis mechanisms where 3 axes are x-y-z and the fourth axis is an extruder.

Introduction :=

A method of manufacturing known as 'Additive manufacturing' due to the fact that instead of removing material to create a part, the process adds material in successive patterns to create the desired shape.

Main areas of use:

* prototyping
* specialized parts - aerospace, military, biomedical engineering dental
* Hobbies and home use
* Future applications - medical (body parts), building and cars.

Aims & objectives

3D printing is a tool that allows people to create new things, limited only by imagination. 3D printing and modeling projects should empower students to take chances and make mistakes. students will be introduced to 3D printing and learn how to create their own print files.

Review of Literature :

3d printing is a technology in which three dimensional objects can be created using many very thin layers stacked on top of each other. While the technology is becoming more and more practical, it has been around 1984.

Research Methodology

Metal printing is considered the holy grail of additive manufacturing and 3d printing. Powder bed fusion that uses the laser as heat source, is the most widely applied metal technology that is used to print a range of metal alloys. It has found its path in the aerospace, aircraft, automotive, and the healthcare Industries.

uses :

Seek to make customers successful by understanding their needs and challenges. Treating them as our business partners.

understand that we must continually adapt to the ever changing needs of the marketplace.

We take pride in the fact that the items we create help tell your story and make your business more successful.

Conclusion

3d printing, like modeling or three dimensional scanning, is a creation tool among other things, but what most distinguishes it is its potensial to create an almost unlimited number of shapes. As with every tool, you need to master it, to take advantage of its abilities, but also know its limits.

Future Scope

An impression taken on any surface is called printing. In older times, people used a stamp to create impressions and frames to print things on any surface. as time changed we started using a computer to create images and print them.

Reference

Bryce. How a 3d printer gave a teenage bomb victim a new arm - and a reason to live.

Burke. 3d printing is the future, But Safety Comes first. In information week.

Formalbs Creates Blu-ray Based Prosumer 3d Printer.

2021-2022

GIOVERNMENT DEGREE COLLEGE FOR WOMEN. KARIMNAGAR

DEPARTMENT OF PHYSICS

STUDENT STUDY PROJECT

Title: DRONE TECHNOLOGY

⇒ Done by:-

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P. Bhavya. (190771624466086)

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⇒ Mentored by:-

Dr. P. Aruna

DECLARATION

We hereby declare that the work presented in this Study Project entitled DRONE TECHNOLOGY is an original one and has been carried out by us in the department of Physics, Government Degree College for women, Karimnagar and has not been submitted either in part or in full for the award of any degree or diploma of any University earlier.

Title : Drone technology

① Abstract : Drone (Unmanned aerial Vehicle) is an electronic device which is remote controlled based aircraft used to achieve Vertical flight with stability using kk 2.5 board and it can be used for live Streaming and also for capturing images using camera, technology advances increase the performance and reduces the cost of microcontroller so that general public can design there own drone. The aim of the project has achieved, resulting in stable and capturing images.

② Introduction :

A Drone has the potential for performing many tasks where humans cannot enter, for example high temperature and high altitude Surveillance in many industries, rescue missions. A Drone has four propellers with motors that generate the thrust for lifting the aircraft A drone is also called as the Quad copter. The basic principle behind the quad copters is, the two motors will rotate in the clockwise direction other two will rotate an anticlockwise direction allowing the aircraft to Vertically ascend. While taking flight with help a camera we can have live Streaming and capture images.

③ Aims & objectives

It is Initially used for anti-aircraft target practice, intelligence gathering and more controversially, as weapons platforms. Drones are now also used in a range of civilian roles.

The aim of the drone technology Project has achieved in stable and capturing images. project aim is for live streaming and collecting images.7.

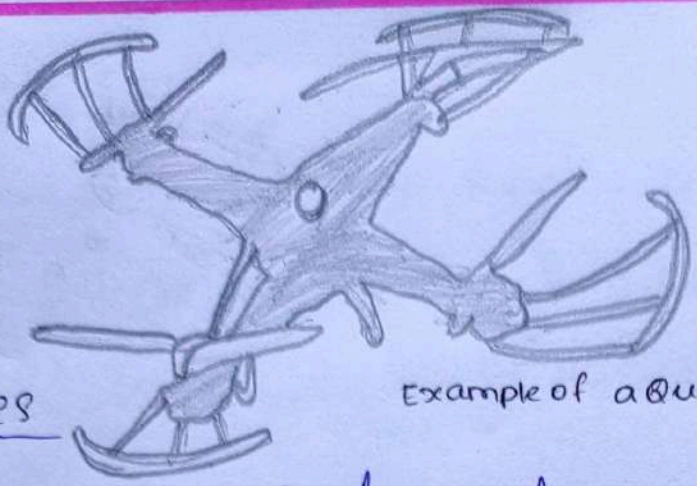
④ Review of literature:

Of the effects of Unmanned Aircraft Systems on seabirds and marine mammals. Drones and their uses the construction of the drone, the most important components of which are the frame, propeller, engine, power system, electronic control, and communication System. A drone is a type of aircraft A drone is also known as an unmanned aerial vehicle Due to the popularity of drones and the fact that many of them are easy and cheap to buy. It is generally expected that the ubiquity of drones will increase significantly in next few years. The main danger of use of a drone is the fall of drone from a great height, which can be caused by battery discharge, damage due to weather conditions. (low air temperature, rain)

⑤ Research methodology: The methodology is based on a training by human concept where the drone learns how to avoid obstacles by example cases that are provided to it and it is trained on them.

⑥ Drawing Pictures / circuit diagram

A quadcopter is a simple flying mechanism



Example of a Quadcopter Drone.

⑦ Uses

Drones are now also used in a range of civilian roles and including the following.

* Search and rescue.
* Surveillance
* traffic monitoring
* weather monitoring
* firefighting
* Personal use.
* Drone-based photography
* Videography.

⑧ conclusion

The importance of drone technology is quite clear from the above discussion. Drones have found many applications in various Sectors. There are many places where man has to risk his life for the surveillance in industries like in horrible temperature conditions unbearable by man, high attitude work. There are many people losing their lives. so the solution to this problem can be brought up by using a remote-controlled aerial vehicle for surveillance.

⑨ Future scope

* They are used to drop supplies at inaccessible locations as well as improve rescuer safety with remote assessments. Drones fly securely low to the ground and can be leveraged in post disaster - relief Operations, monitoring of catastrophe and natural disasters, as well as in emergency communications network aid.

⑩ Reference:

1) Rao B. Gopi AG, Maione R (2016) The societal impact of commercial drones. Technology in society 45: 83-90

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Department of physics
GDCW Karimnagar
Student study project

"VOICE RECOGNITION SYSTEM"

2021 - 2022

Name of the participants

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P. Lakshmi	190771644 68092
P. Anusri	190771644 68093
P. Srividhya	190771644 68094
Rimsha Afreen	190771644 68096

Name of the Supervisor

N. Sathya Narayana Reddy

Voice recognition system :-

Voice recognition systems let consumers interact with technology simply by speaking to it, enabling hands free requests, remainders and other simple tasks. Voice recognition can identify and distinguish voices using automatic speech recognition [ASR] software programs.

Voice or speaker recognition is the ability of a machine or programme to receive and interpret dictation or to understand and perform spoken commands. Voice recognition has gained prominence and use with the rise of artificial intelligence (AI) and intelligent assistants, such as Amazon's Alexa and Apple's Siri.

Voice recognition systems can identify and distinguish voices using automatic speech recognition [ASR] software programs. Somer ASR programs require user first train the program to recognize their voice for a more accurate speech-to-text conversation. Voice recognition systems evaluate a voices frequency ascent and flow of speech.

Although voice recognition and speech recognition are refer to interchangabely, They aren't same, and a critical distingction must be made. Voice recognition identyfies the speaker, be where as speech reognition evaluates what is said.

How voice recognition works :-

voice recognition software on computers requires anlog audio to be converted into digital signals, known as anlog-to-digital [A/D] conversion. For a computer to decipher a signal, it must have a digital data base of words or syllables as well as a quick process for comparing this data to signals. The speech patterns are stored on the hard drive and loaded into memory when the programme is run. A comparator checks this stored patterns against the output of the A/D converter -- an action called pattern recognition.

In practice, the size of a voice recognition programs effective vocabulary is directly related to the ram RAM capacity of the computer in which its installed. A voice recognition program runs many times faster if the entire vocabulary can be loaded into RAM compare to searching the hard drive for some of the matches. processing speed is critical, as it effects how fast the computer can search the RAM for matches.

Audio also must be processed for clarity, so some devices may filter out background noice. In some voice recognition systems, certain frequencies in the audio are emphasized so the devices can recognize a voice better.

Aim :- Remote Sensing Technology

How Remote sensing Technology used :-

Remote sensing is the process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance [typically from satellite or aircraft.] special cameras collect remotely sensed images, which help researchers "sense" things about the earth. some examples are :-

⇒ Cameras on satellites and airplanes take images of large areas on the earth's surface, allowing us to see much more than we can see when standing on the ground.

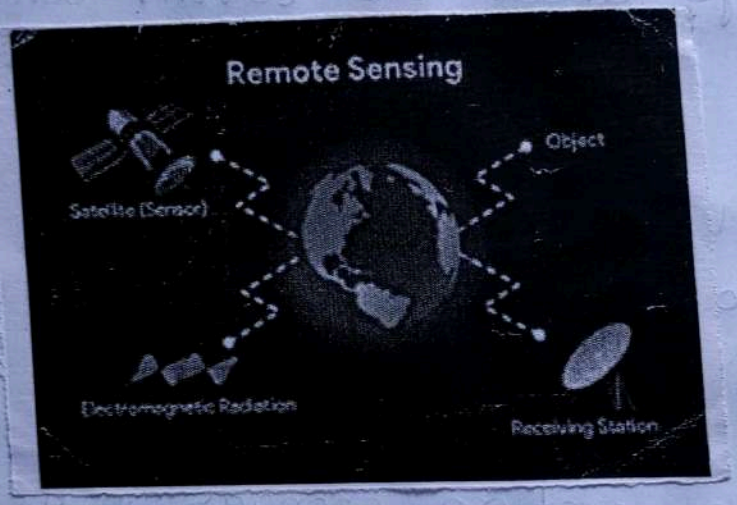
⇒ cameras on satellite can be used to make images of temperature changes in the oceans.

Some specefic uses of remotely sensed images of the earth include

⇒ Large forest fires can be maped from space, allowing rangers to see a much larger area than from the ground.

⇒ Tracking clouds to help predict the whether or watching erupting valcanoes, and help watching for dust stroms.

⇒ Tracking the growth of a city and changes in form land or forests over several years or decades.


Remote Sensing
Satellite (Sensor)
Object
Electromagnetic Radiation
Receiving Station

principles :-

Detection and discrimination of objects or surface features means detecting and recording of radiant groupenergy reflected or emitted by objects or surface material. Different objects return different amount of energy in differents bands of the electromagnetic spectrum, incident upon it. This depends on the property of material [structural, chemical and physical], surface roughness, angle of incidence, intensity, & wavelength of radiant energy.

The Remote sensing is basically a multi- disiplinary science which includes a combina -tion of various disiplanes such as optics, spectroscopy, photography, computer, electronics and telecommunication, satellite launching etc... All these technologies are integrated to act as one complete system in itself, known as Remote sensing system. There are a number of stages in a remote sensing process, and each of them is important for successful operation.

Stages in Remote sensing :-

⇒ Emission of electromagnetic radiation, or EMR (sun/self - emission).

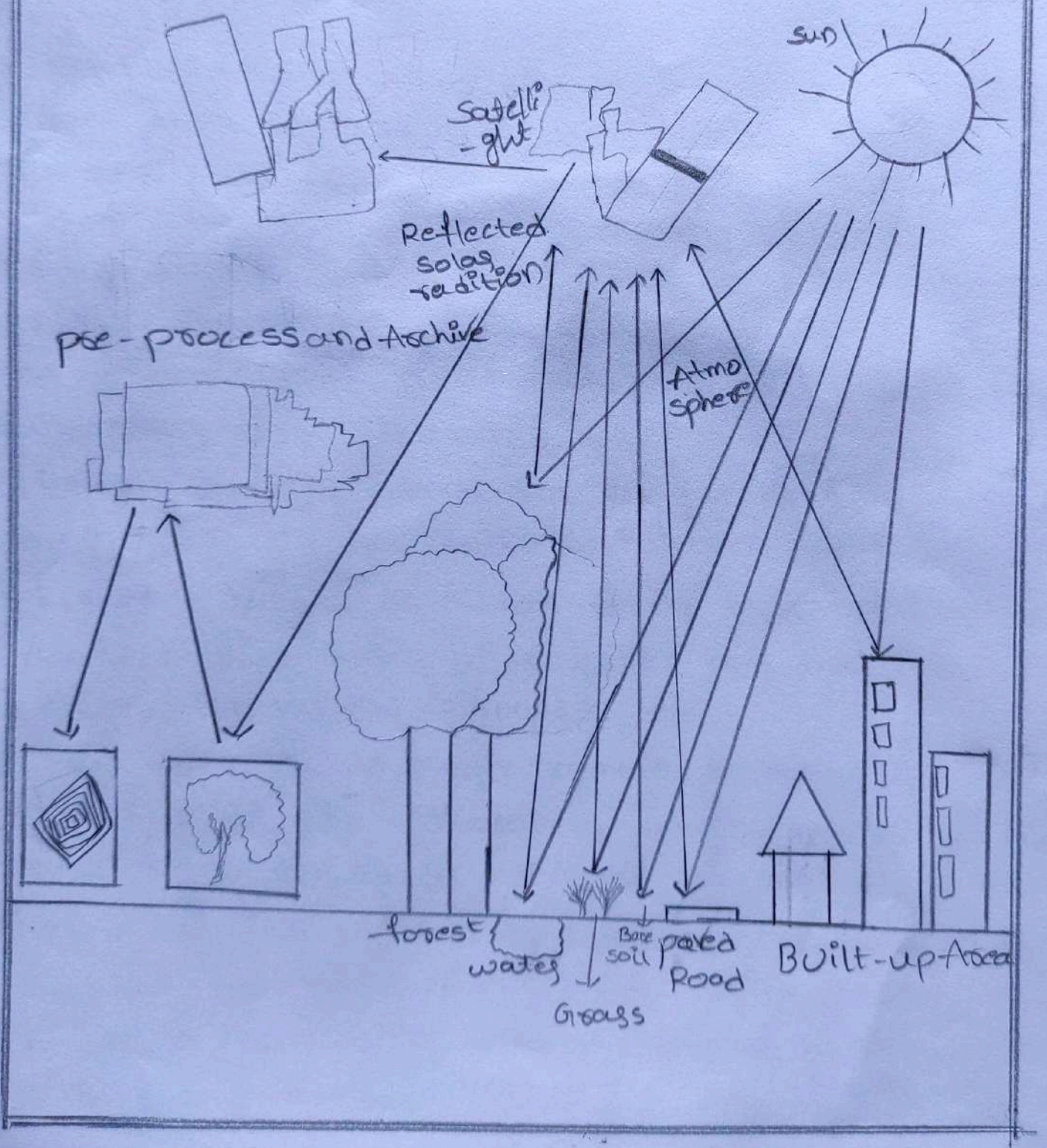
⇒ Transmission of energy from the source to the surface of the earth, as well as absorption and scattering.

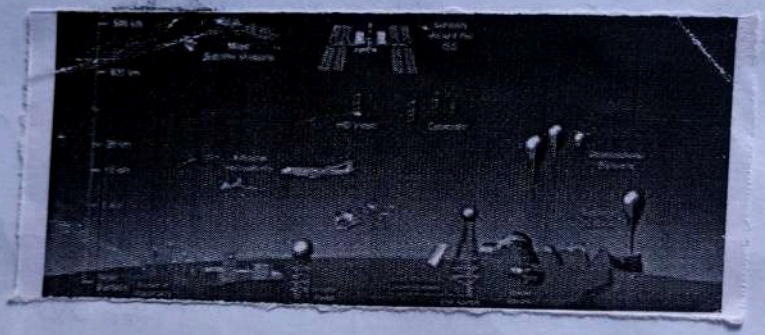
⇒ Interaction of EMR with the earth's surface: "reflection and emission".

⇒ Transmission of energy from the surface to the remote sensor.

⇒ Sensor data output.

Circuit





where we apply remote sensing technology :-

Some specific uses of remotely sensed images of the earth include : large forest fires can be maped from space, allowing rangers to see a much larger area than from the ground. Tracking clouds to help predict the whether or watching erupting valcanoes and help watching for duststromes.

Merits :-

⇒ Remote sensing allows repetative coverage which comes in handy when collecting data on dynamic themes such as water, argricultural fields and so on.

⇒ Large area coverage :- Remote sensing allows coverage of very large areas which enables regional surveys on a variety of themes and identification of extremely large features.

⇒ Remote sensing allows for easy collection of data over a variety of scales and resolutions.

⇒ Remotely sensed data can easily be processed and analized fast using a computer and the data utilized for various purposes.

⇒ Data collected through remote sensing is analized at the laboratery which minimizes the work that needs to be done on the field.

⇒ It is easier to locate floods or forest fire that has spread over a large region which makes it easier to plan a rescue mission easily and fast.

Demerits :-

⇒ Remote sensing is a farely expensive method of analysis espectially when measuring or analyzing smaller areas.

⇒ The instruments used in Remote sensing may sometimes beb-uncallibrated which may lead to uncallibrated remote sensing data.

⇒ Sometimes different phenomena being analyzed may looked the same during measurement which may lead to classification error.

⇒ The information provided by remote sensing data may not be complete and may be temporary.

⇒ Sometimes large scale engineering maps cannot be prepared from satellite data which makes remote sensing data collection incomplete.

Conclusion :-

Remote sensing technology has developed from balloon photography to aerial photography to multi-spectral satellite imaging. Radiation interaction characteristics of earth and atmosphere and in different regions of electro magnetic spectrum are very useful for identifying characterizing earth and atmospheric features.

GOVERNMET DEGREE COLLEGE FOR WOMEN

Karimnagar

STUDENT STUDY PROJECT

Department of Physics

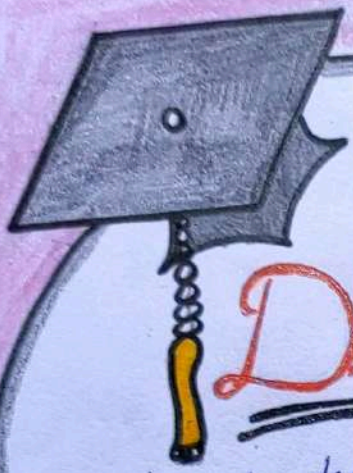
GPS TRACKING SYSTEM

Done By:

A. Sailekha
Nikhitha
Rechana
Akhila
Nikhila
Syeda Begum

MENTORED By: N. Satyanarayana Reddy.

2021-2022



DECLARATION

We here by declare that the work presented in this Study project entitled "EMI Filter" is an original one and has been carried out by us in the department of Physics, Government Degree College for women, Karimnagar and has not been Submitted either in Part or in full for the award of any degree or diploma of any University earlier.

Title :- Photo Diodes

1) Abstract :- photo Diodes convert light to electrical current. The photodiode model contains Shunt resistance, dark current, light current and Junction capacitance. photodiode on Sensitivity of to light is dependent on only wavelength.

2) Introduction :- A photodiode is a p/n- Junction diode that consume light energy to produce an electric current. They are also called a photo-sensor. photodiode are designed to work in reverse bias condition. Typical photodiode materials are Silicon, Germanium and Indium gallium arsenide. It is denoted by λ. In a photodiode reverse current is independent of reverse bias voltage. Reverse current is mostly depends on the light intensity.

unmounted and mounted options - Calibrated options Available. Wavelength Range options covering from 200nm to 2600 nm. OEM & Costoms.

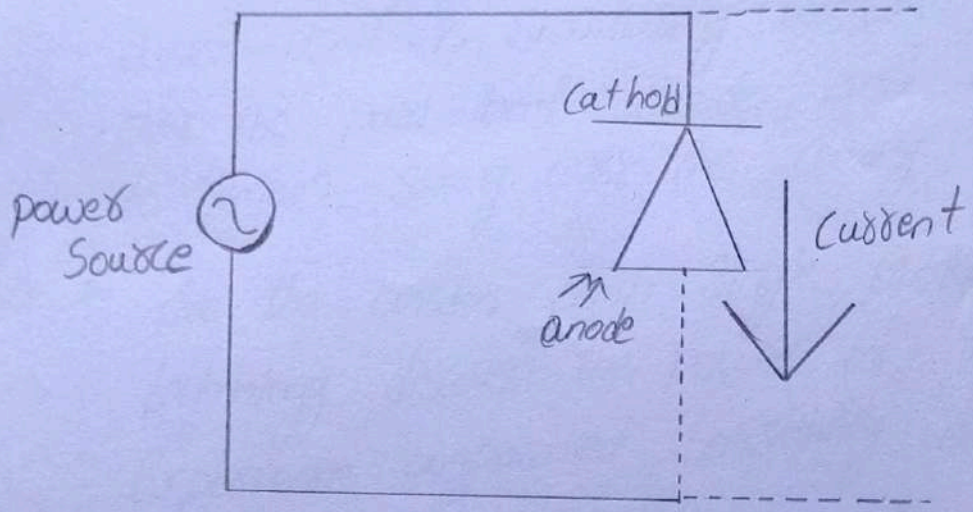
3) Aim of objective :- photodiodes are used for the exact measurement of the intensity of light in science and industry. photodiodes are faster and more complex than normal PN junction diode and hence are frequently used for lighting regulation and optical communication. It produces current when it absorbs photons. It's working principle is converts lights into current. Pin configuration anode and cathode

4) Review of literature :- A review of photodetectors for optical detection in biological application is presented. The intent is to provide an overview of the performace metrices and trade-offs among popular photodetectors in order to facilitate an easier match among the photodetector biological stimulus. and optical pathway. The characteristics and nonidealities of fluorescent and phosphorescent reporters, and the properties of optical components such as filters, lenses, and light sources, are reviewed.

5) Research methodology :- Demodulation using PIN photodiodes when the intrinsic layer is illuminated with light, photons are absorbed and

Electron - hole pairs are created which are swept by the built - in electric field. The resulting flow of current is proportional to the incident optical power.

6) Drawing Pictures / Circuit diagram :-



7) Uses :- See the unseen with Single photon imaging technology discover the power of Single photons. Experience unparalleled sensitivity and resolution with Single photon Cameras. Typical Single photon detectors are limited to detecting one photon at a time and many require time between detection events to replensih photos arriving during this interval many not be detected.

8) Conclusion :- photo diode are optelectronic devices which are diverse in type and uses and can be adapted for uses in almost any electronic device. They can be used with infrared light sources like ~~They are~~ als. LED, neon, fluorescent and

laser light.

9) Future Scope :- photodiodes market is anticipated to showcase significant growth over the forcast period owing to the widening horizons of photodiodes application. photodiode come under the umbrella of the optoelectronics segment which itself is showcasing massive potential over the past half-decade and is expected to remain strong over the coming years.

10) Reference :- See the unseen with single photon imaging technology discover the power of singal photon Experience unparalled sensitivity and resolution with singal photon cameras. The unfair advantage wide range. Innovation photo sensors.

Government Degree College for Women

Karimnagar

Department of Physics

Student study project

Title : Construction of eco-friendly cold - storage.

2021 - 2022

⇒ Done by :

K. Ravali MPC II yr.
R. Alekya MPC II yr
A. Jhansi MPC II yr
Amena Sulthana II yr MPCs
B. Divya II yr MPCs

⇒ Mentored by :

Aruna madam
[Department of physics]

DECLARATION

We here by declare that the work prevented in this study project entitled Construction of eco-friendly cold storage is an original one and has been carried out by us in the department of physics, Government Degree for Women, Karimnagar and has not been submitted either in part or infull for the award of any degree or diploma of any University earlier.

Title: Construction of eco-friendly cold storage

Abstract :

The room is constructed by using mansonry work and it is plastered with atleast 25mm thick plaster material (mortar). After curing of the plaster insulation of wall, ceilings, and floor is carried out to make it cold storage. Thermocol or expanded polystyrene, cork, etc ---- Cold storage working principle are based on cooling the rooms by transfering heat from "high temperature to low temperature."

Introduction :

Eco-friendly Cold storage systems are deployed in fresh food markets in Kenya to test the viability and sustainability of the solution. Throughout the WFP sprint programme, the team aims to achieve impact in the following areas :

* Reduction of post-harvest losses
* Income generation
* Replicable operational and business model to strengthen rural markets throughout the country.

Aims and Objectives

There are mainly 5x(6) advantages of cold storage. Cold storage is most effective space for bulk handling perishable goods, especially fruits & vegies.

* Prolonging shelf-life of fruits and vegables.
* Temperature control
* Cost-effective.
* Transportation of products.
* Frees Up space.
* Storage for chemicals.

Review of Literature

The paper analyzes research articles published on cold chain system during 2006 to 2020. This study describes about the conventional cold chain system in the light of both primary and secondary sources of data. Cold storage space is gap is estimated to 8.25 million tons and suggested to upgrade and modernise the non-functional cold stores.

Research Methodology:

$Q = m \times Cp \times (\text{Temp enter} - \text{Temp store}) / 3600$

- Q = kWh/day
- CP = Specific Heat Capacity of product (KJ/Kg.°C)
- m = the mass of new products each day (kg)
- Temp enter = the entering temperature of products (°C)
- Temp. store = the temperature within the store (°C)
- 3600 = convert from KJ to kWh.

Uses:

Cold storages are used to store fruits, vegetables, processed meat, Dairy Products, Spices, Dry fruits, jaggery, pulses, frozen foods, chemicals, and pharmaceutical products. Prolonging and preserving the shelf life of food without compromising on the nutritive. One of the methods of reserving perishable commodities in fresh and whole some state for a longer period by controlling temperature and humidity with in the storage system.

Conclusion :

India is the largest producer of fruits and vegetables in the world. Scenario but the availability of fruits and vegetables per capita is significantly low because of post harvest losses which account for about 25% to 30% of production.

Future Scope :

The cold chain isector is expected to reach a value of USD 340.3 Billion by 2025. This increasing leaning towards the cold-chain has made the sector bridge the tradition and mordern requirement gap. The cold chain is keeping up with changing trendz and expectations by innovating and employement advanced technologies.

Reference :

8 best practises in managing a cold-storage.

- Adopt Automation
- Maintain Temp. Ranges
- Minimise Heat Loss
- Use Suitable Equipment.
- Ensure Employment Safety.
- Manage Energy Demand
- Maintain Proper Records
- Keep a contingency Plan.

GOVERNMENT DEGREE COLLEGE FOR WOMEN, KARIMNAGAR

DEPARTMENT OF PHYSICS

STUDENT STUDY PROJECT

EMI FILTER

2020 - 2021

Done By :-

M. Anusha MPCs III yr

K. Shirisha MPCs III yr

J. Swathi MPCs III yr

B. Lalitha MPC III yr

S. Renuka MPCs III yr

Mentored By :-

Aruna Madam

[Department of physics]

DECLARATION

We here by declare that the work presented in this study project entitled 'EMI filter' is an original one and has been carried out by us in the department of physics, Government Degree College for women, Karimnagar and has not been submitted either in part or in full for the award of any degree or diploma of any university earlier.

Tittle : EMI Filter

Abstract:-

The demand for high-speed electronics at high frequencies is leading to increasing amounts of Electromagnetic Inference (EMI) which is in two forms - conducted and radiated. The mitigation of conducted interference is a major challenge today and the best solution is the use of EMI filters. This paper focuses on designing an EMI filter to reduce both common-mode and differential-mode noise using ASWR microwave office and MATLAB. The comparision between inductor and choke filter for reducing common-mode noise is shown in this paper and a basic π filter has been designed for reducing differential-mode noise. The use of Microwave office made the design more efficient and practical for use.

Introduction:

The use of sophisticated electronic equipment has led to repaid increase in Electromagnetic interference (EMI). EMI is in two forms- conducted and radiated, of which the term conducted emissions refers to the coupling of electromagnetic energy producted by equipment to its power cord. The conducted interference can further be classified into two types, namely common-mode and differential-mode.

Aims and Objectives:- Electromagnetic interference (EMI), Common-mode noise, Differential-mode noise, EMI filters, Choke, Insersion loss.

Research methodology

To set up the circuit for EMI filter simulation and design:

* Make sure your circuit works properly without the EMI filter.
* Copy your circuit and paste it into this schematic.
* Connect the power converter input to the EMI filter output.
* From the Elements library, choose the LISN block based on your requirement, and replace the one in the schematic.
* Connect the voltage source to the LISN block input.
* Connect the common-mode capacitor labels $C_{m1}, C_{m2}, \ldots$ to nodes in the circuit, and define the common-mode capacitances.

Uses:-

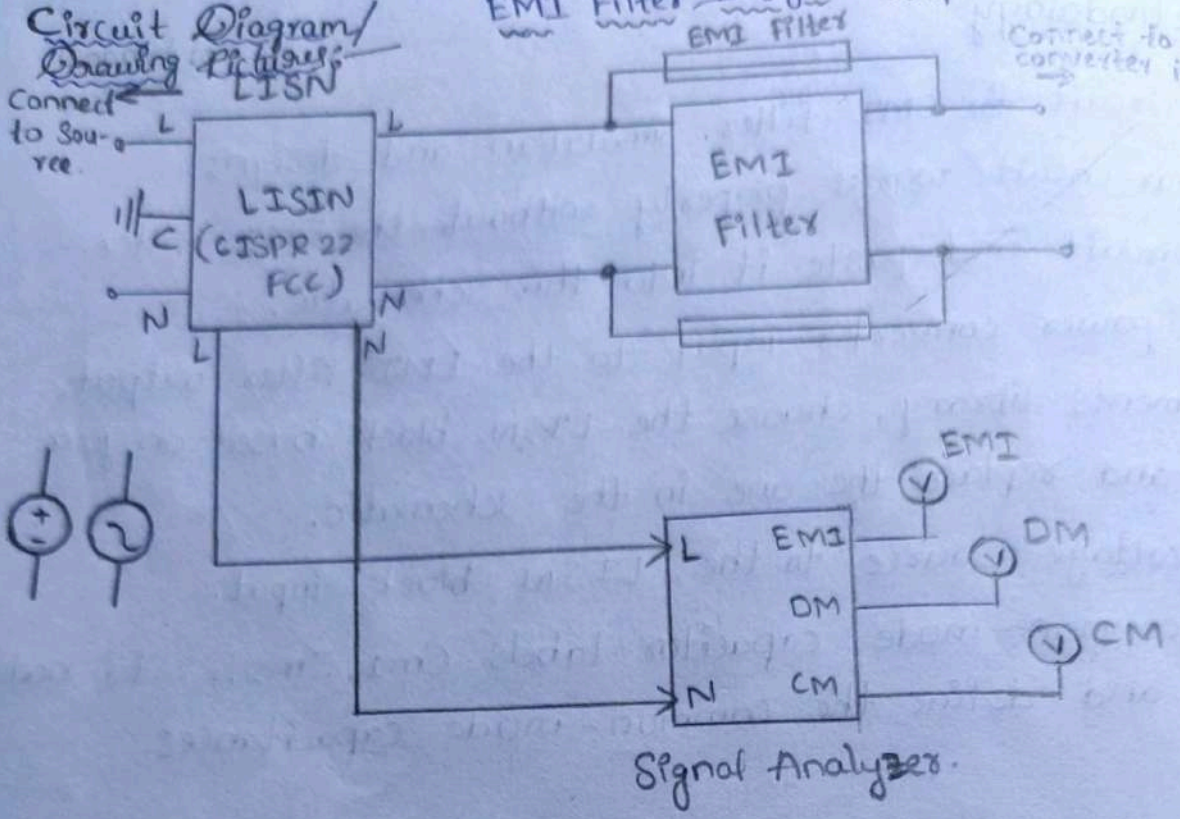
EMI filters protect sensitive electronics from damage caused by high levels of radiation emitted by other electronic equipment. They extract unwanted current conducted through wiring or cables that can interfere with signal and power lines, which allowing desirable currents to flow without restriction.

Conclusion:-

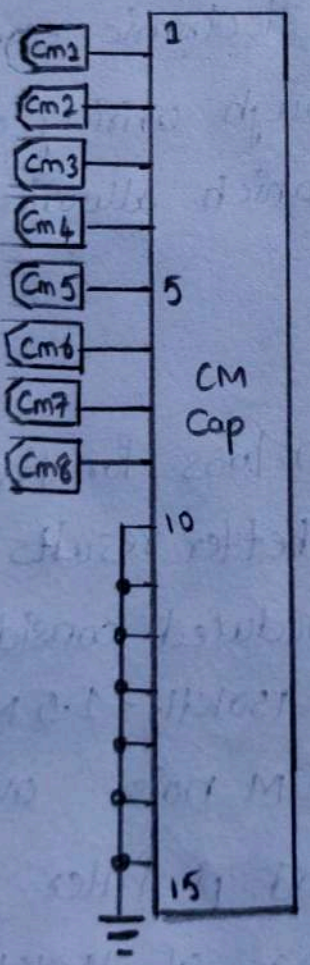
The Inductor filter produced desired insertion loss for frequencies from $300kH_z$-$1.5MH_z$, but the choke filter produced better results than the inductor filter and also the obtained noise reduced considerably over the entire considered frequency range from $150kH_z$-$1.5\,MH_z$. The π filter is a good option for reducing the DM noise over the frequencies from $150kH_z$-$750kH_z$. Hence, choke and pi filter are good EMI solutions over the conducted emissions range of $150kH_z$-$1.5MH_z$.

EMI Filter Design Template.

Circuit Diagram/ Drawing Picture:



Common-Mode Capacitors



Reference:

(1) Klaus Raggl, Thomas Nussbaumer, Johann W. Kolar "Guidance for a simplified Differential-Mode EMI Filter Design" IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, VOL. 57, NO. 3 MARCH 2010.

(2) P. Ram Mohan, M. Vijaya kumar, O.V. Raghava Reddy, "a novel topology of EMI filter to suppress common mode and differential mode noises of electromagnetic interference in switching mode power supplies", VOL. 2, NO. 4, AUGUST 2007 ISSN 1819-6608 ARPN Journal of Engineering and Applied Sciences.

(3) Jukka-Pekka Sjoroos 'Conducted EMI filter design for SMPS", Helsinki University of Technology, Power Electronics Laboratory.

(4) EMC Lab Info: www.emclabinfo.com.

(5) Richard Lee Ozenbaugh, 2001, EMI Filter Design

(6) Maria Carmela Di Piazza, Member, IEEE TRANSACTIONS ON ELECTROMAGNETIC COMPATIBILITY, VOL. 51. NO. 3 AUGUST 2009.

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(8) IMPACT - module 5, "conducted EMI/EMC", Indian Institute of Technology, new Delhi.

(9) M.L. Heldwein, T. Nussbaumer; and J.W. Kolar, Differential Mode EMC Input Filter Design for Three-Phase AC-DC-AC Sparse Matrix PWM. Converters. Swiss Federal Institute of Technology (ETH) Zurich Power Electronic Systems Laboratory, ETH Zentrum/ETL H23, Physikstrasse 3, CH-8092 Zurich, SWITZERLAND.

(10) " Limits and methods of measurment", Information technology equipment - Radio distribationce characteristics, 1998.

(11) CISPR 16 Specialization for radio interference and immunity measuring apparatus and methods, Int. Electrotech. Comm, Geneva, Switzerland, Nov. 2003.

(12) CISPR 22, Information technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurment, Int. Electrotech. Comm., Nov 1997.

(13) Vattipon Tarateeraseth, Student Member, IEEE, Ekye Yak See, Senior Member, IEEE, Flavio G. Canavero, Fellow, IEEE, and Richard Weng-Yew chang, Member, IEEE " Systematic Electromagnetic Interference Filter Design Based on Information From In-Circuit Impedance Measurments", IEEE TRANSACTIONS ON ELECTROMAGNETIC COMPATIBILITY, VOL. 52 NO.3. August 2010.

(11)

Government Degree college for Women Karimnagar

Department of physics students study project

A.C and D.C Converters

2021-2022

Done by :

V. Meghana (190771644681105)

Srivani (190771644681116)

Shivani (190771644681117)

Samatha (190771644681118)

Mentored by :

N. Satyanarayana reddy.

DECLARATION

We hereby declare that the work presented in this study project entitled MOBILE PHONE DETECTOR is an original and has been carried out by us in the department of physics. Govt Degree college for women, karimna-gar and has not been submitted either in part or in full for the award of any degree or diploma of any University earlier.

AC to DC Convetor

Abstract : Modern electrical equipment has a low DC output vollage. The attermating current utility supply must be convetored and stepped down to sufficiant DC vollage previsiouly convertorary of the ware enormous in size and cost a lot of money a the discovery of the switch mode power supply anabled a significant dicrees in size and cost. This aim is archived via increasing power density, which in accomplished by reducing the size of passive l energy storage components such as inductors, capacitors, and transformer.

Introduction :- At present time there is an increasing demand for efficient systems every time we communicate approximately electricity consumptions

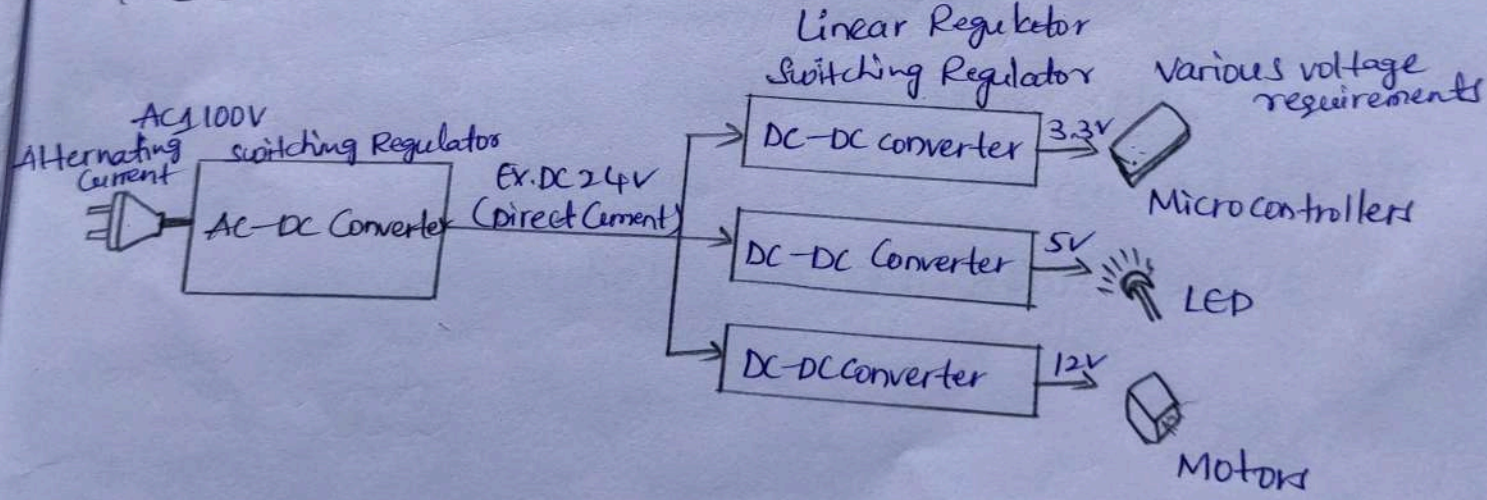
and so as to keep up with those needs engineers were coming forward growing efficient conversion strategies and additionally been capable of design circuits with excessive performance.

Objectives :-

* Instead of running the POP analysis to find the steady-state operating point, a special transient function. Find AC steady, state/Test objective, is placed in the objective column to generate a SIMPLIS initialization files.

* After the Find AC steady state simulation completes. the steady-state operating point is saved as an.

Diagrams/pictures :-



Results :=

Ac source where Ac voltage is given 220V and Freqeuncy is 50HZ. To make electrons pass only in one direction we need diodes. We can see that Ac voltage come from the transformer as a sinusoidal wave, after that rectifier flips the negative half cycle into positive.

Conclusion :=

AC to DC convert by using full bridge rectifier with different combination of load and observed the DC Outcomes through simulations. we also studied about different types and application of AC- DC converters, keeping our main focus on single phase with full bridge rectifier Converter circuits.

we gained vast knowledge about PROTEUS software during the project, where we carried out all our circuit construction and simulation respectively.

Department of Physics

GDCW, Karimnagar

Student Study Project

Rope way Model

2021-2022

Name of the Participants:

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Name of the Supervisor:

V. Sathya Narayana Reddy Sir.

Rope way model

A ropeway is based on the Principle of continuous movement. As such, it is a closed system which does not require energy to move its dead weight. Ropeways only require energy to overcome mechanical friction and to move uneven payloads on the uphill / downhill sides.

This means there are no losses of braking energy from carriers travelling downhill as found, for example, in case of buses. Furthermore, ropeway/ cable liners do not produce local emissions of pollutants during operation! The ropeway is a means of public transport which can be optimally linked to existing transport systems. Particularly in cases where there are barriers to overcome (buildings, waterways, roads or railways lines), ropeways can cost many times less than ground-based transport systems requiring expensive bridges or tunnels to circumvent costs where ropeways score, but also in terms of energy consumption and personnel costs. With very limited staffing exclusively in the stations,

ropeways can carry up to 10,000 passengers an hour. the equivalent of 100 buses.

Use of ropeway :

Ropeways are mature, efficient and comfortable means of transport that are used mainly in the areas of winter sports and tourism.

Importance of Ropeway :

Ropeways are mature, efficient and comfortable means of transport that are used mainly in the areas of winter sports and tourism. ropeways are also gaining in importance as a means of transport in urban areas. Ropeways help to connect hilly regions and regions of rugged terrain. Ropeways help to connect places and transport goods and passengers in regions where there are no roadways or railways. Ropeways in hilly regions are of great attraction to tourists.

Benefits of Ropeways :-

* Economical mode of transportation:
* Faster mode of transportation:
* Environmentally friendly:
* Last mile connectivity:
* Ideal for difficult terrain:
* Economy:
* Transport of different materials.
* Ability to handle large slopes:

disadvantages of Ropeway :-

Ropeways were portable and could be set up quickly and easily. even steep hills or mountains could be traversed with ease with the use of ropeways, places that railroads and pack animals would not be able to climb. The only disadvantages of ropeways were electrical storms and high winds.

About the recent ropeway accident:

The roleway is situated around 20km from the famous baba baidyanath shiv temple in Deogh- as it is India's highest vertical ropeway and is around 766-metres-long. Further, the ropeway is located in densely forested valleys surrounded by hills.

A pulley is one of the cable cars got stuck resulting in the incident. The trolleys were hanging mid-air at a height of nearly 100 feet- The Trikut hills are 392 meters high, making rescue operations difficult except by helicop- ters. There is a service rope to rescue people if trolleys get stuck. However, in this incident the service rope could not be used. This is because the operational rope sagged owing to the weight of the stranded cable cars, thus increasing the gap between the service and operational rope.

Department of physics

GDCW, Karimnagar

Student Study Project

"NANOTECHNOLOGY"

2021-2022

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Name of the Supervision :-

SMT:- P. Aruna

NANOTECHNOLOGY

Nanotechnology refers to the branch of science and engineering devoted to designing, producing and using structures devices and systems by manipulating atoms and molecules at nanoscale, i.e. having one or more dimensions of the order of 100 nanometers.

The applications of nanotechnology can be very beneficial and have the potential to make a significant impact on society. Nanotechnology has already been embraced by industrial sectors, such as information and communications sectors but it also used in food technology, energy technology, as well as in some medical products and medicines. Nanometers may also offer new opportunities for the reduction of environmental pollution.

Therefore the normal human defence mechanisms associated with immune and inflamm-atory systems well not be able to respond adequately to these nanotechnology.

Uses :-

Nanotechnology has already been embraced by industrial sectors, such as the information and communications sectors, but is also used in food technology, energy technology, as well as in some medical products and medicines. Nanomaterials may also offer new opportunities for the reduction of environmental pollution.

Nanotechnology is improving the efficiency of fuel production from raw petroleum materials through better catalysis. It is also enabling reduced fuel consumption in vechiles and power plants through higher efficiency combustion and decreased friction.

The average person already encounters nanotechnology in a range of everyday consumer products - nanoparticles of silver are used to deliver antimicrobial properties in hand washes, bandages, and socks, and zinc or titanium nanoparticles are the active UV-protective elements in modern sunscreens.

Advantages :-

⇒ Controlled release of active substances and increased bioavailability of entrapped bioactive

⇒ Better stability of unstable active ingredients and excellent biocompatibility.

⇒ Occlusive property increases skin hydration and hence increased penetration of drug

⇒ Easy large scale upgradability.

⇒ Application versatility

⇒ Nanotechnology can acutually revolutionize a lot of electronic products, productcenture and applications.

⇒ Nanotechnology can also benefit the energy sector.

⇒ In medical world nanotechnology is also seen as a boon since these can help with creating what is called smart drugs.

Disadvantages of nano technology.

Negative Environmental Impact.

* Decreased in Employment.
* Economic Imbalance.
* Health problems.
* costly.
* practical problems.
* Negative Effects of Health problem.
* short shelf life.
* More expensive.
* carcinogenesis.
* Toxicity
* Complex synethetic route.
* use only for lipophilic drugs.
* cellular toxicity.
* low drug - low capacity.
* safety is unclear in vivo.
* Temperature stability
* unemployment may prevail.

Department of physics

GDCW, Karimnagar

Student study project

Photo Diodes

2021 - 2022

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N. Sathynarayana reddy

Introduction :-

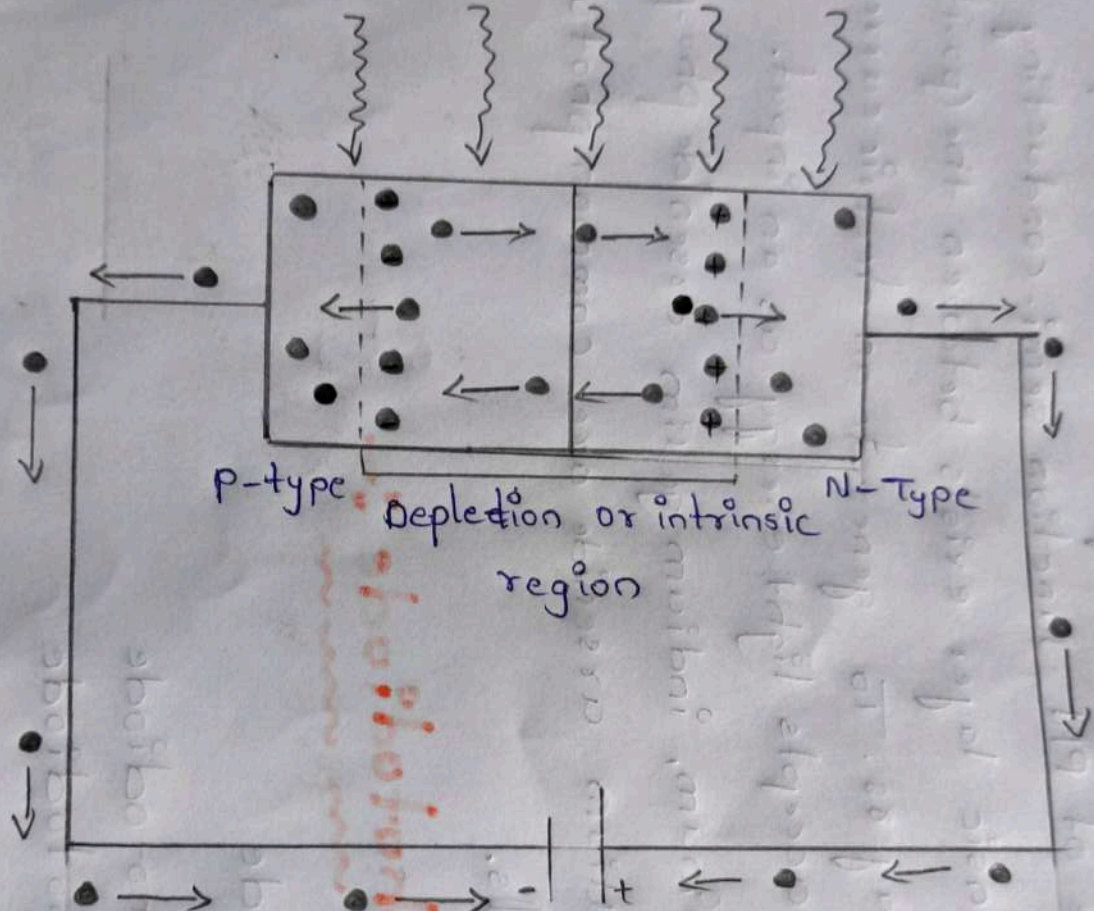
It is a type of light sensor that transforms light into electrical energy (voltage or current). A photo diode is a type of PN Junction semi-conducting device. An intrinsic layer exists between the (positive) and (negative) layers. To generate an electric current the photodiode accepts light energy as an input. Sillicon, germaninum, indium gallim arsenide phosphide and indium gallium arsenide are common photo diode materials.

Types of photodiode :-

- pin photodiode
- Avalanche photodiode
- Schottky photodiode
- PN photodiode

Avalanche photodiode :-

Avalanche photodiode is a type of diode that uses the avalanche mechanism to achive better performance than other types of diodes.


P-type
Depletion or intrinsic region
N-Type
-
+

PN photodiode :- The PN photodiode was the first to be created. Although is performance is not be superior to that of other varieties, it is currently used in a variety of applications. The photodetection occurs mostly in the diode's depletion zone. Although this diode is compact, it has low sensitivity when compared to others. For additional information on the PN diode, please see this page.

photovoltaic Mode :-

⇒ This mode is also known as zero bass mode.

⇒ In which a voltage is produced by the lightened photodiode.

⇒ It gives a very small dynamic range & non-linear necessity of the voltage formed.

photodiode :-

* The photodiode is a p-n junction under reverse bias.

* - Exposing a semiconductor to light can generate electron-hole pairs, which increases the number of free carriers and its conductivity.

* Separation is left open circuit → voltage detected
→ photovoltaic effect
* If device is short-circuited (or under reverse bias)
→ photoconductive mode.

Working of photodiode :-

* photodiodes are of two types PN and PIN.
* At PN junction there will be concentration gradient that causes electrons to diffuse into p-type region and holes into n-types region. This diffusion results in an opposing electric potential, often refferred to as an Depletion region.
* Any photon absorbed in the depletion region causes moment of charge carriers.

New photocatalysts:-

Modifying titania remains a primary research focus to improve its intrinsic photoactivity by doping to extend the photoactive zone. Nanoparticu -late titania is photoactive zone. becoming more used specifically since it can be immobilized on support systems [mahlambi et al., 2015] for use in water treatment.

surface modification of hierarchical porous photocatalysts :-

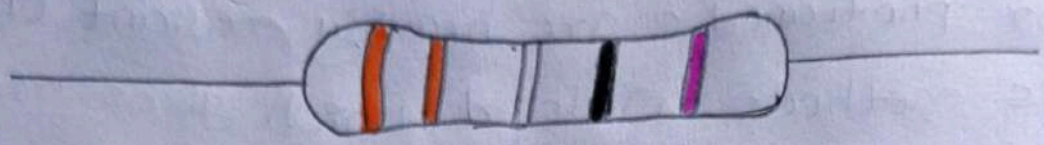
In essence, heterogeneous photocatalysis is surface reaction. Accordingly, suitable surface modification is crucial for improving the photoactivity. To data, a variety of functional modification strategies, such as loading suitable cocatalysis, exposing reactive facets, introducing Defects / heteroatoms, and Adding photosensitizers have been used to further enhance the photocatalytic performance of photocatalysis with hierarchical nanostructures.

Morphology contral

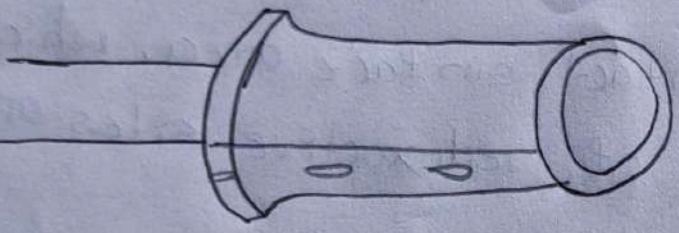
As previously established, the photoactivity of semiconductor photoanodes are heavily reliant on the synthesis methods employed, which gives rise to Different properties. Nanostructured WO_3 photoanodes [21, 41] such as nanowires, nanoflakes, nanotubes, nanobelts, and nanoplatelets provide a higher interfacial contact surface area, which chhances the density of redoxactive sites and enhances light harversting.

Introduction :-

Various methods for assessing and characterizing the photoactivity of mesoporous titania based materials have been developed. most of these techniques study the photobleaching process of dye molecules [E.g. methylene blue and rhodamine 6G] by measuring the decrease in concentration of the dye in function of time by applying UV-Vis analysis measured at only 1 wavelength, that of maximum absorption of the original dye.

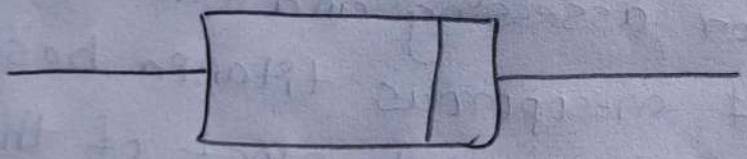


Resistor

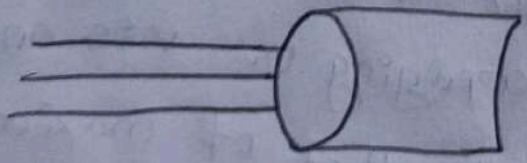


Capacitor

Introduction:



Diode



Transistor

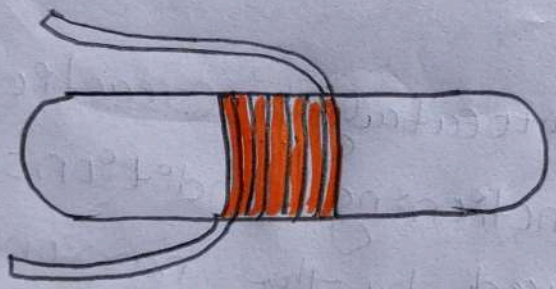
Fundamental Processes and Applications

Nanoparticles - based on metals [titanate]

They have attracted extensive interest of researchers. various studies were carried out and reported that because of their unique physicochemical characterization, they hold opposing views, from the properties of their respective bulk materials.

photocatalyst modification and Doping

Whereas TiO_2 photocatalytic creactions occur under ambient functioning conditions, photoactivity is usually reserved by the narrow wavelength spectrum for catalyst photonic activation. The higher end of the UV spectrum needed for catalyst activation is usually accompanied by high operating costs. A nice-looking alternative is to apply the immense abundance of outdoor solar irradiation for catalyst activation in a suitably planned photoreact-or system. In order to extend the photoresponse of a TiO_2 catalyst for the solar spectrum.



Inductor

Department of physics

Govt Degree college for Womens - karimnagar

Student study project

AUTOMATIC STREET LIGHT

2021-2022

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Name of the Supervisor :-

N. Sathyanarayana Reddy.

utomatic Street light:-

n introduction:-

Needs no manual operation for switching ON and OFF. when there is a need f light it automatically switches ON. hen darkness rises to a certain level hen sensor circuit gets activated and witches ON and when there is other ource of light i.e daytime, the street ight gets OFF. The sensitiveness of the treet light can also be adjusted. In our roject we have used four L.E.D as a symbol of street lamp, but for high power Switching one can connect Relay (electro-magnetic Switch) at the output of pin 3 of I.C 555 that will make easy to turn ON/OFF any electrical appliances that are connected through relay.

rinciple :=

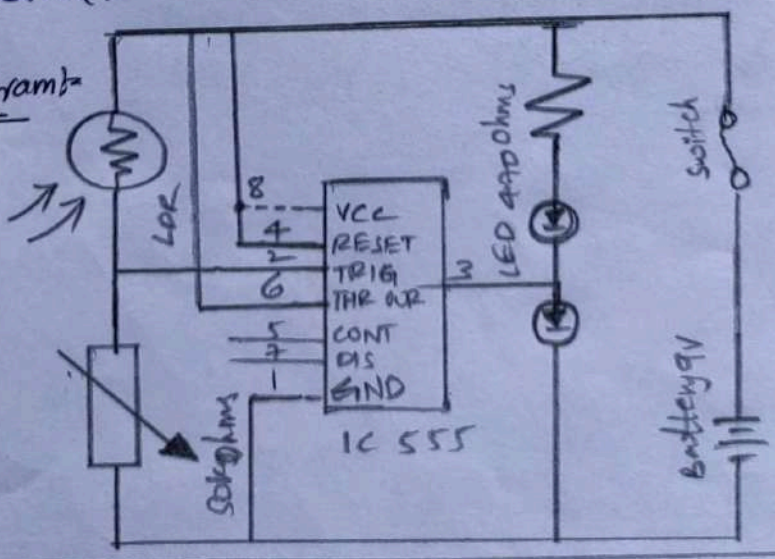
This circuit uses a popular timer I.C 555. I.C555 s connected as comparator with pin-6 connected with positive rail, the output goes high(1) when the trigger pin 2 is at lower then 1/3rd level of the supply voltage. Conversely the output goes low (0) when it is above 1/3rd level. so small change in the voltage of pin-2 is enough to change in the voltage level of output (Pin-3) from 1 to 0 and 0 to 1. The output has only two states high and low and can not remain in any intermediate stage. It is powered by a 6V battery for portable use. The circuit is economic in power consumption. Pin 4, 6 and 8 is connected to the positive supply and pin 1 is grounded. To detect the present of an object we have used LDR and a source of light.

LDR is a special type of resistance whose value depends on the brightness of the light which is falling on it. It has resistance of about 1 mega ohm when it total darkness. but a resistance of

it only about 5k ohms when brightness illuminated. t responds to a large part of light spectrum. ve have made a potential divider circuit with LDR nd 100k variable resistance connected in series. ve know that voltage is directly proportional to conductance so more voltage we will get from this divider when LDR is getting light and low voltage in darkness. This divided voltage is given to pin 2 of c 555. variable resistance is so adjusted that it crosses potential of 1/3rd in brightness and fall below 1/3rd in darkness.

Sensitiveness can be adjusted by this variable resistance. As soon as LDR gets dark the voltage of pin 2 drops 1/3rd of the supply voltage and pin 3 gets high and LED or buzzer which is connected to the output gets activated.

Circuit Diagram:-



omponent used :-

1v Battery with strip
witch
-.D.R (Light Depending Resistance)
2. 6 NE555 with Base
-.E.D (Light Emitting Diode) 5 pieces
: If using white color then 4 pcs)
variable Resistance of 47 kΩ
).C.B (printed circuit Board of 555
or vero board.

COMPONENTS :-

a) Battery :- For 9v power supply we can use 6pcs dry cell or 6F22 9v single piece battery.

b) switch :- Any general purpose switch can be used. switch is used as circuit breaker.

c) L.D.R :- (Light Depending Resistance)
It is a special type of resistance whose value depends on the brightness of light which is falling on it.

L.E.D :-

A diode is a component that only allows electricity flow one way. It can be thought as a sort of one way. can be thought as a sort of one way street for lectrons. Because of this characterstics, diode are sed to transform or rectify Ac voltage into a Dc ltage. Diodes have two cathode is the end on the hematic with the point of the triangle pointing points ward that cathode. The anode, is of course, the opposite nd. current flows from the anode to the cathode.

]Variable resistance :-

Resistors are one of the most common electronic omponents. A resistor is a device that limits, or resists urrent. The current limiting ability or resistance is neasured in ohms, represented by the Greek Symbol omega. Variable resistors are resistors that have a Variable resistance. You adjust the resistance by turning a shaft. This shaft moves a wiper across the actual resistor element. By changing the amounts of resistor between the wiper connection and the Connection (s) to the resistor element.

orking :=

When light falls on the LDR then its resistance decreases when results in increase of the voltage at pin 2 of the IC 555. IC 555 has got comparator inbuilt, which compares between the input voltage from pin 2 and 1/3rd of the power supply voltage. When input falls below 1/3rd then output is set high otherwise it is set low. since in brightness, input voltage rises so we obtain no positive voltage at output of pin 3 to drive relay or LED, besides in poor light condition we get output to energize.

Precautions :=

a] Use a sensitive LDR. You can test it using a multimeter.

b] I.C should not be heated too much while soldering. Excess heat can destroy it.

c] Opposite polarity of battery can destroy I.C so please check the polarity before switching ON the circuit.

d] Each component should be soldered neat and clean. We should check for any soldered.

GOVERNMENT DEGREE COLLEGE FOR WOMEN, KARIMNAGAR.

DEPARTMENT OF PHYSICS.

STUDENT STUDY PROJECT.

Tittle:- SOLAR CELLS.

⇒Done by:-

B. Srilakshmi. (190771644680124)
Srivani. (190771644680013)
Ramya. (190771644680015)
Ch. Achuthra. (190771644680016)
prayalika. (190771644680017).

⇒Mentored by:-

N. Satkyanaryana Reddy

DECLARATION.

We hereby declare that the work presented in this study project entitled Solar Cells is an original one and has been carried out by us in the department of physics, Government Degree for Women, Karimnagar and has not been submitted either in part or in full for the award of any degree or diploma of any University earlier.

Tittle:- SOLAR CELLS

1) Abstract:-

A solar cell, or photovoltaic cell, is an electronic device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical and chemical phenomenon. it is a form of photodectic cell, defined as a device whose electrical characteristics, such as current, voltage or resistance, vary when exposed to light. Individual solar cells devices are often the electrical building blocks of photovoltaic modules, known colloquially as solar panels. the common single junction silicon solar cell can produce a maximum open-circuit voltage of approximately 0.5 volts to 0.6 volts.

2) Introduction:-

Solar cells are semi-conductor devices which use sunlight to produce electricity. they are manfactured and processed in a similar fashion as computer memory chips. Solar cells are peimiarily made up of silicon which absorbs the photons emitted

by sun's rays. The process was discovered as early as 1839. Silicon wafers are doped and the resulting silicon disk's are given an anti-reflective coating. This coating protects sunlight loss. The solar cells are then encapsulated and placed in an aluminium frame. The process requires continuous monitoring to ensure quality control over a period of time.

3) Aims & Objectives:-

Solar energy can be used for many of the everyday needs, including electrical power, heating and cooling, water heating, industrial process heat, cooking, transportation, fuel-production and even environmental clean-up.

solar cell, also called photovoltaic cell, any device that directly converts the energy of light into electrical energy through the photovoltaic effect.

- reduce carbon footprint.
- to build and maintain a cleaner, energy-efficient world.
- reduce your electricity bills.
- less reliability on DISCOM to supply us electricity.

4) Review of Literature :-

As energy demands is increasing day by day. Most of the techniques and technology is going to improved to fulfill energy needs. Scientist and researchers are in struggle to utilize the solar energy. as the energy from sun deliver to earth in one hour is equal to energy consumed by people in one year. So different types of solar cells are going to introduced, and lot of improvements and modification is going on in this field.

5) Uses :-

Solar cells, directly transform energy into directly from the sun. renewable energy is provided by solar cells, and they are durable, compact and low-maintenance. in remote environments, solar cells often generate electricity powering machines far from the closest electrical outlet.

- electric fences.
- water treatment.
- satellites.
- they are good for devices that do not consume too much energy.
- monocrystalline solar panels.

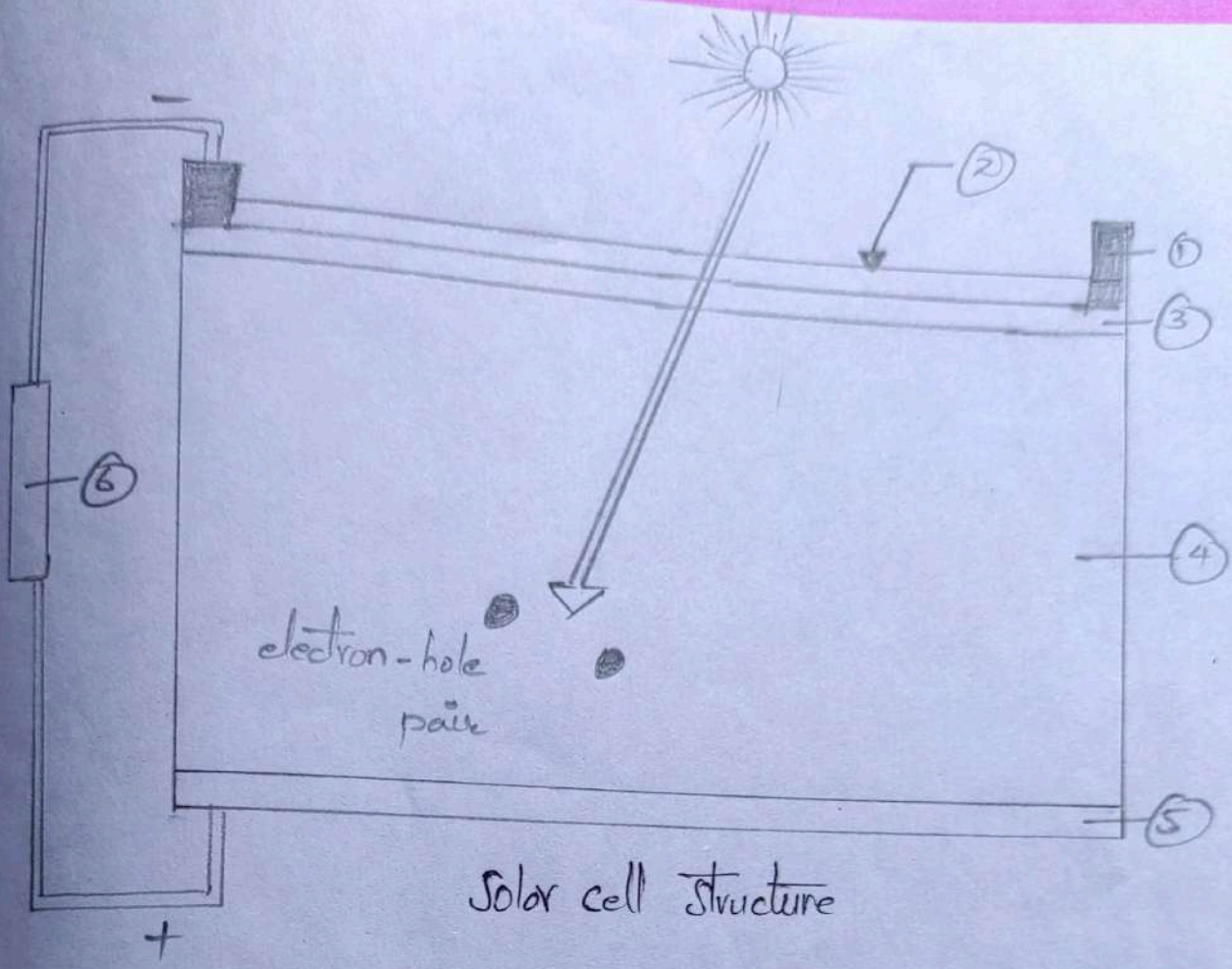
6) Conclusions:-

Solar cells technology is evolving through three generations, but first, comprising cells made from relatively thick (more than 180 μm thick) wafers to of monocrystalline or multicrystalline silicon, continues to dominate the industry.

7) future Scope:-

photovoltaics (PV) and concentrating solar power are likely to grow rapidly the National Renewable Energy Laboratory (NREL) projects solar energy could provide 45% of the electricity in the United States by 2050. if the energy system is fully decarbonized and technology costs are projected to continue to decline.

8) drawing diagram / circuit diagrams:-



Solar cell structure

1:- front contact.

2:- antireflection coating

3:- emitter.

4:- base

5:- rear contact.

6:- external load.

Department of physics

GDW . Karimnagar

Student Study project

"Glasiers"

2021 - 2022

Name of the participants

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3. D. charmi	190771644680 20
4. D. Sabana	190771644680 21
5. pranHha	190771644680 22

Name of the supervisor :-

P. Aruna

Glacier

A glacier is a persistent body of dense ice that is constantly moving under its own weight. A glacier forms where the accumulation of snow exceeds its ablation over many years, often centuries. It acquires distinguishing features, such as crevasses and seracs, as it slowly flows and deforms under stresses induced by its weight. As it moves, it abrades rock and debris from its substrate to create landforms such as cirques, moraines, or fjords. Although a glacier may flow into a body of water, it forms only on land is distinct from the much tinner sea ice and lake ice that form on the surface of bodies of water. Air bubbles, which give a white color to ice, are squeezed out by pressure increasing the created ice's density.

The accumulation zone can be subdivided based on its melt conditions.

⇒ The dry snow zone is a region where no melt occurs, even in the summer, and the snowpack remains dry.

⇒ The percolation zone is an area with some surface melt, causing meltwater to percolate into the snowpack. This zone is often marked by refrozen ice lenses, glands, and layers. The snowpack also never reaches the melting point.

⇒ Near the equilibrium line on some glaciers, a superimposed ice zone develops. This zone is where meltwater refreezes as a cold layer in the glacier, forming a continuous mass of ice.

⇒ The wet snow zone is the region where all of the snow deposited since the end of the previous summer has been raised to 0°C.

classification by size, shape and behavior.

Glaciers are categorized by their morphology, thermal characteristics, and behavior. Alpine glaciers form on the crests and slopes of mountains. A glacier that fills a valley is called a valley glacier, or alternatively, an alpine glcier ice astride a mountain, or volcano is termed an ice cap or ice field. Ice caps have an area less than 50,000 km^2 by definition.

Tidewater glaciers are glaciers that terminate in the sea, including most glaciers flowing from Greenland, Antarctica, Baffin, Devon, and Ellesmere Islands in Canada, Southeast Alaska, and the Northern and Southern Patagonian Ice Fields.

As the ice reaches the sea, pieces break off or calve, forming icebergs, most tidewater glaciers calve, for above sea level, which often results in a tremendous impact as the iceberg strikes the waters. Tidewater glaciers undergo centuries-long cycles of advance and retreat that are much less affected by climate change than other glaciers.

Classification by thermal state :-

Thermally, a temperate glacier is at a melting point throughout the year, from its surface to its base. The ice of a Polar glacier is always below the freezing threshold from the surface to its base, although the surface snowpack may experience seasonal melting. A subPolar glacier includes both temperate and Polar ice, depending on the depth beneath the surface and position along the length of the glacier.

In a similar way, the thermal regime of a glacier is often described by its basal temperature. A cold-based glacier is below freezing at the ice-ground interface and is thus frozen to the underlying substrate. A warm-based glacier is above or at freezing at the interface and is able to slide at this contact. This contrast is thought to a effectively erode its bed, as sliding ice promotes plucking at rock from the surface below. Glaciers which are Partly cold-based and Partly warm-based are known as Polythermal.

Department of physics

GDCW Karimnagar

Student study Project

Origin of Quantum Mechanics

2021 - 2022

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Name of the Supervisor :-

smt P. Aruna

Aim :- Origin of Quantum Mechanics.

what is origin of Quantum Mechanics ?

Building on de Broglie's approach, modern quantum Mechanics was born in 1925, when the German physicists werner Heisenberg, Max Born and pascual Jordan developed matrix mechanics and the Austrian physicist Erwin Schrodinger invented wave mechanics and the non-relativistic schrodinger equation as an approximation of...

History of quantum Mechanics :-

The history of quantum mechanics is a fundamental part of the history of modern physics. Quantum mechanics history as it interlaces with the history of quantum chemistry began essentially with a number of different scientific discoveries.

The 1838 discovery of cathode rays by Michael Faraday the 1859-60 winter statement of the black body radiation problem by Gustav kirchhoff the 1859-60) 1877 Suggestion by Ludwing Boltzmann that the energy state of a physical system could be discrete, the discovery of the photo electric effect by Heinrich Hertz in 1887.

$$E = h\nu,$$

where h is a numerical value is called planks Constant.

what are the properties of quantum Mechanics :=

The main properties of quantum mechanics are the quantification of energy.

The wave particle duality, the uncertainty principle and the correspondence principle.

Connection to Big idea about energy.

electronic transition in atoms corresponds to a quantized energy.

principles of quantum mechanics :-

⇒ The superposition principle.

⇒ The uncertainty principle

⇒ The com- polementarity principle.

Advantage of quantum mechanics :-

Applications of quantum mechanics include explaining phenomena found in nature as well as developing technologies that rely upon quantum effects. like integrated circuits & lasers.

Disadvantages of quantum Mechanics :-

The graph are difficult to understand Since they are wave functions rather than basic distance vs probability plots.

Quantum mechanics is not to be comprehen -ded and is not comprehended by humans.

Department of physics

GDCW karimnagar

Student Study project

Manufacturing of Glass materials

2021 - 2022

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Saritha	190771644680 38

Name of the Supervisor :-

P. Aruna

Manufacturing of glass materials :-

Manufacturing glass articles requires the ability to balance equality control and productivity. We assist glass manufacturers in their pursuit of continually improving quality, while often manufacturing audits, the cost-effective evaluation of a bottle design prior to mold construction and the diagnasis of a fractured item from a consumer, glass manufacturer have long considered american glass reasearch a trusted partner capable of assisting throughout the lif cycle of a glass package. We also have expertize the in tableware, candles and solar energy. If you are experiencing difficulties with your glass articles or are intrested in avoiding many of those same difficulties we invite you to discuss your issues with one of our expert.

Explore the following services which have been shown to offer the most advantage to our clacients in the glass manufacturing industry.

⇒ Performance testing

⇒ Design study

⇒ fracture diagnosis

⇒ glass quality

⇒ Contamination identification

⇒ Cables, decorations and closures.

⇒ Line audits

⇒ Litigation assistance

⇒ poly test slurry

⇒ Training seminars

The art of making glass can be tracked back to 2600 BC in Mesopotania. Egyptianse practised making glass around 2500BC. Artificial glass first appeared in the egyptian or the mesopotamian civilisation, whereas they used tools made out of valcanic glass obsidian in the stone age. Anciant China, however, discoveded, How to make glass a little later.

Glass beeds are known to be one of the earliest products made out of glass. Their creation is thought to be primarily accidental. In the later broze age, glass making came to a halt. Glass was a luxary material back then.

Archaeological excavations suggest the use of glass in england during the middle ages. In the 10th century, stained glass found a place in Cathedrals and windows of places. After the Renaissance, architectural methods changed substantially, leading to a decrease in stained glass as a building material.

Domestic use glass increased the following industrial revolution. Vessles, glass windows, and glass beads gained popularity in Europe during this period. During the 19th century, many people preferred glass windows and doors as a decorative option. In the late 19th century, some designers brought back stained glass in decorative windows. It was during this period that Mr. Tiffany discovered several methods to make domed glass handicrafts.

People discovered the true versatality of using glass as a building material only in the 20th century. With glass making technology recieving an industrial boom, you could produce several different types of glass. Toughend glass, laminated glass, bullet proof glass and smart glass all boosted the use of glass in buildings. Today, several sky scrapers, small and big homes and offices use glass in almost all aspects of construction and design.

Different types of Glass :-

Since glass has a wide variety of applications, it is of different types. Each of these varies in strength and design.

1. Fused Quartz or fused silica glass :-

This type of glass is highly resistant to weathering. Its molecules are arranged randomly. This type of glass is used in tube lights and furnaces.

2. Soda-Lime silica glass :-

This type of glass is commonly used in windows and is one of the most prevalent types of glass made anywhere in the world.

3. Sodium Borosilicate glass :-

In this type of glass, boron oxide is added. It makes the glass less prone to cracking. It is primarily used to make lab equipment and kitchenware.

4. Lead oxide Glass :-

Lead oxide glass has high reflective properties, making it a favourite of jewellary makers. Its crystals reflect light brilliantly.

5. Clear glass :-

Also famous as float glass, clear glass offers extreme clarity and transparency for unobstructed views, making it the go-to choice for panoramic windows.

6. Tinted Glass :-

Commonly known as annealed glass, tinted glass is manufactured with a coating or a film to impact its colour and reduce light transmission.

Uses of Glass :-

Over the years, glass has characterized modern architecture like no other material. Glass materials distinguish the look and feel of facades and have a crucial involvement in the energy efficiancy of buildings.

The usage of glass in the commercial and residential sectors is increasing by leaps and bounds. This versatile material is now considered a symbol of affluence and luxury and gradally becomes an architect's favourite.

Advantages of glass :-

Glass can make infrastructure look more stunning and sophisticated. That usage of glass in construction adds beauty to the building. Its use achieves the architectural view for external decoration, when used in the interiors, glass saves space too.

Glass cladding in buildings carries out the functional requirement of heat retention, lighting and energy-saving. It also adds a sense of ingenuousness and harmony to any surrounding.

Government Degree college for Women Karimnagar

Department of physics student study project

Construction of "Gyroscope"

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DECLARATION... ☺

We thereby declere that the work presented in this study project entitled "Construction of Gyroscope" is an original one and has been carried out by us in the department of physics.

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And has not been submited either in part or in full for the award of only degree or diploma. of any university earlier.

construction of Gyroscope

Abstract :

⇒ Gyroscopic action is the rotation of a spinning body's axis. The understanding of gyroscopic action is crucial for vechile and aircraft engineering design. stabilizing a system like an automobile or a plane requires awareness of gyroscopic effects that may alter the stability of the system.

⇒ The focus of this experiment was to study the gyroscopic couple, angular velocity of the rotor, and the precession velocity.

Introduction :

A gyroscope is a device used for measuring or maintaining orientation and angular velocity. It is a spinning wheel or disc in which the axis of rotation is free to assume

any orientation by it self. when rotating, the orientation of this axis is unaffected by tilting or rotation of the mounting, according to the conservation of angular momentum.

Construction of Gyroscope:

1. There is a thick wheel known as gyro wheel (which is made to rotate at high speed)
2. It is mounted on a circular ring by its axil
3. To make the disc rotate in every direction. [3 rings are used.] [as shown in the above dia.]
4. Basically, all the 3 discs are connected at 90 degrees. this allows a full 360. movement of a disc in any direction.
5. It gives a 3-degree freedom which means.
   1. It can spin on its axis.
   2. It can tilt about on its horizontal plane.
   3. It can turn about its vertical axis.

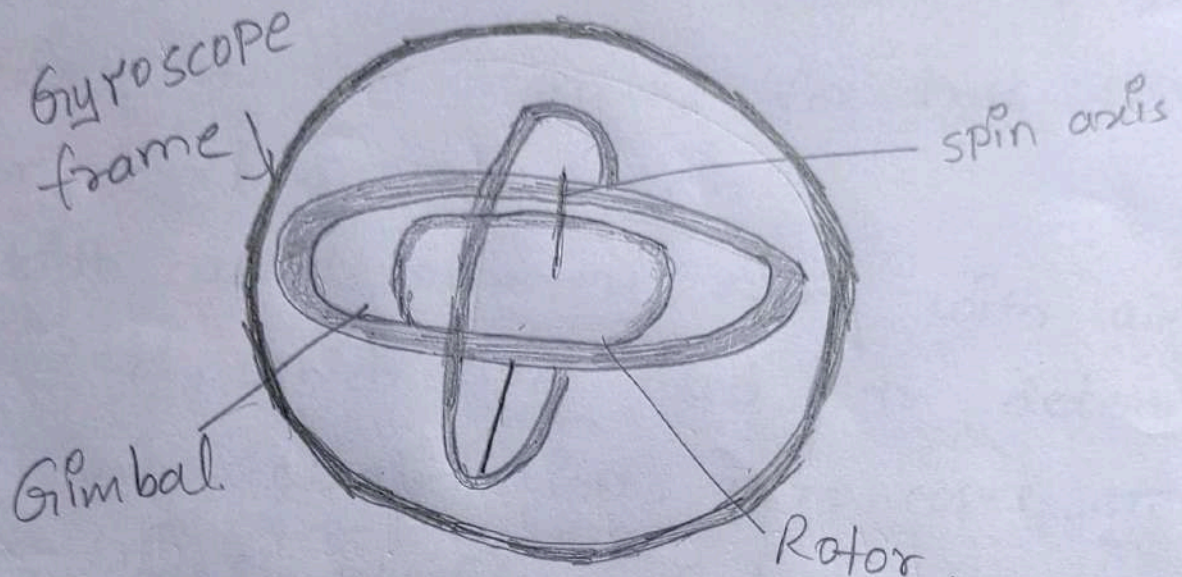
Aims & objectives.

* gyroscopes are motion sensors that detect and measure the Angular motion of an object.
* They measure the rate of rotation of an object around a particular axis: 1-axis, 2-axis, and 3-axis.

Review of literature :-

A mechanical gyroscope consists Essentially of a spinning mass which rotates around its axis. specifically when the mass rotates on its axis, It tends to stay parallel to itelf and oppose any attempt to change its direction. physicist Leon foucault invented this mechanism during his studies of Earth's rotation in 1852 If a gyroscope is installed on gimbals. allowing the mass to navigate freely in the three directions of space, its spinning axis will remain orie-nted in the same direction, Even thought it may change direction.

drawing pictures :-



Gyroscope Diagram

Uses of Gyroscope :-

Following are the main applications of gyroscopes.

*In heading indicators : Gyroscopes commonly referred to as directional gyros, are used in heading indicators. A heading indicator is a flying instrument that pilots use to know the direction and course of their aircraft.

* Gyrocompass: while a gyrocompass seeks for north, a directional gyro may not.. To achieve o this. It senses the rotation of the Earth's axis and then searches for true north rath -er than magnetic north

* With accelerometers: Along with accelero meters, which are used to determine optimum acceleration, gyroscopes are also Employed. It is crucial to remember that an object's velocity may be determi ned by measuring its acceleration and integrating it over time.

conclusion :-

They reported on the currently more di ffused gyroscope technologies in this review. The gyroscopes under consideration include mechanical gyroscopes and macro and micro-scale gyroscopes. Gyroscope is the next sensor industry killer application In the automotive, consumer, industrial,

medical, and military markets, there are many nature applications already developed and produced in limited volumes.

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