# Chlorophyll Extraction from Native Spinach

**A short term project submitted as a part of co-curricular activities of the B.Tech. 1st year students**


Submitted by

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## Certificate of Approval

This is to certify that the short term project entitled **"Chlorophyll Extraction from Native Spinach"**, carried out by **Soham Rana(CSE), Anindita Sadhukhan(CSE), Shyamsundar Maity(CSE), Shayon Mitra(CSE), Smita Sasmal(CSE), Sonu Singh(CSE)** under my supervision and guidance. In my opinion the report in its present form is the part of their cocurricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

Nibedita Mukherjee

(Signature of the Supervisor)

(Signature of the HOD)

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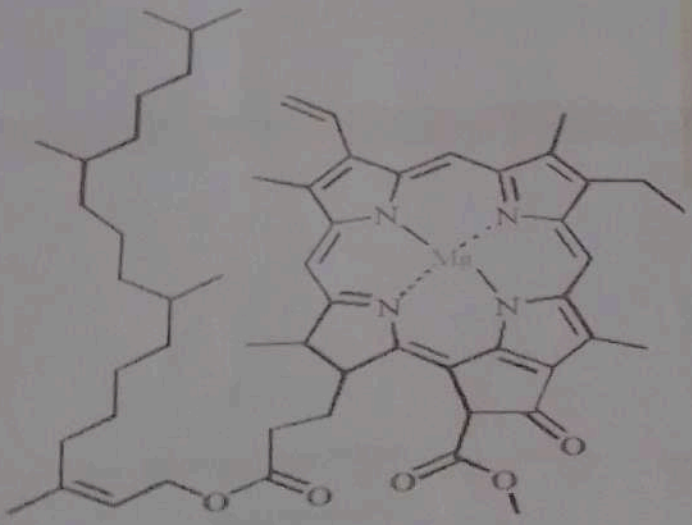
# INTRODUCTION

Diverse plants, algae & Cyanobacteria contain chlorophylls. It is a unique pigment of green colour. From Greek word chloros (Meaning green) and phyllon (meaning leaf) we are getting chlorophyll (chloroplast) in the green plant. In the main organelle where maximum amount of chlorophyll obtained. Energy, glucose can be obtained for the plant from $CO_2$ , $H_2O$ in presence of sunlight and chlorophyll. Chloroplast can be called food factory of plant. Chlorophyll comes under the special class of compound called tetrapyrrole because it contains four pyrolled rings joined with a covalent bond , like vitamin $b_{12}$ and heme molecule.

STRUCTURE OF CHLOROPHYLL



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## Certificate of Approval

This is to certify that the short term project entitled "Sustainable Development – Reduce, Reuse and Recycle", carried out by Atanu Paul under my supervision and guidance. In my opinion the report in its present form is the part of their co-curricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

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# Content:

- Introduction
- Stages in Product Life Cycle
- The 3Rs
- Eco-efficiency and the importance of the 3Rs
- Conventional waste management and the consequences
- Selected World Trends on Human activities
- What should be the priority for countries?
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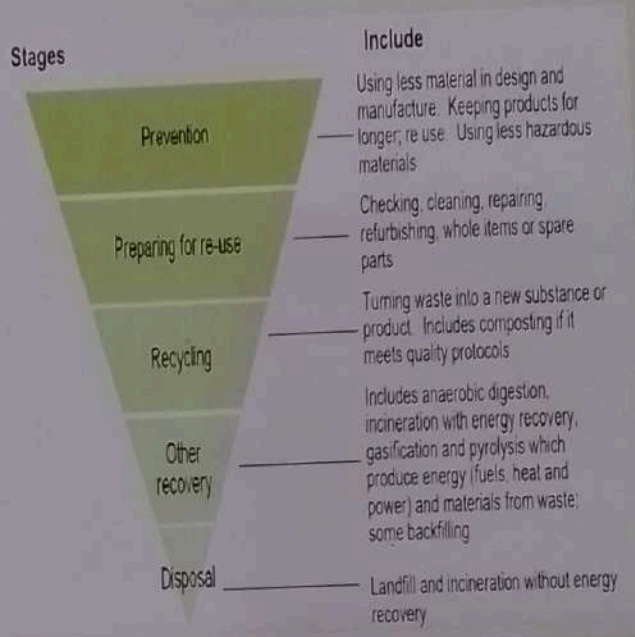
- Need for fundamental change in our mindset and
- attitudes to view "Waste" as "Resource"
- Various types of waste and their recycling potentials
- The relation of reduction of the amount of waste disposal
- with the amount of greenhouse gas emission
- New Environmental Business Opportunities & 3Rs
- Landfills and Incineration versus Resource Recovery and Recycling
- Selected policies to improve/promote resource efficiency
- Conclusion
- *Reference*

# Introduction

Reduce, reuse and recycle is a motto used by environmentalists to reduce waste, minimise consumption and ensure the best overall approach is adopted for the environment and human health. Such programmers when managed at national and/or local levels can save money, energy and natural resources.

Reduce, reuse and recycle are part of the 'waste hierarchy' guidance tool which ranks waste management options according to what is best for the environment and also considers resource and energy consumption. It aims to extract from products the maximum practical benefits and generate minimal waste. The priorities in the hierarchy are based on sustainability.



# REGENT EDUCATION & RESEARCH FOUNDATION GROUP OF INSTITUTION

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DEPARTMENT : CSE

PROJECT NAME : Green Energy

YEAR(SEM) : 2024(2nd)

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# Green Energy

HARNESSING RENEWABLE RESOURCES FOR A SUSTAINABLE FUTURE

# Save the Environment

# REGENT EDUCATION & RESEARCH FOUNDATION
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## Certificate of Approval

This is to certify that the short term project entitled "**Green Energy**", carried out by Srijit Paul under my supervision and guidance. In my opinion the report in its present form is the part of their cocurricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

Amrita Chakraborty
(Signature of the Supervisor)

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# Introduction

Green energy refers to energy derived from naturally replenished sources such as sunlight, wind, water, and biomass. Unlike fossil fuels, green energy sources are sustainable and have minimal environmental impact. Harnessing these renewable resources is crucial for mitigating climate change and ensuring a cleaner, more sustainable energy future.



**Responsibility of an Engineer**

**A short term project submitted as a part of co-curricular activities of the B.Tech. 1st year students**


Submitted by

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Under the guidance of

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This is to certify that the short term project entitled "**Responsibility of an Engineer**", carried out by Sourav Ghosh under my supervision and guidance. In my opinion the report in its present form is the part of their cocurricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

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# Abstract

The responsibility of engineers extends far beyond the technical realm; it encompasses ethical conduct, societal impact, and a commitment to safety and quality. This abstract delves into the multifaceted dimensions of engineering responsibility, highlighting the crucial role engineers play in shaping the present and future of society. Engineers are entrusted with the task of designing, creating, and maintaining systems and technologies that impact every facet of human life. With this privilege comes a profound obligation to uphold the highest standards of professional conduct and prioritize the well-being of the public. Ethical considerations are paramount in engineering practice, guiding engineers to make decisions that uphold honesty, integrity, and respect for human welfare and the environment. Furthermore, engineers must consider the broader societal implications of their work, including environmental sustainability, social equity, and economic impact. They bear responsibility for ensuring the quality and safety of their designs, adhering to regulatory standards and industry best practices. Continuous professional development is also imperative, enabling engineers to stay abreast of emerging technologies and contribute effectively to solving complex challenges. Ultimately, by embracing their responsibilities, engineers can fulfill their role as stewards of technology and catalysts for positive change in society.

# DEFORESTATION

**A short term project submitted as a part of co-curricular activities of the B.Tech 1st year students**


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# REGENT EDUCATION & RESEARCH FOUNDATION
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## Certificate of Approval

This is to certify that the short term project entitled "**DEFORESTATION**", carried out by **PRIYAM RAY (EEE), SUMAN GANGULY (ECE), MUKESH KUMAR (EE)** under my supervision and guidance. In my opinion the report in its present form is the part of their cocurricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

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(Signature of the Supervisor)

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DEFORESTATION

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II. INTRODUCTION

III. CAUSES OF DEFORESTATION

IV. EFFECTS OF DEFORESTATION

V. CURRENT RATE OF DEFORESTATION IN INDIA

VI. STOP DEFORESTATION

VII.CONCLUSION

VIII.REFERENCES

# INTRODUCTION

In this project we have discussed about DEFORESTATION . Deforestation is the purposeful clearing of forested land. Through out history and modern times, forest have been razed to make space for agriculture and animal grazing, and to obtain wood for fuel, manufacturing, and construction. Deforestation has greatly altered landscapes around the world. We have also tried to present have a vivid idea about its causes, effects and also suggested some protective measures that we should take .It will be helpful for our future generation too.

# Regent Education and Research Foundation Group of Institutions

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# REGENT EDUCATION & RESEARCH FOUNDATION
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## Certificate of Approval

This is to certify that the short term project entitled "**Global Warming**", carried out by Sudip Chowdhury under my supervision and guidance. In my opinion the report in its present form is the part of their cocurricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

Amrita Chakraborty
(Signature of the Supervisor)

(Signature of the HOD)

# Mitigating the Impacts of Global Warming: A Call to Action

## ACKNOWLEDGEMENT

*We extend our gratitude to all researchers, activists and organizations dedicated to raising awareness about global warming. Your tireless efforts drive progress toward a sustainable future for generations to come.*

# CONTENT


- *Introduction*
- *Historical Context*
- *Causes of Global Warming*
- *Evidence of Global Warming*
- *Impact on the Environment*
- *Impact of Society*
- *Mitigation Strategies*
- *Adaptation Measures*
- *International Cooperation*
- *Local and Community Action*
- *Future Outlook*
- *Conclusion*

# INTRODUCTION

*Global Worming is the slow increase in the average tempera ture of the earth's atmosphere because an increased amount of the energy (heat) striking the earth from the sun is being trapped in the atmosphere and not radiated out into space.*


*The earth's atmosphere has always acted like a greenhouse to capture the sun's heat, ensuring that the earth has enjoyed temperatures that permitted the emergence of life forms as we know them, including humans.*

*Without our atmospheric greenhouse the earth would be very cold. Global warming, however, is the equivalent of a greenhouse with high efficiency reflective glass installed the wrong way around.*

## *Significance of Global Warming:*

*Global warming exacerbates water shortages in already water-stressed regions and is leading to an increased risk of agricultural droughts affecting crops, and ecological droughts increasing the vulnerability of ecosystems.*

### *Global Warming need attentions:*

*Climate change won't just impact forest, or coral reefs, or even people in far-off countries – it will affect all of us. From more extreme weather to increasing food prices, to recreation and decreased opportunities to appreciate the nature world, people everywhere will feel its effects.*

### *Global Warming an important issue:*

*Each increment of warming results in rapidly escalating hazards, such as more intense heatwaves, heavier rainfall, and other weather extremes that increase risks for human health and ecosystems. Climate-driven food and water insecurity is expected to increase with increased warming.*

# Applications of Linear Algebra in Computer Science and Engineering Fields

**A short term project submitted as a part of co-curricular activities of the B.Tech. 1st year students**



Submitted by :

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## Certificate of Approval

This is to certify that the short term project entitled "**Utilizing Linear Algebra: A Foundation for Advancements in Computer Science and Engineering**", carried out by Soumyajit Bhawal (CSE), Soumyajit Santra (CSE), Soumi Panja (CSE), Soumyadeep Kundu (CSE), Sourav Nayak (CSE) under my supervision and guidance. In my opinion the report in its present form is the part of their cocurricular activities. To the best of my knowledge, the results embodied in this report, are original in nature.

Arka Chatterjee

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(Signature of the HOD)

# Utilizing Linear Algebra: A Foundation for Advancements in Computer Science and Engineering

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