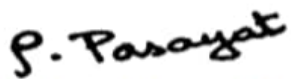


CERTIFICATE

Certified that the work contained in the report titled “**DESIGN AND ANALYSIS OF HYBRID DATA SECURITY ALGORITHM WITH MESSAGE INTEGRITY TEST USING VHDL**” by (Ashis Kumar Samal- 1821105025), (AyanLodh- 1701105497), (B Manoranjan Patra- 1701105252), (Barsha Baisakhi Priyadarshini- 1701105152), (Madhusmita Das- 1701105499), (MonalishaSethi- 1701105173) has been carried out under my supervision and this work has not been submitted elsewhere for a degree.



Mr. Paresh Kumar Pasayat
Assistant Professor & Supervisor,
Dept. of Electronics and Telecommunication Engineering,
Indira Gandhi Institute of Technology, Sarang.



Dr. Urmila Bhanja
Head of the Department,
Dept. of Electronics and Telecommunication Engineering,
Indira Gandhi Institute of Technology, Sarang.



Dr. Sanjay Agrawal
External Examiner,
Associate Professor,
Dept. of Electronics and Telecommunication Engineering,
VSSUT, Burla.

CNN BASED DENOISING AND RECONSTRUCTION OF ENCRYPTED IMAGE

A Project Report Submitted

in Partial Fulfillment of the Requirement

for the Degree of

Bachelor of Technology

in

Electronics and Telecommunication Engineering

by

-Rani Pradhan (36835)
-Soumya Ranjan Patra (36844)
-Sibashish Mohapatra (36842)
-Manaswita Panigrahi (36823)
-Abhilipsa Panda (36849)
- Saurav Badaik (36864)



DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

INDIRA GANDHI INSTITUTE OF TECHNOLOGY SARANG

DHENKANAL - 759146 (ODISHA)

JUNE, 2021

UNDERTAKING

We declare that the work presented in this report titled “*CNN Based Denoising and Reconstruction of Encrypted image*”, submitted to Electronics and Telecommunication Engineering Department, Indira Gandhi Institute of Technology, Sarang for the award of the *Bachelor of Technology* degree in *Electronics and Telecommunication Engineering* is our original work. We have not submitted the same work for the award of any other degree.

June, 2021

Place- IGIT, Sarang

Name of the Students

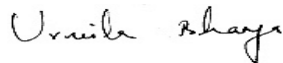
- Rani Pradhan (36835)
- Soumya Ranjan Patra (36844)
- Sibashish Mohapatra (36842)
- Manaswita Panigrahi (36823)
- Abhilipsa Panda (36849)
- Saurav Badaik (36864)

CERTIFICATE


Certified that the work contained in the report titled “*CNN Based Denoising and Reconstruction of Encrypted image*”, by Rani Pradhan-1701105303, Soumya Ranjan Patra-1701105120, Sibashish Mohapatra-1701105533, Manaswita Panigrahi-1701105307, Abhilipsa Panda-1821105002 and Saurav Badaik-1821105131 has been carried out under my supervision and this work has not been submitted elsewhere for a degree.



Mr. Kodanda Dhar Sa
Assistant Professor & Supervisor,
Dept. of Electronics and Telecommunication Engineering,
Indira Gandhi Institute of Technology, Sarang.



Dr. Urmila Bhanja
Head of the Department,
Dept. of Electronics and Telecommunication Engineering,
Indira Gandhi Institute of Technology, Sarang.



Dr. Sanjay Agrawal
Associate Professor, Electronics & Telecommunication Engg.
VSSUT, Burla, ODISHA, INDIA
External Examiner

ACKNOWLEDGEMENTS

We would like to place my sincere, deepest appreciation, humble regards and heartfelt gratitude to our project guide **Mr. Kodanda Dhar Sa** for his guidance, simulating suggestion and tremendous help over the period of our study and project presentation. His constant encouragement, invaluable advice and motivation helped us all the time of research and writing of this report. We have felt encouraged by his friendly attitude and appreciation of our efforts. Without his supervision and help, this report would not have been achieved.

We are deeply thankful to **Dr. Urmila Bhanja**, Head of the Department, Electronics and Telecommunication Engineering, for her endless help throughout our research work. We would highly indebted to the whole **Electronics and Telecommunication Engineering Department, IGIT, Sarang** for providing with excellence academic circumstances that are essential to accomplish our report.

We express our sincere thanks to **Dr. Satyabrata Mohanta**, Director, IGIT, Sarang for allowing me to carry out the research work.


Last but not the least; We thank God Almighty for giving us an opportunity to excel in our efforts to complete the seminar on time.

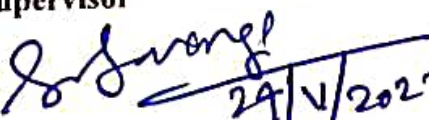
**INDIRA GANDHI INSTITUTE OF TECHNOLOGY,
SARANG, DHENKANAL – 759146**



CERTIFICATE

This is to certify that the project report entitled “SOLID MODELLING AND NUMERICAL SIMULATION OF AN INDUSTRIAL GEARBOX USING NANOLUBRICANTS” submitted by RAKESH RATAN JENA(1801105355), SASANKA SEKHAR KHATUA(1801105406), SHIBANI SUBHADARSINI(1801105435), SOMYARANJAN PRUSTY(1801105475), SRABANA KUMAR MURMU(1801105501), SUBIT KUMAR SAHOO(1801105519) of GROUP NO – 14 in partial fulfilment of requirements for the award of Bachelor of Technology degree in Mechanical Engineering at Indira Gandhi Institute of Technology, Sarang is an authentic work carried out under our supervision and guidance. To the best of our knowledge, the matter embodied in this project report has not been submitted to any other university/institute for the award of any Degree (UG/PG) or Diploma.


Mr. Gaurab Kumar Ghosh
Asst. Professor
Supervisor


External Examiner


Project Viva-voce held on... 24/5/2022


H.O.D
Mechanical Engg Dept
I.G.I.T. Sarang

CERTIFICATE

This is to certify that the report entitled, "Preparation and Characterization of Amine modified Activated Carbon from Corncobs for Carbon Dioxide capture" was carried out by us under the guidance of Dr.(Mrs.)Dipa Das for the partial fulfilment towards the award of Bachelor of Technology in Chemical Engineering under Indira Gandhi Institute of Technology, Sarang in academic year 2020-2021. This report has been examined and found to be satisfactory.

Date:03-03-2021


16/05/21
Dr. (Mrs.)Dipa Das
Head Of the Department
Chemical Engineering
IGIT, Sarang

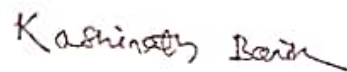
CERTIFICATE

This is to certify that the report entitled "Preparation of Bio-plastic Using Starch Derivatives" submitted by Deepak kumar sahuo(1701105177), Suraj kumar(1701105439), Anil kumar sethi(1701105440), Ashutosh pradhan(1701105308), Brahmananda mohanty(1821105044), Chandrajit Sahoo(1701105585) in fulfillment of the requirement for the award of Bachelor of Technology Degree in Chemical Engineering at Indira Gandhi Institute of Technology, Sarang is an original work executed under the supervision of Kashinath Barik during the academic year 2020-21.



Dr. (Mrs.) Dipa Das

Head of the Department
Chemical Engineering




Kashinath Barik
Asst. Professor Dept. Of
Chemical Engineering

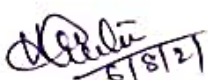


Indira Gandhi Institute of
Technology Sarang

CERTIFICATE

This is to certify that the report entitled, "**Preparation And Characterization Of NiCrBSi-Al₂O₃ Composite Coatings**" was carried out by us under the guidance of **Dr. Harekrushna Sutar** for the partial fulfilment towards the award of Bachelor of Technology in Chemical Engineering under Indira Gandhi Institute Of Technology, Sarang in academic year 2020-2021. This report has been examined and found to be satisfactory.


10/05/21
Dr.(Mrs) Dipa Das
(Head of the Department)
Chemical Engineering


5/8/21
Dr.Harekrushna Sutar
(Asst.Professor)
Chemical Engineering
Harekrushna Sutar
Assistant Professor
Chemical Engineering Dept.
I.G.I.T., Sarang

Date: 04.06.2021

CERTIFICATE

This is to certify that the report on the Project entitled 'Mathmetical modelling by MATLAB to a hydrodynamic behavior of spouped bed and fluidized bed' is a bonafide record of the work carried out by Subrat Nayak (1831105160), Chinmaya Devjyotee Samantaray (1701105576), Sumant Kumar Sahu (1821105166), of 8th semester B-Tech, Indira Gandhi Institute of Technology, Sarang under my supervision and guidance towards the partial fulfillment of requirement for the award of the degree of Bachelor of Technology in Chemical Engineering at Indira Gandhi Institute of Technology, Sarang. To the best of our knowledge, the matter embodied in this thesis has not been submitted to any other university or institute for the award of any degree.



Project Supervisor,

Date: 4th June, 2021

Place: Sarang, Odisha



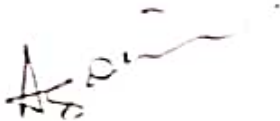
Head Of Department

Dept. of Chemical Engg.

IGIT Sarang

CERTIFICATE

This is to certify that Anurag, Deeptimayee, Jiban, Jyoti, and Swastika of final year of Chemical Engineering has submitted Major Project report entitled "Removal of Ammonia-Nitrogen from Wastewater by Adsorption" in partial fulfillment for the award of "Bachelor of Technology" Degree in the department of Chemical Engineering, Indira Gandhi Institute Of Technology, Sarang. This project is a bonafide work performed by them under my guidance in the academic session 2020-2021.



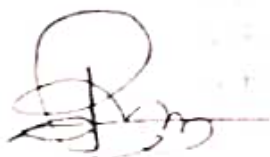
Mr. Anup Kumar Swain
Assistant Professor
Dept. of Chemical Engineering



Dr. (Mrs.) Dipa Das
Head of the Department
Dept. of Chemical Engineering

CERTIFICATE

This is to certify that the major project report entitled "Preparation, Characterization and Performance analysis of SPEEK - based membrane in DMFC" submitted by Saaraa Mohanty, Saloni Misra, Soumya Ranjan Sethi, Sambheet Nayak, Priyanka Behera, Bijikanta Priyadarshy, Soumyansu Satabdi Das, Rakesh Kumar Subudhi, Brajeswari Pattanaik in partial fulfillment prerequisites for the award of the degree of "Bachelor of technology" in the department of Chemical Engineering, Indira Gandhi Institute Of Technology, Sarang. This project is a bonafide work disbursed by them under my supervision and guidance in the academic session 2017-2021.




Mr. Rabi Ranjan Murmu
Assistant Professor
Department of Chemical
Engineering.


16/05/21

DR.(Mrs.) Dipa Das
Head of the Department Of Chemical
Engineering.

CERTIFICATE

This is to certify that the major project report entitled "Preparation, Characterization and Performance analysis of Chitosan-based membrane in DMFC" submitted by K. Mohan Rao, Rohan Pratap Singh, Saunak Subudhi, Ajay Kumar Barik, Shibananda Sahu, Nikhil Ranjan Dash in partial fulfilment prerequisites for the award of the degree of "Bachelor of Technology" in the department of Chemical Engineering, Indira Gandhi Institute Of Technology, Sarang. This project is a bonafide work disbursed by them under my supervision and guidance in the academic session 2017-2021.



03.08.2021

Mr. Rabi Ranjan Murmu
Assistant Professor
Department of Chemical
Engineering



18/8/21

Dr. (Mrs.) Dipa Das Head
of the Department
Department of Chemical
Engineering



INDIRA GANDHI INSTITUTE OF TECHNOLOGY, SARANG
(An autonomous Institute of Govt. of Odisha)

CERTIFICATE

This is to certify that the project report entitled “Modelling, Simulation and Control of Isothermal Non-jacketed Continuous Stirred Tank Reactor” submitted by Anshuman Pradhan, Asit Kumar Behera, Bishnu Rajak, and Binayak Prasad Singh, Shazad Hussainy, to the Department of Chemical Engineering, Indira Gandhi Institute of Technology, Sarang, in partial fulfillment prerequisites for the award of the degree of “Bachelor of Technology” in the Department of Chemical Engineering is a bona-fide work disbursed by them under my supervision and guidance in the academic session 2020-2021.


16105121
Dr. Dipa Das

H.O.D

Dept. of Chemical Engineering



04/06/2021

Dr. Sudip Banerjee

Assistant Professor

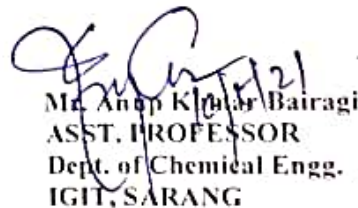
Dept. of Chemical Engineering

CERTIFICATE

This is to certify that the report on the Project entitled 'Review of Chemical Leaching of Aluminium from Red Mud' is a bonafide record of the work carried out by Sai Sonali Nayak(1701105311), Manasha Ranjan Rath(1701105382), Arya Anindya(1701105384), Pritish Behera(1701105399), Nirmal Krushna Dash(1701105407), Satya Ranjan Nahak(1701105577), Siddhant Dash(1701105594), Niranjana Jena(1831105095), Tapan Kumar Khuntia(1831105181) of 8th semester B-Tech, Indira Gandhi Institute of Technology, Sarang under my supervision and guidance towards the partial fulfillment of requirement for the award of the degree of Bachelor of Technology in Chemical Engineering at Indira Gandhi Institute of Technology, Sarang. To the best of my knowledge, the matter embodied in this thesis has not been submitted to any other university or institute for the award of any degree.



Dr. Dipa Das
HEAD OF DEPARTMENT
Dept. of Chemical Engg.
IGIT, SARANG



Mr. Anup Kumar Bairagi
ASST. PROFESSOR
Dept. of Chemical Engg.
IGIT, SARANG

Date- 4th June, 2021
Place- Sarang, Odisha



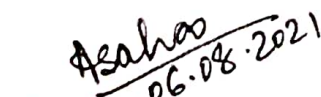
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang, 759146 (ODISHA)

CERTIFICATE

This is to certify that the report entitled " A Review on the Synthesis of Graphene and effect of GNP thickness on the Mechanical, Thermal and Morphological Properties of Graphene Nanoplatelet Reinforced Polypropylene " submitted by Dibyani Sahu (Regd no-1907105001) in fulfillment of the requirement for the award of Masters of Technology Degree in Chemical Engineering at Indira Gandhi Institute of Technology, Sarang is an original work executed under the supervision of Dr. Harekrushna Sutar during the academic year 2020-21.


6/8/21

Dr. Harekrushna Sutar
Assistant Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang, 759146 (ODISHA)


06.08.2021

Dr. Abanti Sahoo
Head of Department
Chemical Engineering
NIT Rourkela, Odisha
(External Examiner)



Dr. Dipa Das
Head of Department
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang, 759146 (ODISHA)



Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang, Dhenkanal, Odisha-759146

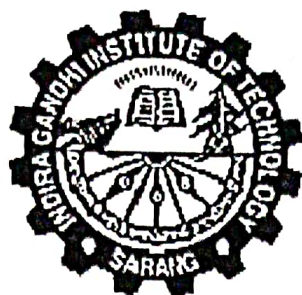
CERTIFICATE

This is to certify that the project report entitled "Adsorptive removal of Ammonia-Nitrogen from wastewater" is a bonafide record of work submitted by KUNIKA SAMASI (1907105002) under the guidance of Mr. Anup Kumar Swain. It is submitted in partial fulfilment of the requirement for the award of the Degree of MASTER OF TECHNOLOGY in Chemical engineering, Indira Gandhi Institute of technology, Sarang, Odisha.

Mr. Anup Kumar Swain
Assistance Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (Odisha)

Dr. (Mrs.) Dipa Das
Head of the department
Department of Chemical
Engineering Indira Gandhi
Institute of Technology,
Sarang-759146 (Odisha)

Dr. (Mrs.) Abanti Sahoo
Head of the Department
Department of Chemical Engineering
NIT Rourkela-769008 (Odisha)



**Indira Gandhi Institute of Technology
Sarang**

CERTIFICATE

This is to certify that the report entitled, "COMPARISON OF ADSORPTION CAPACITY OF AMINE MODIFIED ACTIVATED CARBON FOR CO₂ CAPTURE" was carried out by us under the guidance of **Dr. Dipa Das** for the partial fulfilment towards the award of Master of Technology in Chemical Engineering under Biju Pattanaik University of Technology from IGIT, Sarang in academic year 2019-2021. This report has been examined and found to be satisfactory.

I considered that the thesis has reached the standards and fulfilling the requirements of the rules and regulations relating to the nature of the degree. The contents embodied in the thesis have not been submitted for the award of any other degree or diploma in this or any other university.

Dr. Dipa Das

GUIDE

Department of
Chemical Engineering
Indira Gandhi Institute
of Technology
Sarang-759146
(ODISHA)

Dr. Dipa Das

HOD

Department of
Chemical Engineering
Indira Gandhi Institute
of Technology
Sarang-759146
(ODISHA)

Dr. Abanti Sahoo

HOD

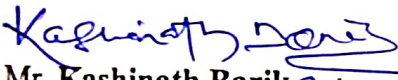
Department of
Chemical Engineering
National Institute of
Technology
Rourkela-769008
(ODISHA)

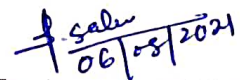



Department of Chemical
Engineering Indira Gandhi Institute
of Technology Sarang-759146
(ODISHA)

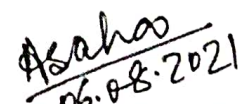
CERTIFICATE

This is to certify that the report entitled "Preparation of Bio-plastic Using Starch Derivatives" submitted by **Rajalaxmi Rath (Regd no-19071004)** in fulfillment of the requirement for the award of Masters of Technology Degree in Chemical Engineering at Indira Gandhi Institute of Technology, Sarang is an original work executed under the supervision of **Mr. Kashinath Barik** during the academic year 2020-21.


Mr. Kashinath Barik
GUIDE
Assistant Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (ODISHA)


Mrs. Brahmotri Sahoo
CO-GUIDE
Assistant Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (ODISHA)


Dr. (Mrs.) Dipa Das
HOD
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (ODISHA)


Prof. (Mrs.) Abanti Sahoo
HOD
Department of Chemical Engineering
National Institute of Technology
Rourkela-769008 (ODISHA)

CERTIFICATE

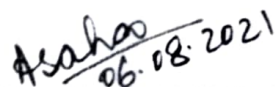
This is to certify that the major project report entitled "The Effect of Ionic Liquids on CNT Modified Chitosan Composite Membrane for Direct Methanol Fuel Cell" submitted by Subhasmita Jena in partial fulfilment prerequisites for the award of the degree of "Master of technology" in the department of Chemical Engineering, Indira Gandhi Institute of Technology, Sarang. This project is a bonafide work disbursed by her under my supervision and guidance in the academic session 2017-2021.



Mr. Rabi Ranjan Murmu
Assistant Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology,
Sarang-759146 (Odisha)



Dr. (Mrs.) Dipa Das
Head of the department
Department of Chemical Engineering
Indira Gandhi Institute of Technology,
Sarang-759146 (Odisha)



06.08.2021

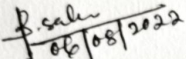
Dr. (Mrs.) Abanti Sahoo
Head of the Department
Department of Chemical Engineering
NIT Rourkela-769008 (Odisha) .

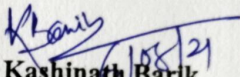


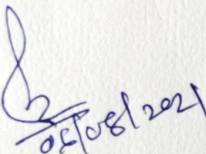
Department of Chemical
Engineering Indira Gandhi Institute
of Technology Sarang-759146
(ODISHA)

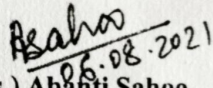
CERTIFICATE

This is to certify that the report entitled "**Wet coal beneficiation**" submitted by **Surendra Nath Dandasena (Regd no-19071006)** in fulfillment of the requirement for the award of Masters of Technology Degree in Chemical Engineering at Indira Gandhi Institute of Technology, Sarang is an original work executed under the supervision of Mrs. **Brahmotri Sahoo** during the academic year 2020-21.

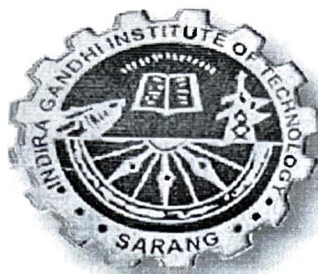

Mrs. **Brahmotri Sahoo**
GUIDE
Assistant Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (ODISHA)


Mr. **Kashinath Barik**
CO-GUIDE
Assistant Professor
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (ODISHA)


Dr. (Mrs.) **Dipa Das**
HOD
Department of Chemical Engineering
Indira Gandhi Institute of Technology
Sarang-759146 (ODISHA)

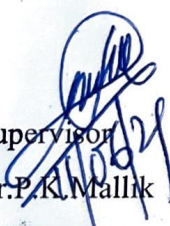

Prof. (Mrs.) **Abanti Sahoo**
HOD
Department of Chemical Engineering
National Institute of Technology
Rourkela-769008 (ODISHA)


INDIRA GANDHI INSTITUTE OF TECHNOLOGY, SARANG



CERTIFICATE

This is to certify that the project report entitled **“PROCESSING AND ANTIBACTERIAL CHARACTERIZATION OF SMS SLAG”** submitted by **Bhagyasri Sahoo** in partial fulfillment of the requirements for the award of Master of Technology degree in **“METALLURGICAL & MATERIALS ENGINEERING”** of **Indira Gandhi Institute of Technology, Sarang**, is an authentic work carried out by him under my supervision and guidance. To the best of my knowledge, the matter embodied in the report has not been submitted to any other university/institute for the award of any Degree or Diploma.


Supervisor
Dr. P. K. Malik
Head of Dept.


Head of the Department
Dr. P. K. Malik
Head of Dept.

External Examiner

Metallurgical & Materials Engg Metallurgical & Materials Engg
I.G.I.T, Sarang I.G.I.T, Sarang

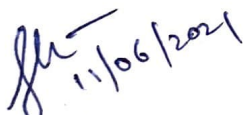


Department of Metallurgical and Materials Engineering
Indira Gandhi Institute of Technology, Sarang
ODISHA-759146

CERTIFICATE

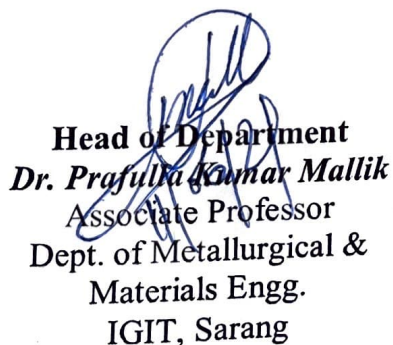
This is to certify that the thesis entitled "Evaluation of Mechanical Properties of Glass/Carbon/Kevlar Reinforced Polymer Hybrid Composites" submitted by **Sonali Rout** (Registration Number: 1907105052) in partial fulfilment of the requirements for the award of **Master of Technology** in the *Department of Metallurgical and Materials Engineering*, Indira Gandhi Institute of Technology, Sarang is an authentic work carried out under my supervision and guidance.

To the best of my knowledge, the matter embodied in the thesis has not been submitted to elsewhere for the award of any degree.


11/06/2021

Supervisor
Dr. Suresh Chandra Patnaik
Professor
Dept. of Metallurgical &
Materials Engg.
IGIT, Sarang

Co-Supervisor
Dr. Ramesh Kumar Nayak
Assistant Professor-1
Dept. of Materials &
Metallurgical Engg.
MANIT, Bhopal


Head of Department
Dr. Profulla Kumar Mallik
Associate Professor
Dept. of Metallurgical &
Materials Engg.
IGIT, Sarang

External Examiner
Date -
Place -



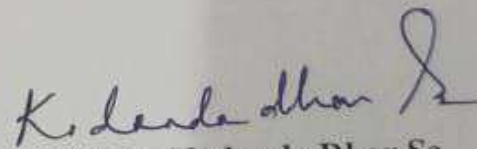
Department of Electronics Engineering
Indira Gandhi Institute of Technology, Sarang
Dhenkanal-759146, Odisha

CERTIFICATE

This is to certify that the major project entitled "Multi – Focus image fusion" submitted by Priyanka Parija, Regd. No. 18071051072, Department of Electronics Engineering, Indira Gandhi Institute of Technology, Sarang; for partial fulfillment of the requirements for the degree of Master of Technology in Electronics Engineering with specialization in "Electronics & Telecommunication"; is a bonafide record of the work carried out by her under our supervision and guidance.


Dr. (Mrs.) Urmila Bhanja

(Head of the Department)


Asst Prof. Kodanda Dhar Sa

(Project Guide)