

## CERTIFICATE

This is to Certify that Ms.R.ARCHANA ( Reg.no : 22MPPH1001 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at **PVN POWER LINES**. she has visited our company from 29.05.2023 to 14.06.2023

During the In-plat training her initiative and behavior was found to be good

We wish her the best in all for she future endeavors and career.



For PVN POWER LINES

Authorized signatory



# PVN Power Lines

GSTIN : 33AXUPM8069J1ZN

Plot No. 134, Women's Industrial Park,  
SIDCO (Govt. Engineering College Backside)  
Karuppur, SALEM - 636 011.

Email : [pvnpowerlines@yahoo.in](mailto:pvnpowerlines@yahoo.in)

Cell : 94432 44113, 97862 44113, Phone : 0427 - 2970077

## CERTIFICATE

This is to Certify that Ms.K.DHINISHA ( Reg.no : 22MPPH1002 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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We wish her the best in all for she future endeavors and career.



For PVN POWER LINES

Authorized signatory





GSTIN : 33AXJPM8059J1ZM

Plot No. 134, Women's Industrial Park,  
SIDCO (Govt. Engineering College Backside)  
Karuppur, SALEM - 636 011.

Email : [pvnpowerlines@yahoo.in](mailto:pvnpowerlines@yahoo.in)

Cell : 84432 44113, 97862 44113, Phone : 0427 - 2970077

## CERTIFICATE

This is to Certify that Ms.S.ELAMATHI ( Reg.no : 22MPPH1003 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

During the In-plant training her initiative and behavior was found to be good

We wish her the best in all for she future endeavors and career.

For PVN POWER LINES  
  
Authorized signatory

All Type of Panel Boards and Electrical works (APFC Panel and Control Panels)

All Type of Panel Boards and Electrical works (APFC Panel and Control Panels)

Scanned with OKEN Scanner



**PVN Power Lines**

GSTIN : 32AXJIPM8098J1ZM

Plot No. 12A, Women's Industrial Park,  
SIDCO (Govt. Engineering College Backside)  
Karuppur, SALEM - 638 011.

Email : [pvnpowerlines@yahoo.in](mailto:pvnpowerlines@yahoo.in)

Cell : 94432 44113, 97852 44113, Phone : 0427 - 2870577

## CERTIFICATE


This is to Certify that Ms.A.GOWRI ( Reg.no : 22MPPH1004 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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For PVN POWER LINES

  
Authorized signatory

## CERTIFICATE

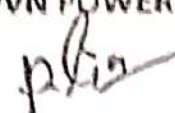
This is to Certify that Ms.B.GOWRI ( Reg.no : 22MPPH1005 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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For PVN POWER LINES

  
Authorized signatory



## CERTIFICATE

This is to Certify that Ms.S.HARIPRIYA ( Reg.no : 22MPPH1006 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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For PVN POWER LINES

Authorized signatory



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Email : [pvnpowerlines@yahoo.in](mailto:pvnpowerlines@yahoo.in)

Cell : 94432 44113, 97882 44113, Phone : 0427 - 2970077

## CERTIFICATE

This is to Certify that Ms.G.P.KABILAMBIGAI ( Reg.no : 22MPPH1007 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at **PVN POWER LINES**. she has visited our company from 29.05.2023 to 14.06.2023

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We wish her the best in all for she future endeavors and career.



For PVN POWER LINES

*pliz*

Authorized signatory

All Type of Panel Boards and Electrical works (APFC Panel and Control Panels)





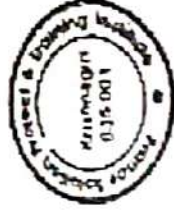
Making Powerful Programmes


# PRANAV SOLUTION

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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Ms. KAVIPRIYA S V, Reg.No: ZMPPPH1008, M.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranaav Solution





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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Ms. NANDHINI S, Reg.No: 22MPPH009, M.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.RELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



*S. Relavarasan*  
Managing Director  
Pranav Solution



# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained  
in the internship report entitled  
"SOLAR PANEL INSTALLATION AND TRAINING"

is carried out by

**M.A.SITHESWARI / 22MPPH1010 / Master of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

in the academic year 2022-2023 from 02.06.2023 to 19.06.2023

under the Supervision of

**D.PRABHU**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
Authorised Signatory

Contact No. : 90920 94572 Email ID: teslascientific251117@gmail.com  
V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.



# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained  
in the internship report entitled

“SOLAR PANEL INSTALLATION AND TRAINING”

is carried out by

**A.SIVAJOTHI / 22MPPH1011 / Master of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

**under the Supervision of**

**D.PRABHU**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
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V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.





# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained  
in the internship report entitled  
"SOLAR PANEL INSTALLATION AND TRAINING"  
is carried out by  
M.SUVATHI / 22MPPH1012 / Master of Science in Physics  
Muthayammal College of Arts and Science, Rasipuram  
in the academic year 2022-2023 from 02.06.2023 to 19.06.2023  
under the Supervision of  
D.PRABHU  
Tesla Scientific Solution, Rasipuram, Namakkal Dt.



  
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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Ms. THATCHAYINI M, Reg.No: 22MPFH1013, M.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELA VARASAN, PRANAV SOLUTION, KRISHNAGIRI.



*Pranav*  
Managing Director  
Pranav Solution



# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

“SOLAR PANEL INSTALLATION AND TRAINING”

is carried out by

J.VIDHYA / 22MPPH1014 / Master of Science in Physics

Muthayammal College of Arts and Science, Rasipuram

in the academic year 2022-2023 from 02.06.2023 to 19.06.2023

under the Supervision of

D.PRABHU

Tesla Scientific Solution, Rasipuram, Namakkal Dt.



  
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## CERTIFICATE

This is to Certify that Ms.B.ARAVIND ( Reg.no : 22MPPH1015 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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We wish her the best in all for his future endeavors and career.



For PVN POWER LINES

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# PRANAV SOLUTION

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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Mr. GOWSICK R M, Reg.No: 22MPPH1016, M.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranav Solution



GSTIN : 33AXUPM8069J1ZN

Plot No. 134, Women's Industrial Park,  
SIDCO (Govt. Engineering College Backside)  
Karuppur, SALEM - 636 011.

Email : pvnpowerlines@yahoo.in

---

Cell : 94432 44113, 97862 44113, Phone : 0427 - 2970077


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## CERTIFICATE

This is to certify that Mr. C.GOWTHAM(Reg.no : 22MPPH1017)  
Student of final – M.Sc. Physics Muthayammal College Of Arts And Science  
(Autonomous) – Rasipuram Tamil Nadu has Successfully completed his In-  
plant Training at **PVN POWER LINES**. He has visited our company from  
**29.05.2023 to 14.06.2023**.

During the In-plant training him initiative and behaviour was found to be good

We wish him the best in all for his future endeavours and career.

For PVN POWER LINES  
  
*plg*  
Authorized signatory

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All Type of Panel Boards and Electrical works (APFC Panel and Control Panels)



## CERTIFICATE

This is to Certify that Ms.S.HARSHATHSIVAA ( Reg.no : 22MPP111018 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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For PVN POWER LINES  
  
Authorized signatory



## CERTIFICATE

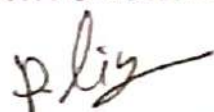
This is to Certify that Ms.RJAWAHAR ( Reg.no : 22MPPH1019 ) student of final year - M.SC.Physics Muthayammal College Of Arts And Science (Autonomous)-Rasipuram Tamil Nadu has Successfully completed his In-plant Training at PVN POWER LINES. she has visited our company from 29.05.2023 to 14.06.2023

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For PVN POWER LINES

  
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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Mr. MOHAMED JIEURUDEEN S, Reg.No: 22MPPH1020, M.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.RELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



*Relavarasan*  
Managing Director  
Pranav Solution





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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Mr. NAVEEN S, Reg.No: 22MPPH1021, M.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranav Solution



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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Mr. PERIYASAMY M, Reg.No: 22MPPH1022, MSc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranav Solution



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## Certificate of Internship

This is to certify that the work contained in the internship report entitled “LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY” is carried out by Mr. RAJAVEL K, Reg.No: 22MPPH1023, M.Sc, PHYSICS, KUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranav Solution





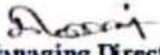
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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "LED LIGHTS ASSEMBLING AND DESIGNING TECHNOLOGY" is carried out by Mr. **SANJAY V** , Reg.No: **22PPH026** MSc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranav Solution



# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

**"SOLAR PANEL INSTALLATION AND TRAINING"**

is carried out by

**VSANTHOSH / 22MPPH1025 / Master of Science in Physics**

Muthayammal College of Arts and Science, Rasipuram

in the academic year 2022-2023 from **02.06.2023** to **19.06.2023**

under the Supervision of

**D.PRABHU**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
Authorised Signatory

Contact No. : 90920 94572 Email ID: teslascientific251117@gmail.com  
V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.





# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

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in the internship report entitled  
"SOLAR PANEL INSTALLATION AND TRAINING"

is carried out by

**M.SHANMUGA SUNDARAM / 22MPPH1026 / Master of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

**under the Supervision of**

**D.PRABHU**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
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# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

**“NODEMCU BASED EMBEDDED SYSTEM WITH IOT”**

is carried out by

**K.ASHIFA / 21MUPH1001 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

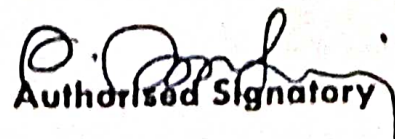
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**A.JEEVAGAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
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"NODEMCU BASED EMBEDDED SYSTEM WITH IOT"

is carried out by

S.HEMASAKTHI / 21MUPH1002 / Bachelor of Science In Physics

Muthayammal College of Arts and Science, Rasipuram

in the academic year 2022-2023 from from 02.06.2023 to 19.06.2023

under the Supervision of

A.JEEVAGAN

Tesla Scientific Solution, Rasipuram, Namakkal Dt.



  
Authorised Signatory

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V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.





# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

“ARDUINO BASED EMBEDDED SYSTEM DESIGN ”

is carried out by

**K.KANISHKA / 21MUPH1003 / Bachelor of Science in Physics**

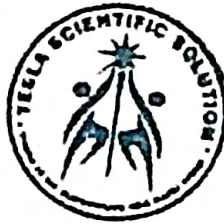
**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

under the Supervision of

**R.SARAVANAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
Authorised Signatory

Contact No. : 90920 94572 Email ID: teslascientific251117@gmail.com  
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(Educational Services)

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is carried out by

**M.KAVIYA / 21MUPH1004 / Bachelor of Science in Physics**

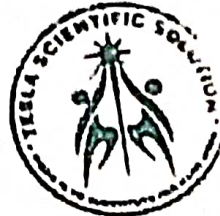
**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

under the Supervision of

**R.SARAVANAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



*(Signature)*  
Authorised Signatory

Contact No. : 90920 94572 Email ID: [teslascientific251117@gmail.com](mailto:teslascientific251117@gmail.com)  
V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.



# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained  
in the internship report entitled

**“NODEMCU BASED EMBEDDED SYSTEM WITH IOT”**

is carried out by

**R.MADHUMITHA / 21MUPH1006 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

in the academic year 2022-2023 from from **02.06.2023** to **19.06.2023**

under the Supervision of

**A.JEEVAGAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
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**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from from 02.06.2023 to 19.06.2023**

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V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.





# PRANAAV SOLUTION

( Approved By Government of India MSME / UDYAM Reg.No : TN-II-0030200 )

## Certificate of Internship

This is to certify that the work contained in the internship report entitled "BASIC CIRCUIT DESIGNING TECHNOLOGY" is carried out by Ms. MEKHALASRI M P, Reg.No: 21MUPH1008, B.Sc, PHYSICS, MUTIAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.RELAVARASAN, PRANAAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranaav Solution



# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

**“NODEMCU BASED EMBEDDED SYSTEM WITH IOT”**

is carried out by

**M.S.MOHANADEVI / 21MUPH1009 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from from 02.06.2023 to 19.06.2023**

**under the Supervision of**

**A.JEEVAGAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



*[Handwritten Signature]*  
Authorised Signatory

Contact No. : 90920 94572 Email ID: teslascientific251117@gmail.com  
V.Nagar, Rasipuram, Namakkal Dt. Pin : 637408. Tamil Nadu.





# Tesla Scientific Solution

(Educational Services)

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is carried out by

**R.MOHAVARSHINI / 21MUPH1010 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

in the academic year 2022-2023 from from **02.06.2023** to **19.06.2023**

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**A.JEEVAGAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



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Authorised Signatory

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# Tesla Scientific Solution

(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

“NODEMCU BASED EMBEDDED SYSTEM WITH IOT”

is carried out by

**C.PADMASHRI / 21MUPH1012 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

in the academic year 2022-2023 from from 02.06.2023 to 19.06.2023

under the Supervision of

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(Educational Services)

## INTERNSHIP CERTIFICATE

This is to certify that the work contained

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“NODEMCU BASED EMBEDDED SYSTEM WITH IOT”

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# PRANAV SOLUTION

( Approved By Government of India MSME / UDYAM Reg.No : TN-11-0030200 )

## Certificate of Internship

This is to certify that the work contained in the internship report entitled "BASIC CIRCUIT DESIGNING TECHNOLOGY" is carried out by Ms. SIVARANJANI P, Reg.No: 21MUPH1014, B.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



Managing Director  
Pranaav Solution





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## INTERNSHIP CERTIFICATE

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in the internship report entitled

**“ARDUINO BASED EMBEDDED SYSTEM DESIGN ”**

is carried out by

**P.SOWNDHARYA / 21MUPH1015 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

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# PRANAV SOLUTION

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## Certificate of Internship

This is to certify that the work contained in the internship report entitled "BASIC CIRCUIT DESIGNING TECHNOLOGY" is carried out by Ms. SUVATHI L, Reg.No: 21MUPH1016, B.Sc, PHYSICS, MUTHAYANDMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



Managing Director  
Pranav Solution





# Tesla Scientific Solution

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## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

**“ARDUINO BASED EMBEDDED SYSTEM DESIGN ”**

is carried out by

**P.R.SUVATHI / 21MUPH1017 / Bachelor of Science in Physics**

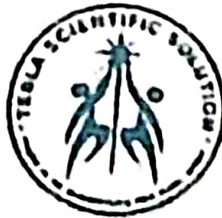
**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

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This is to certify that the work contained

in the internship report entitled

**"ARDUINO BASED EMBEDDED SYSTEM DESIGN"**

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**M.SWETHA / 21MUPH1018 / Bachelor of Science in Physics**

**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

under the Supervision of

**R.SARAVANAN**

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**"ARDUINO BASED EMBEDDED SYSTEM DESIGN "**

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**Muthayammal College of Arts and Science, Rasipuram**

**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

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**R.SARAVANAN**

**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



  
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( Approved By Government of India MSME / UDYAM Reg.No : TN-II-0030200 )

## Certificate of Internship

This is to certify that the work contained in the internship report entitled "BASIC CIRCUIT DESIGNING TECHNOLOGY" is carried out by Ms. VIJAYALAKSHMI V, Reg.No: 21MUPH1020, B.Sc, PHYSICS, MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), RASIPURAM, in the academic year 2023 from 29.05.2023 to 07.06.2023 under the Supervision of Er.R.ELAVARASAN, PRANAV SOLUTION, KRISHNAGIRI.



  
Managing Director  
Pranav Solution





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“ARDUINO BASED EMBEDDED SYSTEM DESIGN ”

is carried out by

**P.ABINESH / 21MUPH1021 / Bachelor of Science in Physics**

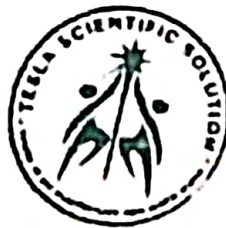
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**R.SARAVANAN**

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**"ARDUINO BASED EMBEDDED SYSTEM DESIGN "**

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**S.BALU / 21MUPH1022 / Bachelor of Science in Physics**

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**Tesla Scientific Solution, Rasipuram, Namakkal Dt.**



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## INTERNSHIP CERTIFICATE

This is to certify that the work contained

in the internship report entitled

**“NODEMCU BASED EMBEDDED SYSTEM WITH IOT”**

is carried out by

**M.SAKTHIVEL / 21MUPH1023 / Bachelor of Science in Physics**

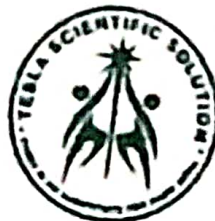
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Managing Director  
Pranav Solution



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Managing Director  
Pranav Solution

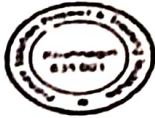


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**“ARDUINO BASED EMBEDDED SYSTEM DESIGN ”**

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**in the academic year 2022-2023 from 02.06.2023 to 19.06.2023**

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# **SYNTHESIS AND CHARACTERISATION OF PURE MnO AND CADMIUM DOPED MnO NANOPARTICLES BY COPRECIPITATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**R. ARCHANA**

**(Reg.No:22MPPH1001)**



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**Dr. M.REVATHI M.Sc., B.Ed., M.Phil., Ph.D.,  
(ASSISTANT PROFESSOR AND HEAD OF THE  
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**MAY- 2024**

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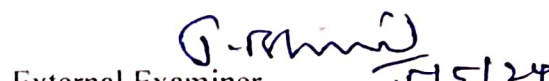
This is to certify that the project report entitled "SYNTHESIS AND CHARACTERISATION OF PURE MnO AND CADMIUM DOPED MnO NANOPARTICLES BY CO-PRECIIPITATION METHOD" submitted to periyar university, Salem in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS** is record of original research work done by **R.ARCHANA (Reg. No: 22MPPH1001)** during the period of his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associates ship / Fellowship or similar title to any candidate of any University.

  
Project Guide

  
Head of the Department  
**Dr. M. REVATHI** M.Sc.,B.Ed.,M.Phil.,Ph.D.,  
Head Department of Physics  
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Rasipuram - 637 408.

Submitted for the project viva- voce examination held on 15.5.24 at Rasipuram, Tamil Nadu.

  
Internal Examiner  
15/5/24

  
External Examiner  
15/5/24



**SYNTHESIS AND CHARACTERISATION OF TIB MAGANESE  
OXIDE NANOPARTICLE BY CO-PRECIPIATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**BY**

**K.DHINISHA**

**(Reg.No:22MPPH1002)**



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Project Guide

  
Head of the Department

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RASIPURAM (TK), NAMAKKAL (DT)-637 408.

Submitted for the project viva-voce examination held on 15.5.2024

  
Internal Examiner

  
External Examiner

**SYNTHESIS AND CHARACTERISATION OF PURE CuO  
AND NI DOPED CuO NANOPARTICLES BY  
CO-PRECIPIATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**BY**

**S.ELAMATHI**

**(Reg.No:22MPPH1003)**



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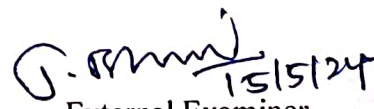
  
Project Guide

  
Head of the Department

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RASIPURAM (T.N), NAMAKKAL (DT)-637 408

Submitted for the project viva- voce examination held on 15-5-24

  
Internal Examiner 15/5/24

  
External Examiner 15/5/24

**PREPARATION AND CHARACTERIZATION OF ALGINIC  
ACID- HYDROXYAPATITE NANOCOMPOSITE FOR  
WASTE WATER TREATMENT**

*Project report submitted to Periyar University, Salem in partial fulfillment of the  
requirements for the award of degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**GOWRI. A**

**(Reg.No:22MPPH1004)**

**Under the Guidance of**

**Dr. K. SANGEETHA.M.Sc. M.Phil., B.Ed., Ph.D**

**Dean Sciences**



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This is to certify that the project report entitled "PREPARARION AND CHARACTERIZATION OF ALGINIC ACID - HYDROXYAPATITE NANOCOMPOSITE FOR WASTE WATER TREATMENT" submitted to Periyar university, Salem in partial fulfillment of the requirements for the award of the degree of MASTER OF SCIENCE in PHYSICS is record of original research work done by GOWRI. A (Reg.No: 22MPPH1004) during the period of her/his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associates ship / Fellowship or similar title to any candidate of any University.

*[Signature]*  
Project Guide 13/5/24

*[Signature]*  
HEAD OF THE DEPARTMENT  
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MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
(AUTONOMOUS)  
RASIPURAM (TK), NAMAKKAL (DT)-637 408.

Submitted for the project viva- voce examination held on 15.05.2024

*[Signature]*  
Internal Examiner

External Examiner *[Signature]*  
15/5/24



**SYNTHESIS AND CHARACTERIZATION OF NICKEL DOPED  
COBALT OXIDE NANOPARTICLES**

*Project report submitted to Periyar University, Salem in partial fulfillment of the  
requirements for the award of degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**GOWRI. E**

**(Reg.No:22MPPH1005)**

**Under the Guidance of**

**Dr. K. SANGEETHA.M.Sc. M.Phil., B.Ed., Ph.D**

**Dean Sciences**



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**MAY-2024**

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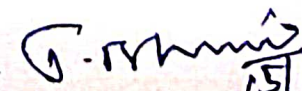
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HEAD OF THE DEPARTMENT  
Head of the Department  
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MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
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RASIPURAM (TK), NAMAKKAL (DT)-637 408.

Submitted for the project viva- voce examination held on 15/05/2024

  
Internal Examiner 15/5/24

External Examiner  15/5/24

**INVESTIGATION OF CALCIUM PHOSPHATE –POLYVINYL  
ALCOHOL NANOCOMPOSITES FOR DRUG DELIVERY  
APPLICATIONS**

*Project report submitted to Periyar University, Salem in partial fulfillment of the  
requirements for the award of degree of*

**MASTER OF SCIENCE IN PHYSICS**

By

**HARIPRIYA.S**

**(Reg.No: 22MPPH1006)**

Under the Guidance of

**Dr.K.SANGEETHA M.Sc.,M.Phil.,B.ED.,Ph.D**

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This is to certify that the project report entitled "INVESTIGATION OF CALCIUM PHOSPHATE- POLYVINYL ALCOHOL NANOCOMPOSITES FOR DRUG DELIVERY APPLICATIONS" submitted to periyar university, Salem in partial fulfillment of the requirements for the award of the degree of MASTER OF SCIENCE in PHYSICS is record of original research work done by HARIPRIYA.S (Reg. No: 22MPPH1006) during the period of her/his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

  
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(AUTONOMOUS)  
RASIPURAM (TK), NAMAKKAL (DT)-637 408.

Submitted for the project viva- voce examination held on 15.05.2024

  
Internal Examiner 15/5/24

  
External Examiner 15/5/24

**SYNTHESIS, STRUCTURAL AND OPTICAL PROPERTIES OF  
NiO/g-C<sub>3</sub>N<sub>4</sub> NANOCOMPOSITES**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

By

**G.P.KABILAMBIGAI**

**(Reg.No:22MPPH1007)**



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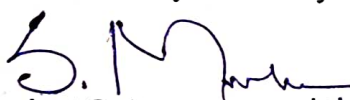
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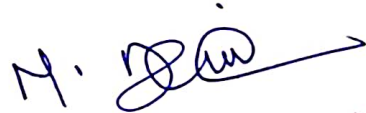


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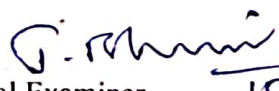
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MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
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RASIPURAM (TK), NAMAKKAL (DT)-637 408

Submitted for the project viva- voce examination held on 15.05.2024

  
Internal Examiner 14/5/24

  
External Examiner 15/5/24



**SYNTHESIS OF CaTiO<sub>3</sub> NANOPARTICLES BY SOL-GEL  
METHODE AND THEIR CHARACTERIZATION**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**S.V.KAVIPRIYA  
(Reg.No:22MPPH1008)**



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**Mr.V.SATHEESH KUMAR M.SC.,M.Phil.,B.Ed.,  
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This is to certify that the project report entitled **SYNTHESIS OF CaTiO<sub>3</sub> NANOPARTICLES BY SOL-GEL METHOD AND THEIR CHARACTERIZATION** submitted to periyar university, Salem in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS** is record of original research work done by **S.V.KAVIPRIYA(Reg.No:22MPPH1008)** during the period of his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

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Submitted for the project viva- voce examination held on \_\_\_\_\_ **RASIPURAM (TK), NAMAKKAL (DT)-637 408**

Internal Examiner

External Examiner

**SYNTHESIS AND CHARACTERISATION OF MWCNTs/PbO  
NANOPARTICLES VIA CO-PRECIPITATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**S.NANDHINI**

**(Reg.No:22MPPH1009)**



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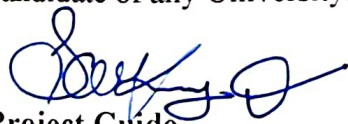
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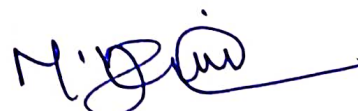


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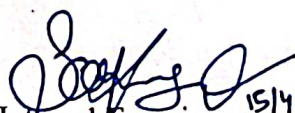
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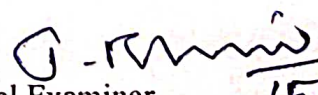
  
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Submitted for the project viva- voce examination held on 15.05.2024 (AUTONOMOUS)  
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Internal Examiner 15/5/24

  
External Examiner 15/5/24

# **SYNTHESIS AND CHARACTERIZATION OF MAGNESIUM DOPED CADMIUM OXIDE**

*Project report submitted to Periyar University, Salem in partial fulfillment of the  
requirements for the award of degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**SITHESWARL.M.A**

**(Reg.No:22MPPH1010)**

**Under the Guidance of**

**Dr. K. SANGEETHA**

**Dean Sciences**



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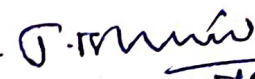
This is to certify that the project report entitled "SYNTHESIS AND CHARACTERISATION OF MAGNESIUM DOPED CADMIUM OXIDE" submitted to periyar university, Salem in partial fulfillment of the requirements for the award of the degree of MASTER OF SCIENCE in PHYSICS is record of original research work done by SITHESWARI.M.A (Reg. No: 22MPPH1010) during the period of her/his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associates ship / Fellowship or similar title to any candidate of any University.

  
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Submitted for the project viva- voce examination held on 15.05.2024

  
Internal Examiner  
15/5/24

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**SYNTHESIS AND CHARACTERISATION OF PURE ZINC OXID  
AND CADMIUM DOPED ZINC OXIDE NANOPARTICLES  
BY CO- PRECIPITATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

By

**A.SIVA JOTHI  
(Reg No: 22MPPH1011)**



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**Under the Guidance of**

**Dr.M.REVATHI M.Sc.,B.Ed., M.Phil.,Ph.D**

**(Assistant professor and head, department of physics)**

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This is to certify that the project report entitled "SYNTHESIS AND CHARACTERISATION OF PURE ZINC OXIDE AND CADMIUM DOPED ZINC OXIDE NANOPARTICLES BY CO-PRECIPIATION METHOD" submitted to Periyar university, Salem in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS** is record of original research work done by **A.SIVAJOTHI, (REG NO.22MPPH1011)** during the period of his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

  
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External Examiner 15/5/24

# **SYNTHESIS AND MAGNETIC CHARACTERISATION OF Al(NO<sub>3</sub>) DOPED NiO NANOPARTICLES**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**M.SUVATHI**

**(Reg.No:22MPPH1012)**



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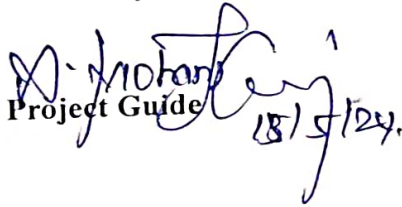
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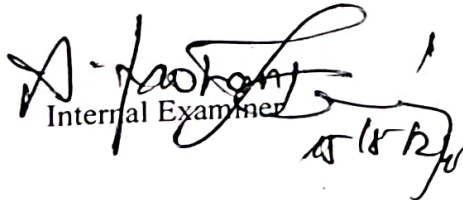
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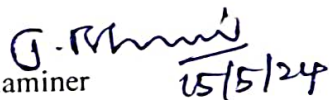
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**HEAD OF THE DEPARTMENT**  
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**(AUTONOMOUS)**  
**RASIPURAM (Tk), NAMAKKAL (Dt)-637 408.**

Submitted for the project viva-voce examination held on 15-05-2024

  
Internal Examiner  
15/5/24

  
External Examiner  
15/5/24

**SYNTHESIS AND CHARACTERIZATION OF NICKLE OXIDE BY  
CO-PRECIPIATION METHOD AT VARIOUS TEMPERATURE**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

By

**M.THATCHAYINI  
(Reg: 22MPPH1013)**



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**M.THATCHAYINI(Reg.No:22MPPH013)** during the period of his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

*M. Haem*  
Project Guide

*M. Haem*  
Head of the Department  
**HEAD OF THE DEPARTMENT  
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MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
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RASIPURAM (TK), NAMAKKAL (DT)-637 408**

Submitted for the project viva- voce examination held on 15/5/24

*M. Haem*  
Internal Examiner 15/5/24

*O. M. M. M.*  
External Examiner 15/5/24



# SYNTHESIS AND MAGNETIC CHARACTERIZATION OF Cu DOPED NiO NANOPARTICLES

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**J.VIDHYA**

**(Reg.No:22MPPH1014)**



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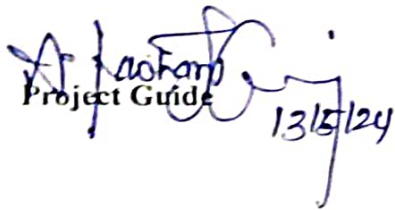
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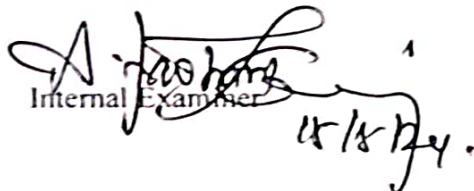
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RASIPURAM - 637 408.

Submitted for the project viva- voce examination held on \_\_\_\_\_

  
Internal Examiner  
15/5/24

  
External Examiner  
15/5/24

**SYNTHESIS OF TIN AND NICKEL OXIDE BY USING  
COPRECIPITATE METHOD**

*Project report submitted to Periyar University, Salem in partial fulfillment of the  
requirements for the award of degree of*

**MASTER OF SCIENCE IN PHYSICS**

By

**B. ARAVINTH**

**(Reg.No:22MPPH1015)**



Under the Guidance of

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Submitted for the project viva- voce examination held on 15.05.2024

  
Internal Examiner

  
External Examiner

# **SYNTHESIS AND CHARACTERIZATION OF MWCNTs/CO<sub>3</sub>O<sub>4</sub> NANOPARTICLES VIA SOL-GEL METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**R.M.GOWSICK**

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**FABRICATION OF POLYVINYL ALCOHOL/GELATIN COMPOSITE  
NANOFIBER FOR BIOMEDICAL APPLICATIONS**

*Project report submitted to Periyar University, Salem in partial fulfilment of the  
requirements for the award of degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**C. GOWTHAM**

**(Reg.No:22MPPH1017)**

**Under the Guidance of**

**Dr. K. SANGEETHA. M.Sc. M.Phil., B.Ed., Ph.D**

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15.05.2024

Submitted for the project viva- voce examination held at Rasipuram (TK), Namakkal (DT)-637 408. 15.05.2024

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External Examiner 15/5/24

**SYNTHESIS AND CHARACTERISATION OF COPPER  
DOPED NICKEL FERRITE (NiFe<sub>2</sub>O<sub>4</sub>) NANOPARTICLES BY  
CO-PRECIPIATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**S. HARSHATHSIVAA**

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M. Saranya  
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[M. SARANYA]

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**SYNTHESIS AND CHARACTERIZATION OF  $\text{SnTiO}_3$  NANOPARTICLES BY  
SOL GEL METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**R.JAWAHAR**

**(Reg.No:22MPPH1019)**



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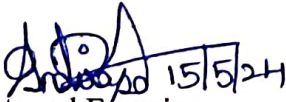
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Submitted for the project viva- voce examination held on 15.05.2024

  
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**PREPARATION AND STRUCTURAL PROPERTIES OF UNDOPED  
AND Bi DOPED MnO<sub>2</sub> NANOPARTICLES**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**S.MOHAMED JIEURUDEEN**

**(Reg.No:22MPPH1020)**



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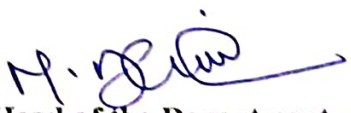


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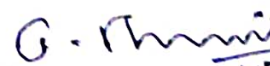
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**SYNTHESIS AND CHARACTERISATION OF ZINC COBALTITE  
NANOPARTICLES BY CO PRECIPITATION METHOD**

*Dissertation submitted to Periyar University In partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**S.NAVEEN**

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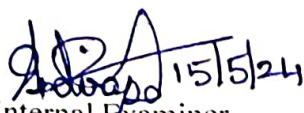
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Submitted for the project viva- voce examination held on 15.05.2024

  
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External Examiner

# **SYNTHESIS AND CHARACTERISATION OF MWCNTs/V<sub>2</sub>O<sub>5</sub> NANOPARTICLES VIA SOLID STATE METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

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**RASIPURAM (TK), NAMAKKAL (DT)-637 408.**

**External Examiner**

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**SYNTHESIS AND CHARACTERISATION OF COPPER COBALTITE  
NANOPARTICLES BY CO PRECIPITATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

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Submitted for the project viva- voce examination held on 15/05/2024

  
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# **SYNTHESIS AND CHARACTERIZATION OF IRON OXIDE NANOPARTICLES BY CO- PRECIPITATION METHOD AT VARIOUS TEMPERATURE**

*Dissertation submitted to Periyar University in partial fulfillment of the requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

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**V. SANJAY**

**(Reg.No:22MPPH1024)**



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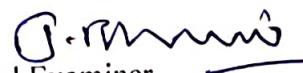
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**DEPARTMENT OF PHYSICS**  
**MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE**  
**(AUTONOMOUS)**  
**RASIPURAM (Tk), NAMAKKAL (Dt)-637 408.**

Submitted for the project viva- voce examination held on 15/05/2024

  
Internal Examiner

  
External Examiner  
15/5/24

**SYNTHESIS AND CHARACTERISATION OF STRONTIUM  
OXIDE AND ZINC OXIDE NANOCOMPOSITE BY USING  
CO-PRECIPIATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**V.SANTHOSH**

**(Reg.No:22MPPH1025)**



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AND SCIENCE  
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**Under the Guidance of**

**Ms. M. SARANYA M.Sc., M. Phil.,  
(ASSISTANT PROFESSOR)**

**DEPARTMENT OF PHYSICS**

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Affiliated to Periyar University, Salem,

Accredited by NAAC with 'A' grade, Recognized by UGC under Section 2(F) & 12(B),

Rasipuram - 637 408, Namakkal District, Tamil Nadu.

**MAY- 2024**

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Rasipuram - 637 408, Namakkal District, Tamil Nadu.

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**CERTIFICATE**

This is to certify that the project report entitled "SYNTHESIS AND CHARACTERISATION OF STRONTIUM OXIDE AND ZINC OXIDE NANOCOMPOSITE BY USING CO-PRECIPIATION METHOD" submitted to periyar university, Salem in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS** is record of original research work done by **V. SANTHOSH (Reg. No: 22MPPH1025)** during the period of his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

*M. Saranya*  
Project Guide 14/5/24  
[M. SARANYA]

*M. Saranya*  
Head of the Department  
HEAD OF THE DEPARTMENT  
DEPARTMENT OF PHYSICS  
MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
(AUTONOMOUS)

Submitted for the project viva- voce examination held on 15/05/2024

*M. Saranya*  
Internal Examiner  
[M. SARANYA]

*J. Ramesh*  
External Examiner 15/5/24



**SYNTHESIS AND CHARACTERISATION OF LEAD OXIDE  
(PbO) AND NICKEL FERRITE (NiFe<sub>2</sub>O<sub>4</sub>) NANOPARTICLES  
BY CO-PRECIPIATION METHOD**

*Dissertation submitted to Periyar University in partial fulfillment of the  
requirements for the award of the Degree of*

**MASTER OF SCIENCE IN PHYSICS**

**By**

**M.SHANMUGASUNDARAM**

**(Reg.No:22MPPH1026)**



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**Ms. M. SARANYA M.Sc., M.Phil.,**

**(ASSISTANT PROFESSOR)**

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Affiliated to Periyar University, Salem,

Accredited by NAAC with 'A' grade, Recognized by UGC under Section 2(F) & 12(B),

Rasipuram - 637 408, Namakkal District, Tamil Nadu.

**MAY- 2024**

**MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**

Affiliated to Periyar University, Salem,

Accredited by NAAC with 'A' grade, Recognized by UGC under Section 2(f) & 12(B),  
Rasipuram - 637 408, Namakkal District, Tamil Nadu.

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**MUTHAYAMMAL  
COLLEGE OF ARTS  
AND SCIENCE**  
(Autonomous)  
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**CERTIFICATE**

This is to certify that the project report entitled "SYNTHESIS AND CHARACTERISATION OF LEAD OXIDE (PbO) AND NICKEL FERRITE (NiFe<sub>2</sub>O<sub>4</sub>) BY CO-PRECIPIATION METHOD" submitted to Periyar University, Salem in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS** is record of original research work done by **M.SHANMUGASUNDARAM (Reg. No: 22MPPH1026)** during the period of his study (2022-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision/ guidance and this project report has not found formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

M. Saranya  
Project Guide 14/5/24  
[M. SARANYA]

M. Saranya  
Head of the Department  
HEAD OF THE DEPARTMENT  
DEPARTMENT OF PHYSICS  
MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
(AUTONOMOUS)

Submitted for the project viva- voce examination held on 15/05/2024

M. Saranya  
Internal Examiner 15/5/24  
[M. SARANYA]

G. Ramesh  
External Examiner 15/5/24

**MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**  
Affiliated to Periyar University, Salem,  
Accredited by NAAC with "A" grade, Recognized by UGC under Section 2(f) & 12(B),  
Rasipuram-637408.Namakkal District, Tamilnadu

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This is to certify that the Project Report entitled "ANTI-SLEEP ALARM DETECTOR FOR DRIVERS" Submitted to Periyar University, Salem in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE IN PHYSICS** is a record of original research work done by **HEMASAKTHIS (21MUPH1002), KANISHKA.K (21MUPH1003), KAVIYA.M (21MUPH1004), YASHIGA.R (21MUPH5001)** during the period of her/his study (2021-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.


  
Project Guide 13/5/24

  
13/5/24.  
Dr. M. REVATHI M.Sc., Ph.D.,  
Head Department of Physics  
Muthayammal College of Arts and Science  
Rasipuram - 637 408.  
Namakkal (Dt.) Tamilnadu.

Submitted for the project viva-voce examination held on 14.05.2024

**Examiners:**

1.   
14/5/24

2.   
14/5/24



**MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)**

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Accredited by NAAC with „A” grade, Recognized by UGC under Section 2(f) & 12(B),  
Rasipuram-637408.Namakal District,Tamilnadu

**DEPARTMENT OF PHYSICS**



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COLLEGE OF ARTS  
AND SCIENCE**  
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This is to certify that the Project Report entitled “TELESCOPE DESIGN AND DEVELOPMENT” Submitted to Periyar University, Salem in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE IN PHYSICS** is a record of original research work done by **SIVARANJANI . P (21MUPH1014) , SUVATHI .L (21MUPH1016) , SRINIVASAN . M (21MUPH1024)** during the period of her/his study (2021-2024) in the Department of physics , Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

Project Guide

**Dr.C. INDIRA PRIYADHARSINI, M.Sc., M.Phil., Ph.D.,**  
Assistant Professor-Department of Physics,  
MUTHAYAMMAL COLLEGE OF  
ARTS AND SCIENCE (AUTONOMOUS),  
RASIPURAM, Namakkal Dt. - 637 408.

Head of the Department

**Dr. M. REVATHI** M.Sc., B.Ed., M.Phil., Ph.D.,  
Head Department of Physics  
Muthayammal College of Arts and Science  
Rasipuram - 637 408.

Submitted for the project viva voce examination held on **14.05.2024** Namakkal (DU) Tamilnadu.

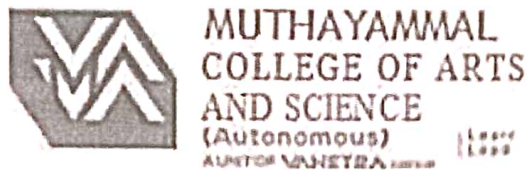
Examiners:

1. 14/5/24

2. 14/5/24

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Affiliated to Periyar University, Salem,  
Accredited by NAAC with "A" grade, Recognized by UGC under Section 2(f) & 12(B),  
Rasipuram-637408.Namakkal District ,Tamilnadu.

DEPARTMENT OF PHYSICS



CERTIFICATE

This is to certify that the Project Report entitled " RUBY LASER" Submitted to Muthayammal College of Arts and Science, Rasipuram (Autonomous) in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE IN PHYSICS is a record of original research work done by MOHANADEVI.M.S(21MUPH1009), SWETHA.M (21MUPH1018),VARSHI.A.S (21MUPH1019),during the period of study (2021-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associates ship / Fellowship or similar title to any candidate of any University.

M. Saranya  
Project Guide  
[M. SARANYA]

HEAD OF THE DEPARTMENT  
DEPARTMENT OF PHYSICS  
MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
(Autonomous)  
RASIPURAM (P.O), NAMAKKAL (DT)-637 408.

Submitted for the project viva-voce examination held on 14.5.24

Examiners:

1. 14/5/24 2. M. Saranya 14/5/24

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AND SCIENCE**  
(Autonomous)  
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**CERTIFICATE**

This is to certify that the Project Report entitled " **ULTRASONIC RADAR SENSOR**" Submitted to Muthayammal College of Arts and Science, Rasipuram (Autonomous) in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE IN PHYSICS** is a record of original research work done by **MEKHALASRI.M.P(21MUPH1008), MOHAVARSHINI.R(21MUPH1010), SUVATHI.P.R(21MUPH1017)**, during the period of study (2021-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

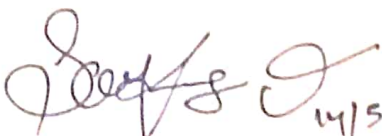
  
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DEPARTMENT OF PHYSICS  
MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE  
(AUTONOMOUS)  
RASIPURAM (T.K), NAMAKKAL (DT)-637 408

Submitted for the project viva-voce examination held on 14/05/2024

Examiners:

1.   
14/5/24

2.   
14/5/24



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AND SCIENCE**  
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SUN OF VANETRA

**CERTIFICATE**

This is to certify that the Project Report entitled, "AUTOMATIC WATERING SYSTEM USING SOIL MOISTURE SENSOR" Submitted to Muthayammal College of Arts and Science, Rasipuram (Autonomous) in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE IN PHYSICS** is a record of original research work done by **MAHESWARIS.(21MUPH1007), VIJAYALAKSHMI.V(21MUPH1020), VIGNESHWARAN.P(21MUPH1025), VIJAYAKUMAR.P(21MUPH1026)**, during the period of study (2021-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

*P. P. Perum*

Project Guide

*M. P. Perum*

Head of the Department

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DEPARTMENT OF PHYSICS

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RASIPURAM (Tk), NAMAKKAL (Dt)-637 408.

Submitted for the project viva-voce examination held on 14/05/2024

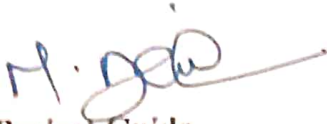
Examiners:

1. *[Signature]*  
14/5/24

2. *[Signature]*  
14/05/2024

## CERTIFICATE

This is to certify that the Project Report entitled " **ULTRASONIC SENSOR DISTANCE CALCULATOR** " Submitted to Muthayammal College of Arts and Science, Rasipuram (Autonomous) in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE IN PHYSICS** is a record of original research work done by **ABINESH.P (21MUPH1021)**, **ASHIFA.K(21MUPH1001)**, **BALU.S(21MUPH1022)**, **MADHUMITHA.R (21MUPH1006)** and **SOWNDHARYA.P(21MUPH1015)** during the period of her/his study (2021-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.



**Project Guide**

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**Head of the Department**

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MUTHAYAMMAL COLLEGE OF ARTS AND  
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RASIPURAM (TK), NAMAKKAL (DT)

Submitted for the project viva-voce examination held on 14.05.2024

**Examiners:**

1.   
14/5/24

2.   
14/5/24

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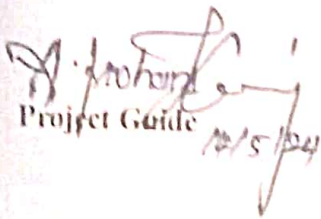
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RASIPURAM, NAMAKKAL DISTRICT, TAMILNADU

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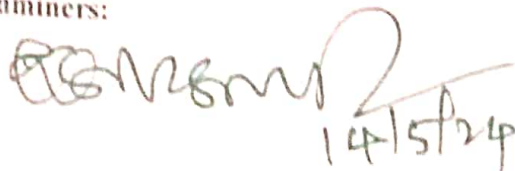
This is to certify that the Project Report entitled "FIRE DETECTOR SYSTEM WITH PROTECTION USING ARDUINO" Submitted to Muthayammal College of Arts and Science, Rasipuram (Autonomous) in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE IN PHYSICS is a record of original research work done by PADMASHRI.C (21MUPH1012), RENUKADEVIA (21MUPH1013), SAKATHIVEL.M (21MUPH1023), during the period of study (2021-2024) in the Department of Physics, Muthayammal College of Arts and Science, Rasipuram (Autonomous) under my supervision / guidance and this project report has not formed the basis for the award of Degree / Diploma / Associateship / Fellowship or similar title to any candidate of any University.

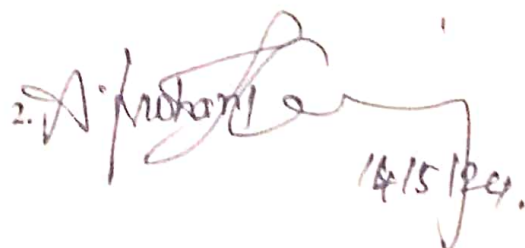
  
Project Guide  
14/5/24

  
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**HEAD OF THE DEPARTMENT**  
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**MUTHAYAMMAL COLLEGE OF ARTS AND**  
**(AUTONOMOUS)**  
**RASIPURAM (TK), NAMAKKAL (DT), TN.**  
14/5/24

Submitted for the project viva-voce examination held on

Examiners:

1.   
14/5/24

2.   
14/5/24





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# NPTEL Online Certification

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This certificate is awarded to

**ARCHANA R**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **66** %

Online Assignments	20.5/25	Proctored Exam	45.53/75
--------------------	---------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000774

To verify the certificate



No. of credits recommended: 3 or 4



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(Funded by the MoE, Govt. of India)



This certificate is awarded to

**S ELAMATHI**

for successfully completing the course

**Physics of Renewable Energy Systems**

with a consolidated score of **60** %

Online Assignments	20.35/25	Proctored Exam	39.8/75
--------------------	----------	----------------	---------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

(12 week course)

**Prof. Haimanti Banerji**  
Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S846002402

To verify the certificate



No. of credits recommended: 3 or 4



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(Funded by the MoE, Govt. of India)



This certificate is awarded to

**KABILAMBIGAI GP**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **51** %

Online Assignments	20.63/25	Proctored Exam	30.23/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000695

To verify the certificate



No. of credits recommended: 3 or 4





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This certificate is awarded to

**S NANDHINI**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **61** %

Online Assignments	18.85/25	Proctored Exam	42/75
--------------------	----------	----------------	-------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

(12 week course)

**Prof. Haimanti Banerji**  
Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S743000921

To verify the certificate



No. of credits recommended: 3 or 4



# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**SITHESWARI M A**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **53** %

Online Assignments	20.88/25	Proctored Exam	31.76/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S846002430

To verify the certificate



No. of credits recommended: 3 or 4



Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**THATCHAYINI M**

for successfully completing the course

**Physics of Renewable Energy Systems**

with a consolidated score of **65** %

Online Assignments	20.22/25	Proctored Exam	44.63/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

(12 week course)

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S743000318

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**VIDHYA J**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **62** %

Online Assignments	20.25/25	Proctored Exam	42/75
--------------------	----------	----------------	-------

Total number of candidates certified in this course: **1012**

Jul-Oct 2023

(12 week course)

**Prof. Haimanti Banerji**  
Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S743000395

To verify the certificate



No. of credits recommended: 3 or 4



# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**GOWSICK R M**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **52** %

Online Assignments	20.6/25	Proctored Exam	31.38/75
--------------------	---------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000754

To verify the certificate



No. of credits recommended: 3 or 4



# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to  
**MOHAMED JIEURUDEEN S**  
for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **56** %

Online Assignments	22.03/25	Proctored Exam	34.31/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**  
(12 week course)

**Prof. Haimanti Banerji**  
Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000714

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**SANJAY V**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **51** %

Online Assignments	21.38/25	Proctored Exam	30/75
--------------------	----------	----------------	-------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S846001577

To verify the certificate



No. of credits recommended: 3 or 4



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(Funded by the MoE, Govt. of India)



This certificate is awarded to  
**SHANMUGASUNDARAM M**  
for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **50** %

Online Assignments	18.66/25	Proctored Exam	31.38/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**  
(12 week course)

**Prof. Haimanti Banerji**  
Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000735

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**ASHIFA K**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **67** %

Online Assignments	21.81/25	Proctored Exam	45.53/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

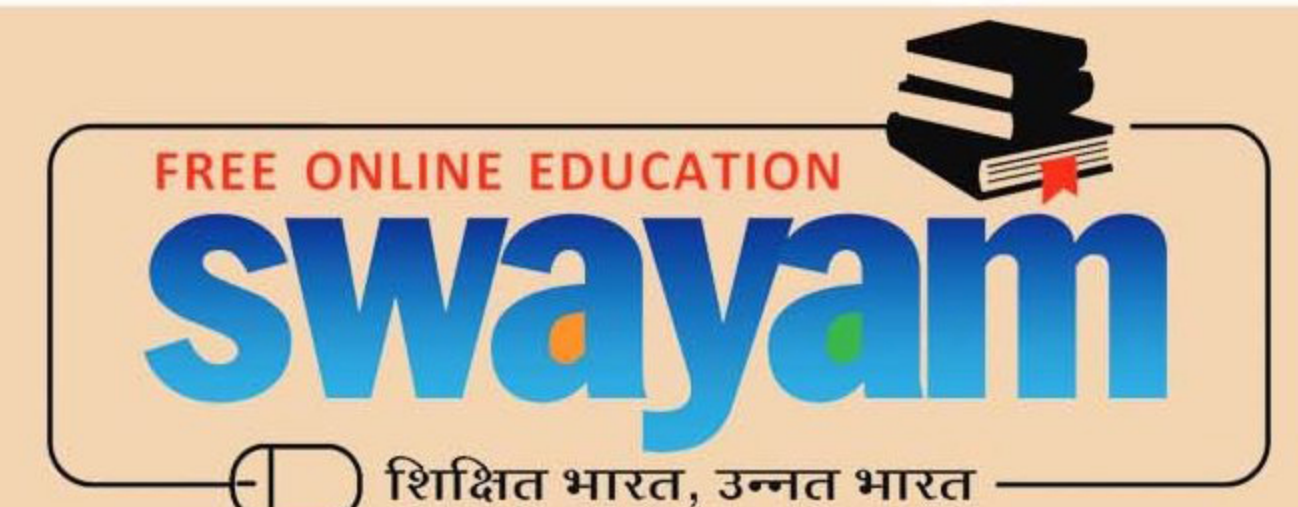
**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000814

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**HEMASAKTHI S**

for successfully completing the course

**Physics of Renewable Energy Systems**

with a consolidated score of **48** %

Online Assignments	18.35/25	Proctored Exam	30/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000474

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**KANISHKA K**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **53** %

Online Assignments	20.85/25	Proctored Exam	32.15/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000854

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**KAVIYA M**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **57** %

Online Assignments	20.56/25	Proctored Exam	35.97/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL

IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000495

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**MAHESWARI S**

for successfully completing the course

**Physics of Renewable Energy Systems**

with a consolidated score of **60** %

Online Assignments	21.78/25	Proctored Exam	37.99/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000514

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**R MOHAVARSHINI**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **61** %

Online Assignments	18.41/25	Proctored Exam	42.75/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

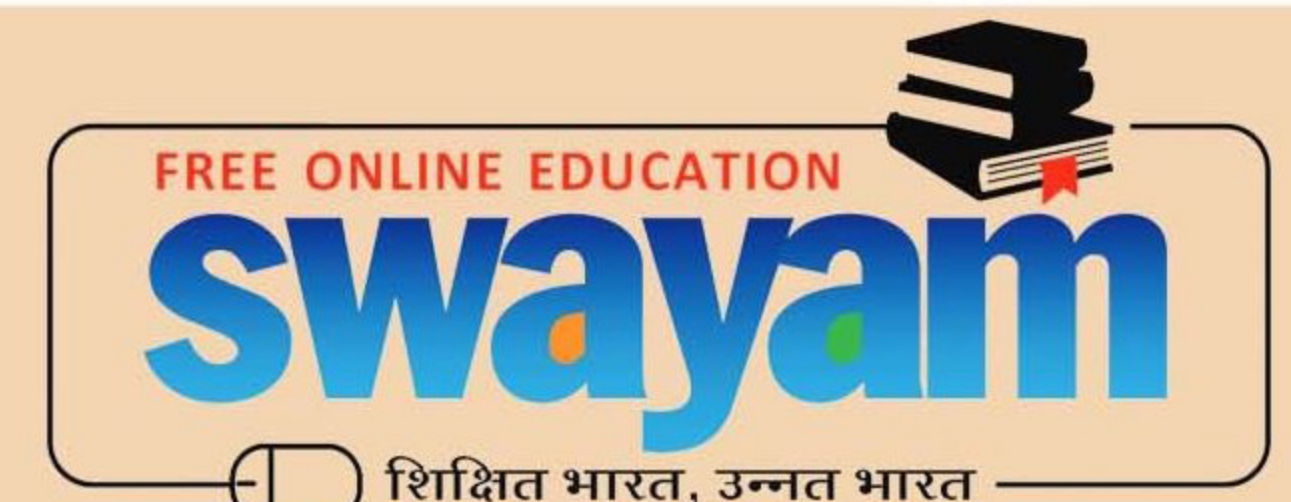
**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S743000123

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**RENUKADEVI A**

for successfully completing the course

**Physics of Renewable Energy Systems**

with a consolidated score of **55** %

Online Assignments	20.72/25	Proctored Exam	34.57/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

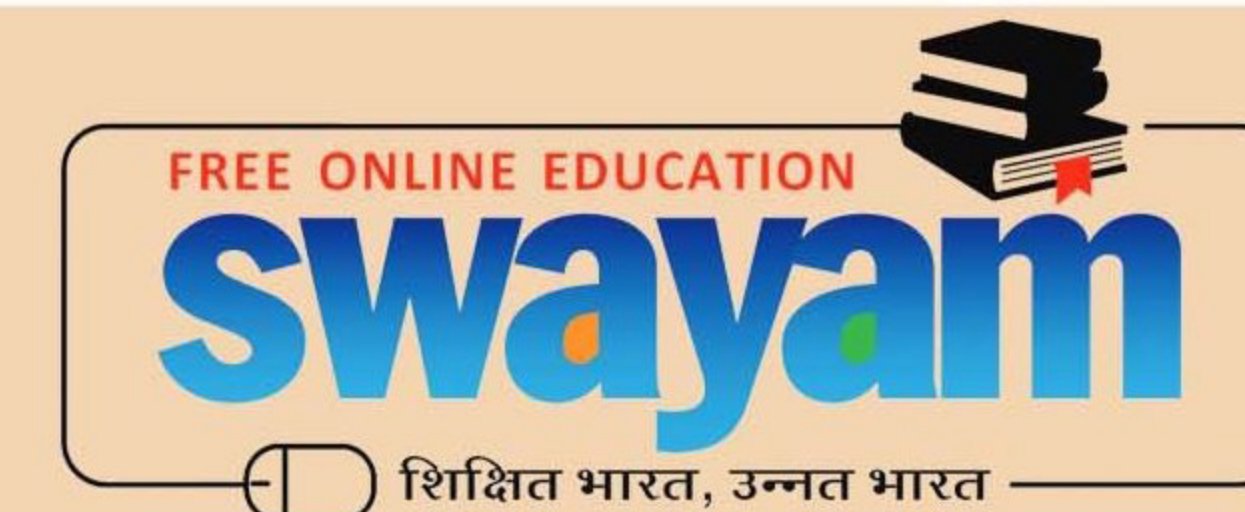
**Prof. Haimanti Banerji**

Coordinator, NPTEL

IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000554

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**SOWNDHARYA P**

for successfully completing the course

**Physics of Renewable Energy Systems**



with a consolidated score of **80** %

Online Assignments	23.72/25	Proctored Exam	56.25/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

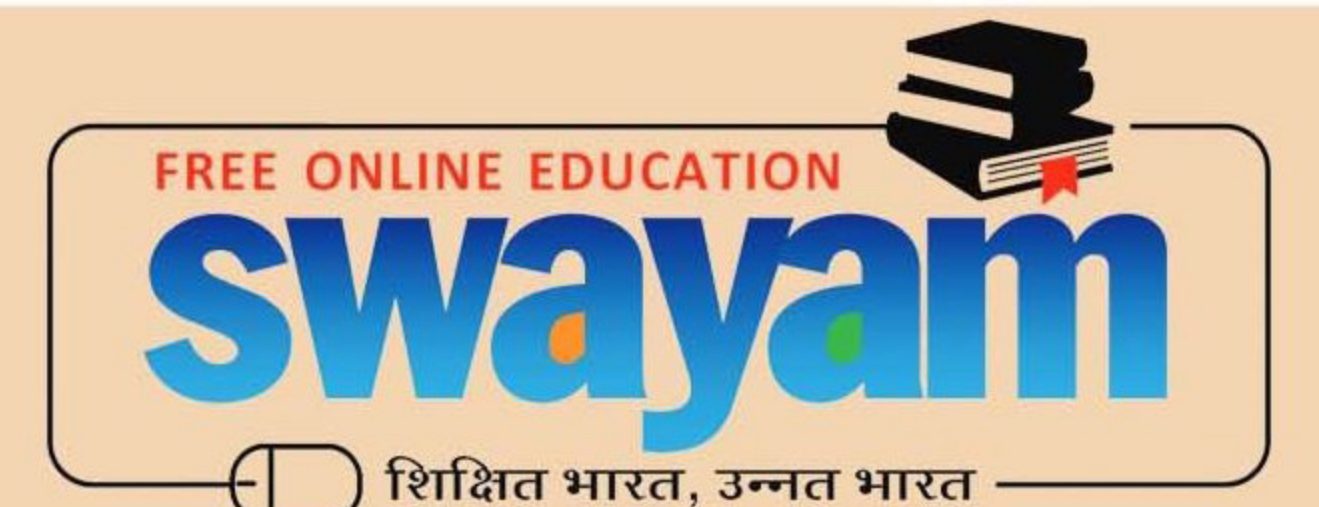
**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S743000048

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**SUVATHI L**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **60** %

Online Assignments	21.75/25	Proctored Exam	37.88/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

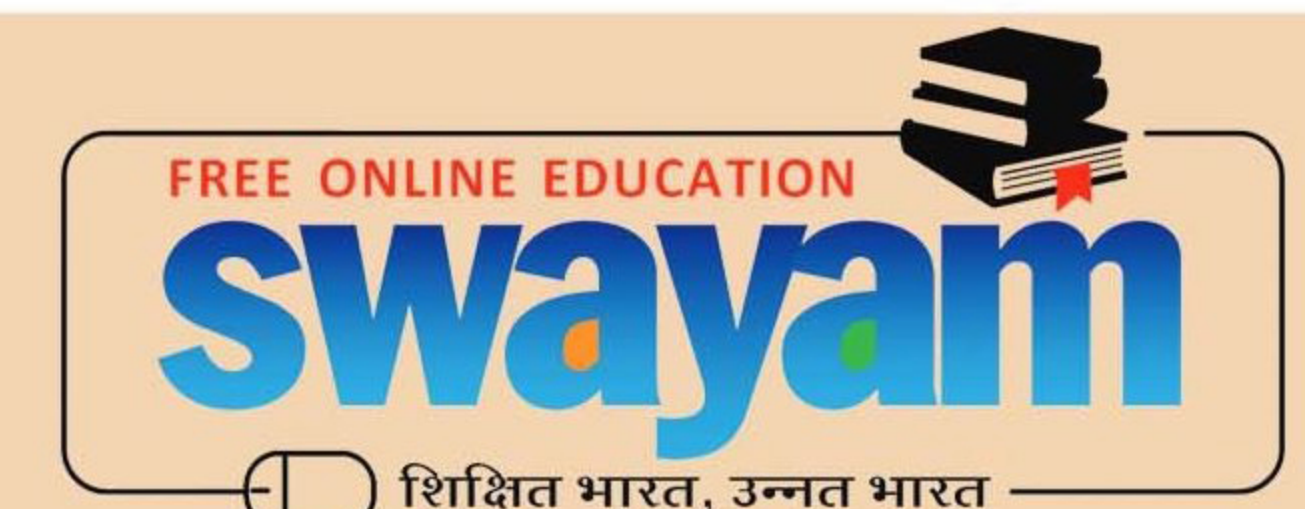
**Prof. Haimanti Banerji**

Coordinator, NPTEL

IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000593

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**SWETHA M**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **56** %

Online Assignments	22.6/25	Proctored Exam	33.16/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

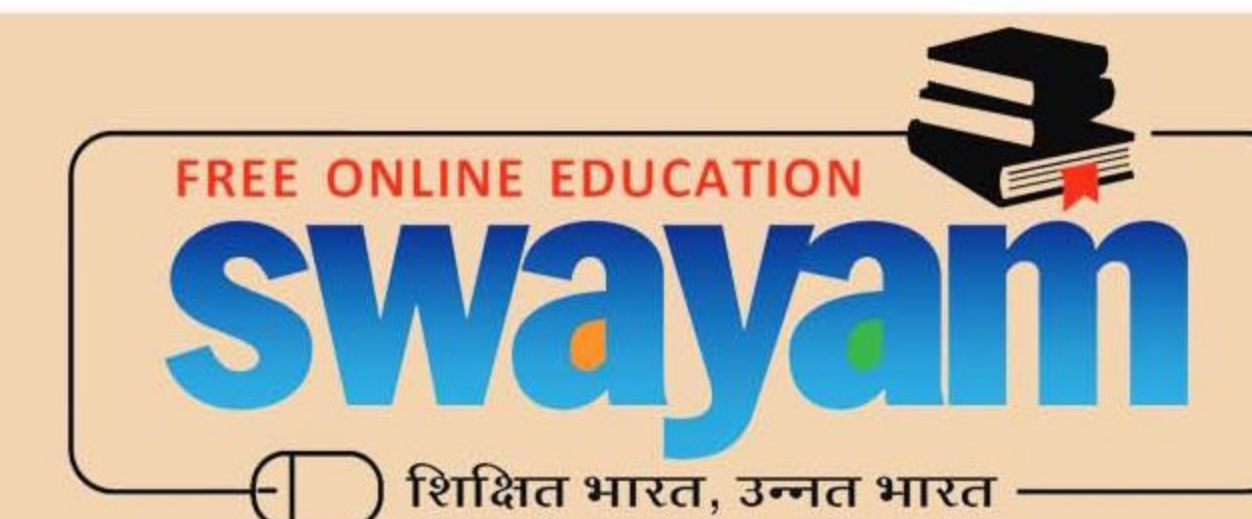
**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000615

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**VARSHA S**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **54** %

Online Assignments	20.63/25	Proctored Exam	33/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL

IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S743000358

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**VIJAYALAKSHMI V**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **54** %

Online Assignments	19.94/25	Proctored Exam	33.92/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL

IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000656

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**ABINESH P**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **49** %

Online Assignments	19.41/25	Proctored Exam	30/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

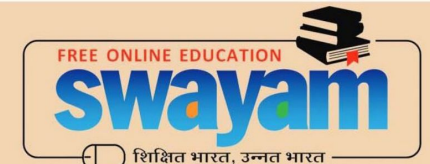
(12 week course)

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000455

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**SRINIVASAN**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **52** %

Online Assignments	21.06/25	Proctored Exam	30.86/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

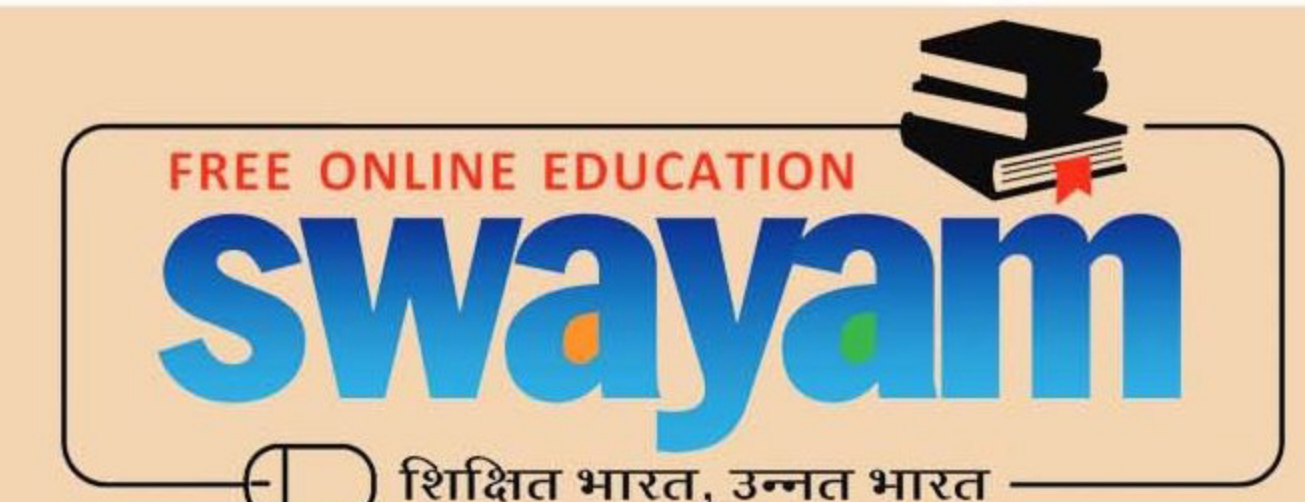
**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000574

To verify the certificate



No. of credits recommended: 3 or 4





# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**VIJAYAKUMAR P**

for successfully completing the course

**Physics of Renewable Energy Systems**

with a consolidated score of **56** %

Online Assignments	21.91/25	Proctored Exam	34.44/75
--------------------	----------	----------------	----------

Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL

IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000634

To verify the certificate



No. of credits recommended: 3 or 4





Elite

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to

**YASHIGA R**

for successfully completing the course

## Physics of Renewable Energy Systems

with a consolidated score of **63** %

Online Assignments	21.1/25	Proctored Exam	41.59/75
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Total number of candidates certified in this course: **1012**

**Jul-Oct 2023**

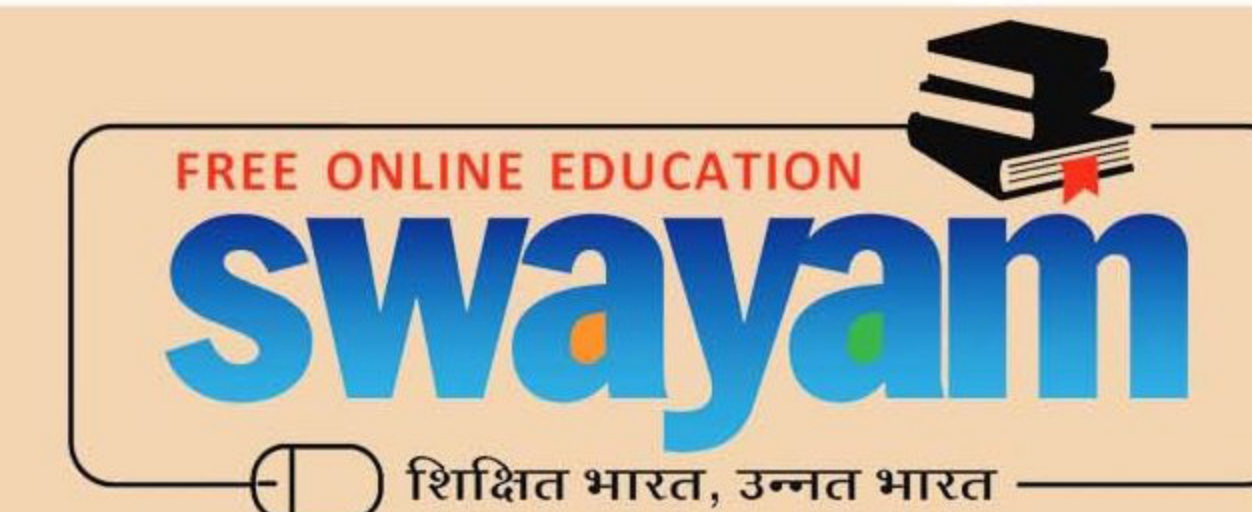
**(12 week course)**

**Prof. Haimanti Banerji**

Coordinator, NPTEL  
IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23PH35S843000675

To verify the certificate



No. of credits recommended: 3 or 4