



POST GRADUATE DEPARTMENT OF ANTHROPOLOGY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
EB-2, SECTOR-I, SALT LAKE, KOLKATA-700064

MEMO NO.:

DATE: 10/3/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Imran Nazir, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work, for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Environment, Space & Health: An Empirical Study on Environment Controlled Ethnomedicinal Usage an Changes in Two Distinct Ecozones of Supurdi in Purulia District and Tipligheri in Sunderban Delta of South 24 Parganas at Purulia and Soth 24 Parganas, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Sankha*

Dr. Sankha Priya Guha  
Associate Professor  
Department of Anthropology  
Bidhannagar College

Head  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/8/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Pritam Sanyal, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: The Changes of Game and Sports in Bengali Society: An Anthropological Study Special Emphasis on Leisure at Kolkata, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Sankha*

Dr. Sankha Priya Guha  
Associate Professor  
Department of Anthropology  
Bidhannagar College

Head  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
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MEMO NO.:

DATE: 10/3/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Nirtyaa Roy, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Involvement of Women in Post Death and Post Funeral of a Deceased Parent or Husband: An Anthropological Study among Bengali Hindu population in Banamalipur, Barasat, North 24 Parganas at Barasat, North 24 Paganas, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Sankha*

Dr. Sankha Priya Guha  
Associate Professor  
Department of Anthropology  
Bidhannagar College

Head  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/8/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Abhra Ghosal, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Cultural Identity and the Issues of Electoral Democracy Among the Motuas of North 24 Parganas, West Bengal: An Ethnographic Study at North 24 parganas, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*K. Kaushik Bhattacharya*

Mr. Kaushik Bhattacharya  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/3/23.

**TO WHOM IT MAY CONCERN**

*This is to certify that Prithwish Mukherjee, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Chhau Dance from tradition to the Trend: An Ethnographic Study at Purulia, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



Mr. Kaushik Bhattacharya  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor (W.B.E.S.)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/3/23.

**TO WHOM IT MAY CONCERN**

*This is to certify that Aninda Ojha, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work, for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: The Cultural Identity of Body Among the Fishermen Community of Jaldā and Narandiya of Ramnagar Block, Purba Medinipur. An Ethnographic Study at Purba Medinipur, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



Mr. Kaushik Bhattacharya  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
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MEMO NO.:

DATE: 10/8/23.

**TO WHOM IT MAY CONCERN**

*This is to certify that Prabal Dey, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: An Anthropological Study on Women Empowerment through Self Help Groups and its challenges at a Rural Area in Coochbehar District of West Bengal at Coochbehar, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Kartick Chakraborty.*

Mr. Kartick Chakraborty  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
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MEMO NO.:

DATE: 10/8/23.

**TO WHOM IT MAY CONCERN**

*This is to certify that Subhankar Das Sharma, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Aachar Evam Biswas: An Anthropological Study on Some Aspects of Religious Rituals in A Multi Communal Semi-Urban Area of Hooghly District in West Bengal at Hooghly, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Kartick Chakraborty*

Mr. Kartick Chakraborty  
Assistant Professor  
Department of Anthropology  
Bidhannagar College  
Assistant Professor (W.B.E.S.)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
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MEMO NO.:

DATE: 10/7/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Kiran Ghosh, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: The Story of Tanti Kahini: An Anthropological Study of Changing and Problems Aspect of Weaver Community at Begampur in Hooghly, West Bengal at Hooghly, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Kartick Chakraborty*

**Mr. Kartick Chakraborty**  
**Assistant Professor**  
**Department of Anthropology**  
**Bidhannagar College**

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/3/23

**TO WHOM IT MAY CONCERN**

*This is to certify that **Prema Biswas**, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: **Womanhood and Identity: An Anthropological Study Among The Middleclass Women in A Semi-Urban Area at Habra of North 24 Parganas in West Bengal at North 24 Paganas**, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Kartick Chakraborty*

Mr. Kartick Chakraborty  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor (W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/3/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Souvik Kumar Patra, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Students' Dropout of Schools and Colleges during the Covid-19 Pandemics: An Ethnographic Study in Kolkata, India at Kolkata, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Soumita Biswas*

Mrs. Soumita Biswas  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor (W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
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MEMO NO.:

DATE: 10/7/23,

**TO WHOM IT MAY CONCERN**

*This is to certify that Ashis Kurmi, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Mobile phone Culture: Mobile Technology in everyday Lives of Slum Community in Suryanagar Colony, Kanchrapara, North 24 Parganas at Kanchrapara, North24 Parganas, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*

*Soumita Biswas*

Mrs. Soumita Biswas  
Assistant Professor  
Department of Anthropology  
Bidhannagar College  
Assistant Professor (W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
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MEMO NO.:

DATE: 10/8/23

**TO WHOM IT MAY CONCERN**

*This is to certify that Pragya Sona Biswas, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Blood Pressure and its Biocultural Correlates Among Females in an Urban Neighbourhood at Kolkata, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Sudesna Chanda*

Dr. Sudesna Chanda  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/3/23,

**TO WHOM IT MAY CONCERN**

*This is to certify that Saba Farhin, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: A biological Anthropological Study to Understand if There is A Relation Between Patterns and Blood Group in Human at Kolkata, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Sudesna Chanda*

Dr. Sudesna Chanda  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/8/23.

**TO WHOM IT MAY CONCERN**

*This is to certify that Priyankar Majumdar, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: Relationship of Dermatoglyphic Pattern Types with ABO and Rh Blood Groups: A Short Anthropological Study Among Bengali Boys in Bidhannagar, Kolkata, West Bengal at Bidhannagar, Kolkata, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*



*Sudhesna Chanda*

Dr. Sudesna Chanda  
Assistant Professor  
Department of Anthropology  
Bidhannagar College

Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



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MEMO NO.:

DATE: 10/3/23

**TO WHOM IT MAY CONCERN**

*This is to certify that **Kankana Basu**, Student of Department of Anthropology, Bidhannagar College has successfully completed his / her Dissertation Work for M.Sc. (SEM IV) examination for the paper- ANTPCOR15P on the topic: **Diabetes and its Management Among the Elderly of Urban Neighbourhood in Shibpur at Shibpur, Howrah**, for a duration of 60 days.*

*He / She was sincere and efficient in his / her allotted assignment.*

*Sudesna Chanda*

**Dr. Sudesna Chanda**  
Assistant Professor  
Department of Anthropology  
Bidhannagar College



Assistant Professor(W.B.E.S)  
Department of Anthropology  
Bidhannagar College  
Govt. of West Bengal  
Salt Lake, Kolkata-64



**COMPLETION CERTIFICATE**

**TO WHOM IT MAY CONCERN**

This is to certify that the research/review work incorporated in the dissertation entitled “**Cytotoxicity Testing of Different Fertilizers of West Bengal Using *Allium cepa* (At) Test**” is submitted by **Antara Ghosh** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session **2021-2023** for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25/7/2023

Place: Kolkata

*Santanu Saha*  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



**COMPLETION CERTIFICATE**

**TO WHOM IT MAY CONCERN**

This is to certify that the research/review work incorporated in the dissertation entitled “ **Cytotoxicity Testing of Different Herbicides and Pesticides of West Bengal Using *Allium cepa* (At) Test**” is submitted by **Debjani Bandyopadhyay** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session **2021-2023** for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25/7/2023

Place: KSI Kataba

*Santannu Saha*  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



**COMPLETION CERTIFICATE**

**TO WHOM IT MAY CONCERN**

This is to certify that the research/review work incorporated in the dissertation entitled “**Evaluation of Cytotoxicity of the waste water collected from different urban locations using *Allium cepa* test**” is submitted by **Jubaida Anjum Khatun** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session **2021-2023** for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25/7/2023

Place: Kolkata

*Santanu Saha*  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the research/review work incorporated in the dissertation entitled "PROTEIN CONTENT AND NON-SPECIFIC PROTEASE ACTIVITIES DURING *Vigna radiata* SEED GERMINATION: A COMPREHENSIVE STUDY" is submitted by TAPAPLUTA SINHA of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-2023 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25/7/2023

Place: Kolkata

Santanu Saha  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
DEPARTMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the research/review work incorporated in the dissertation entitled "CHANGES IN  $\alpha$ -AMYLASE ACTIVITY AND TOTAL SOLUBLE SUGAR DURING RICE (*Oryza sativa* L.) SEED GERMINATION is submitted by MENKA HELA of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-2023 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25/7/2023

Place: Kolkata

Santanu Saha  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the review work incorporated in the dissertation entitled “ **Morpho-physiological studies and Pharmacological analysis of Andrographis paniculata Wall. ex Nees.**” is submitted by **Milandip Singh** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-23 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him in this Department. This dissertation has been completed successfully by the presenter.

Date: 25.7.23

Place: Kolkata

*Sandam Saha*  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

*Associate Professor & Head*  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the review work incorporated in the dissertation entitled “ **Morphological, Phytochemical and Pharmacological studies of Satamuli (*Asparagus racemosus Willd.*)**” is submitted by **Aditi Ghosh** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-23 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by her in this Department. This dissertation has been completed successfully by the presenter.

Date: 26.7.23

Place: Kolkata

*Santanu Saha*  
26/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

*Associate Professor & Head*  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the research/review work incorporated in the dissertation entitled "**Foliar Application of Manganese ( $Mn^{2+}$ ) and Zinc ( $Zn^{2+}$ ) as Micronutrients on Growth and Yield Attributes of Tomato (*Lycopersicon esculentum* Mill.)**" is submitted by **Mr. Saharukh Molla** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-23 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25<sup>th</sup> July, 2023

Place: Kolkata

Head

Post Graduate Department of Botany

Bidhannagar College

Kolkata

*Sandaru Sahe*  
25/7/23

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64





## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the research/review work incorporated in the dissertation entitled “Foliar Application of Iron ( $Fe^{2+}$ ) and Magnesium ( $Mg^{2+}$ ) as Micronutrients on Growth and Yield Attributes of Tomato (*Lycopersicon esculentum* Mill.)” is submitted by Mr. Joydeep Samadder of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-23 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25<sup>th</sup> July, 2023

Place: Kolkata

*Santanu Saha*  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the research/review work incorporated in the dissertation entitled "A Study on Salt Stress and Seed Germination of Wheat (*Triticum aestivum* L.) Cultivars" is submitted by Miss **Mithu Saha** of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-23 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25<sup>th</sup> July, 2023

Place: Kolkata

*Sandhanu Saha*  
25/7/23

Head  
Post Graduate Department of Botany  
Bidhannagar College  
Kolkata

Associate Professor & Head  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64



## COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN

This is to certify that the research/review work incorporated in the dissertation entitled “A Study on Salt Stress and Seed Germination of Green Mung (*Vigna radiata* L.) Cultivars” is submitted by Miss Prity Garain of M.Sc. 4th Semester, Post Graduate Department of Botany, Bidhannagar College for the academic session 2021-23 for partial fulfillment of the Degree of Master of Science in Botany (Specific Elective Subject: Advanced Plant Physiology & Biochemistry and Plant Molecular Biology) of the West Bengal State University, West Bengal, is an original work done by him/her in this Department. This dissertation has been completed successfully by the presenter.

Date: 25<sup>th</sup> July, 2023

Place: Kolkata

*Santam Saha*  
*25/7/23*

Head

Post Graduate Department of Botany

Bidhannagar College

Kolkata

*Associate Professor & Head*  
POST GRADUATE DEPARTMENT OF BOTANY  
BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
SALT LAKE, KOLKATA-64





सत्यमेव जयते

Government of West Bengal  
Department of Chemistry  
BIDHANNAGAR COLLEGE  
EB- 2, Salt Lake, Sector- I, Kolkata – 700 064

Date: 20.07.2023

## CERTIFICATE

I hereby certify the project work entitled “Spectroscopic and Electrochemical Characterisation of Mononuclear Dioxidomolybdenum(VI) Complex With ONO donor ligand containing  $[\text{MoO}_2]^{2+}$  Moiety” was performed by Trina Das, M.Sc. Student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, during the period from 15<sup>th</sup> April to 30<sup>th</sup> June, 2023 as a partial fulfillment of the Master of Science in Physical Chemistry.



  
(Dr. Nikhil Ranjan Pramanik)

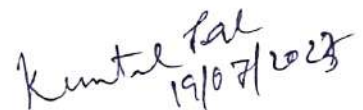
Head  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

## CERTIFICATE

This is to confirm that **Suraj Mondal**, M.sc 4<sup>th</sup> sem student, Department of Chemistry, Bidhannagar College, has been carried out the project "**Synthesis and Characterization of Cobalt Complex Containing 2,3-diaminomaleonitrile Moiety**". It's a report on the study he's done under my direction and supervision.

Date :

Place :



Kuntal Pal  
19/07/2023

Dr. Kuntal Pal

Assistant Professor

Department of Chemistry

University of Calcutta



M. Branavik

21/7/23

Head

Department of Chemistry  
Bidhannagar College  
Kolkata-64 ,

*University of Kalyani*  
*Faculty of Science*  
*Department of Chemistry*



*Dr. S. M. Islam*  
*Professor*

Kalyani 741 235, W.B., INDIA

Phone: 91-33-2582-8750 (O)

[Ext. 305]

:9231572961(M)

**Certificate From the Supervisor**

This is to certify that the project report, entitled “**Cu<sub>x</sub>O<sub>y</sub>@COF: An efficient heterogeneous catalyst for the CO<sub>2</sub> fixation**” submitted by Arit Dey to the Department of Chemistry, Bidhannagar College in partial fulfilment of the requirements for the degree of Master in Science is a bonafied work carried out by him under my supervision and guidance during April 2023 to May 2023. The results embodied in this report have not been submitted to any other Institute/University for the award of any degree or diploma.

Date: 20/7/23

*S. M. Islam*  
20/7/23

Signature and seal of the Supervisor

*Dr. S. M. Islam*  
**Professor of Chemistry**  
**University of Kalyani**

*N. Pramanik*  
21/7/23

*Head*  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

This is to certify that **Poulami Saha** Roll-BNC/CEM-IV No-006 has successfully accomplished her Project under my supervision for the partial fulfillment of the degree of Master of Science of Bidhannagar College.

Date: 22/06/2023

*Arabinda Mandal*

**Dr. Arabinda Mandal**

Department of Chemistry

Bidhannagar College

Kol-700064

**Assistant Professor  
Department of Chemistry  
Bidhannagar College  
Kolkata-64**

Assistant Professor  
Department of Chemistry  
Bidhannagar College



# CERTIFICATE

DEPARTMENT OF CHEMISTRY (UG & PG)

**BIDHANNAGAR COLLEGE**

SALT LAKE, KOLKATA

Govt. of West Bengal

This is to certify that the review work entitled "Detection of Cyanide ion based on Chemosensor and Fluoresensor" submitted by Chayan Sau, for the award of Master of Science from Bidhannagar College, affiliated to West Bengal State University, and has completed successfully the review work under my supervision. The review work has reached the standard necessary for submission. As far my knowledge goes, the contents of this project work have not been submitted for the award of any other degree or diploma before.

Date: 22/08/2023

*Arabinda Mandal*

**Dr. NIKHIL RANJAN PRAMANIK (HOD)**

Associate Professor

Department of Chemistry

Bidhannagar College

**Dr. ARABINDA MANDAL**

Assistant Professor

Department of Chemistry

Bidhannagar College





## CERTIFICATE FROM THE SUPERVISOR

Dr. Mijanur Rahaman Molla

Assistant Professor  
Department of Chemistry  
University of Calcutta  
92, A.P.C. Road, Kolkata-700009  
India



This is to certify that the project work entitled "*Synthesis of azobenzene based  $\pi$  conjugated chromophore and demonstration of self assembly property*" submitted by Narayan Roy for the award of M.Sc degree in Chemistry of the West Bengal State University, is absolutely based upon his work done under the supervision of Dr. Mijanur Rahaman Molla, Assistant Professor, Department of Chemistry, University of Calcutta.

*M. Rahaman*  
19/07/23

**Dr. Mijanur Rahaman Molla**  
(Signature of the supervisor & date with official seal)

Dr. Mijanur Rahaman Molla  
Assistant Professor  
Department of Chemistry  
University of Calcutta  
92, A.P.C. Road, Kolkata-700009

*W. Ramanik*

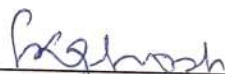
20/7/23  
Head

Department of Chemistry  
Bidhannagar College  
Kolkata-64

## DECLARATION

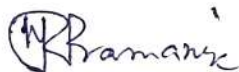
Date: 19<sup>th</sup> July, 2023

This is to certify that the work embodied in the project entitled, "**Correlation between Hydrodynamic Diameter and Particle Diameter of Size-Specific Gold Nanoparticles**" has been performed by Sneha Kundu, under my supervision as a part of fulfillment of his M. Sc. degree of Bidhannagar College, Kolkata with Physical Chemistry as Special paper and that neither this report nor any part thereof has been submitted earlier for any degree earlier.



**Dr. Sujit Kumar Ghosh**  
Associate Professor

**Dr. SUJIT KUMAR GHOSH**  
Associate Professor  
Department of Chemistry  
Jadavpur University  
Kolkata-700032



20/7/23

Associate Professor  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

## To whom it may concern

This is certify that the project entitled "AI(III) selective Turn-on flurescent chemosensor using Rhodamine derivative" is the result of work done by Amrita Roy,who has registered his name in Bidhannagar College, Kolkata November 2021 for the award of Master of Science (Chemistry).As a part of M.Sc degree he carried out project work from May, 2023 to June, 2023 under the supervision of Dr.Arup Kumar Adak, Associate Professor, Department of Chemistry,Bidhannagar College. This work neither in part nor whole has been submitted for any other degree by Amrita Roy or others. It is also certified that he has fulfilled all the requirement of the regulations relating to the nature and period of research.

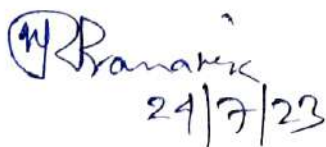
Date : 21.07.2023



Dr. ARUP KUMAR ADAK

Associate Professor in Chemistry

Bidhannager Collage



24/7/23

Head

Department of Chemistry  
Bidhannagar College  
Kolkata-64 .

Associate Professor  
Department of Chemistry  
Bidhannagar College  
Kolkata-64 .



DEPARTMENT OF CHEMISTRY (UG & PG)  
**BIDHANNAGAR COLLEGE**  
SALLAKE, KOLKATA

This is to certify that the review work entitled **RhodamineB based chemosensors for the detection of Cu<sup>2+</sup>** submitted by Md Alamgir Mondal for the award of Master of Science from Bidhannagar College, affiliated to West Bengal State University, and has completed successfully the review work under my supervision. The review work has reached the standard necessary for submission. As far my knowledge goes, the contents of this project work have not been submitted for the award of any other degree or diploma before.

Dated: 24/7/2023



Dr. Arup Kumar Adak  
Associate Professor (Chemistry)

Associate Professor  
Department of Chemistry  
Bidhannagar College  
Kolkata-64



24/7/23

Head  
Department of Chemistry  
Bidhannagar College  
Kolkata-64



## DECLARATION

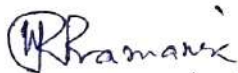
Date: 19<sup>th</sup> July, 2023

This is to certify that the work embodied in the project entitled, "Electrokinetic Properties of Surfactant-Stabilized Aspect Ratio Specific Gold Nanorods" has been performed by Sreejan Goswami, under my supervision as a part of fulfillment of his M.Sc. degree of Bidhannagar College, Kolkata with Physical Chemistry as Special paper and that neither this report nor any part thereof has been submitted earlier for any degree earlier.



Dr. Sujit Kumar Ghosh  
Associate Professor

**Dr. SUJIT KUMAR GHOSH**  
Associate Professor  
Department of Chemistry  
Jadavpur University  
Kolkata-700032



20/7/23  
Head

Department of Chemistry  
Bidhannagar College  
Kolkata-64

*University of Kalyani*  
*Faculty of Science*  
*Department of Chemistry*

*Dr. S. M. Islam*  
**Professor**



Kalyani 741 235, W.B., INDIA

Phone: 91-33-2582-8750 (O)

[Ext. 305]

:9231572961(M)

Date: 20/7/23

**Certificate From the Supervisor**

This is to certify that the project report, entitled "**Zn grafted covalent organic nanosheets (Zn@TpDT CONs) as an efficient catalyst for the CO<sub>2</sub> fixation reactions**", submitted by Labani Das to the Department of Chemistry, West Bengal State University in partial fulfilment of the requirements for the degree of Master in Science is a bonafide work carried out by her under my supervision and guidance during April 2023 to May 2023. The results embodied in this report have not been submitted to any other Institute/University for the award of any degree or diploma.

Date:

*RRamank*  
21/7/23

**Head**  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

*S. M. Islam*  
20/7/23

Signature and seal of the Supervisor

**Dr. S. M. Islam**  
**Professor of Chemistry**  
**University of Kalyani**



सत्यमेव जयते

DEPARTMENT OF CHEMISTRY

BIDHANNAGAR COLLEGE

EB-2, Salt Lake, Sector-I, Kolkata-700064

To whom it may concern

I hereby certify that the project work entitled "**Lewis acid/Bio-catalyst promoted isomerized Morita-Baylis-Hillman intramolecular Cyclization**" was performed by Debosmit Ghosh, M.Sc. Student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfillment of the Master of Science in Chemistry.

Date:

*Shubhankar Samanta*

Dr. Shubhankar Samanta

20/07/23

Project Supervisor

Assistant Professor

Department of Chemistry

Bidhannagar College

*WRRamane*

21/7/23

Head

Department of Chemistry  
Bidhannagar College  
Kolkata-64

Dr. Shubhankar Samanta  
Assistant Professor (WBES)  
Department of Chemistry  
Bidhannagar College  
Salt Lake, Kol-64





सत्यमेव जयते

BIDHANNAGAR COLLEGE  
GOVERNMENT OF WEST BENGAL  
DEPARTMENT OF CHEMISTRY


EB-2, SECTOR -I, SALT LAKE CITY, KOLKATA-700064

PHONE: 033-2337-4761

Email: bnc.chem15@gmail.com

Date : 21/07/2023

I hereby certify the project work entitled "Condition dependent mechanochemical solvent-free synthesis to c-fused dihydrofuran" was performed by **Sk Razibul Alam**, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfillment of Masters of Science in Chemistry.

  
21/7/23

Head  
Department of Chemistry  
Bidhannagar College  
Kolkata



Shubhankar Samanta 21/07/2023  
**Dr. Shubhankar Samanta**  
Assistant Professor,  
Department of Chemistry,  
Bidhannagar College, Kolkata

Dr. Shubhankar Samanta  
Assistant Professor (WBES)  
Department of Chemistry  
Bidhannagar College  
Salt Lake, Kol-64





DEPARTMENT OF CHEMISTRY

BIDHANNAGAR COLLEGE

EB-2, Salt Lake, Sector-I, Kolkata-700064

To whom it may concern

This is to certify that the project work entitled "A short synthetic route of new functionalized c-fused pyrrole derivatives" submitted by **Firoj Molla** for the award of degree of Master of Science in Chemistry to the Bidhannagar College, Salt Lake, Kolkata, affiliated to the West Bengal State University, is a project work carried out by him under my supervision. The project work has reached the standards necessary for submission. The contents of this project work have not been submitted for the award of any other degree or diploma.

Shubhankar Samanta

20/07/23

Dr. Shubhankar Samanta

Assistant Professor

Department of Chemistry

Bidhannagar College

**Dr. Shubhankar Samanta**

Assistant Professor (WBES)

Department of Chemistry

Bidhannagar College

Salt Lake, Kol-64

Pranav

24/7/23

**Head**

Department of Chemistry  
Bidhannagar College  
Kolkata-64





DEPARTMENT OF CHEMISTRY

BIDHANNAGAR COLLEGE

EB-2, Salt Lake, Sector-I, Kolkata-700064

To whom it may concern

I hereby certify that the project work entitled "**Urea promoted neat synthesis of fused isoquinolines**" was performed by Sandip Ghosh, M.Sc. Student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfillment of the Master of Science in Chemistry.

Date: 20/07/23

Shubhankar Samanta  
20/07/23

Dr. Shubhankar Samanta

Project Supervisor

Assistant Professor

Department of Chemistry

Bidhannagar College

Dr. Shubhankar Samanta  
Assistant Professor (WBES)  
Department of Chemistry  
Bidhannagar College  
Salt Lake, Kol-64

R. Pramanik  
21/7/23

Head  
Department of Chemistry  
Bidhannagar College  
Kolkata-64





सत्यमेव जयते

**BIDHANNAGAR COLLEGE**  
**GOVERNMENT OF WEST BENGAL**  
**DEPARTMENT OF CHEMISTRY**

**EB-2, SECTOR -I, SALT LAKE CITY, KOLKATA-700064**

**PHONE: 033-2337-4761**

**Email: [bnc.chem15@gmail.com](mailto:bnc.chem15@gmail.com)**

Date : 31/05/2023

I hereby certify the review work entitled “**Deciphering the Multidimensionalities of Interactions of Metal Ions with various proteins**” was performed by Prerona Rakshit, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfillment of Masters of Science in Chemistry.



  
Dr. Nikhil Ranjan Pramanik

*Head*  
Department of Chemistry  
Bidhannagar College  
Kolkata-64


Department of Chemistry (UG and PG)

Bidhannagar College

Salt Lake, Kolkata

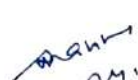
Govt. Of West Bengal

This is to certify that the project entitled '**THE SYNTHESIS OF HIGHLY CONDENSED POLYCYCLIC BENZIMIDAZOLE SYSTEM**' submitted by Satyajit Saha for the award of Master of Science (Chemistry) to the Bidhannagar College, Salt Lake , Kolkata, is a bona fide project work carried out by him under my supervision. The project work has reached the standard necessary for submission. The contents of this project work have not been submitted for the award of any other degree or diploma.

  
24/7/23

Dr. Nikhil Ranjan Pramanik (H.O.D)

Professor of Chemistry *Head*  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

  
24.07.2023

Dr. Susanta Kumar Manna

Assistance Professor in Chemistry

Assistant Professor (WBES)  
Bidhannagar College  
E-2, Sector-I, Salt Lake  
Kolkata-700064



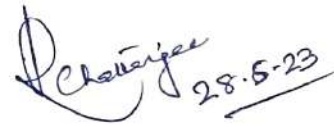


**BIDHANNAGAR COLLEGE**  
**GOVERNMENT OF WEST BENGAL**  
**DEPARTMENT OF CHEMISTRY**  
**EB-2, SECTOR -I, SALT LAKE CITY, KOLKATA-700064**  
**PHONE: 033-2337-4761**  
**Email: bnc.chem15@gmail.com**

Date : 28.05.2023

I hereby certify the review work entitled “**A Brief Survey On Advancement and Applications of Polyoxometalates**” was performed by Maitraya Bagchi, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfillment of Masters of Science in Chemistry.

  
28/5/23  
Head  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

  
28.5.23  
Dr. Rajarshi Chatterjee





DEPARTMENT OF CHEMISTRY  
 BIDHANNAGAR COLLEGE  
 EB-2, Salt Lake, Sector-I, Kolkata-700064

To whom it may concern

I hereby certify the review work entitled "Magnetostructural correlation of dinuclear Ni(II) complexes derived from tridentate NNO donor Schiff base ligands" was performed by Prosenjit Kundu, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College as a partial fulfillment of Masters of Science in Chemistry.

RPramanik

24/7/23

Head  
 Department of Chemistry  
 Bidhannagar College  
 Kolkata-64

Rituparna Biswas

Dr. Rituparna Biswas  
 Assistant Professor (W.B.E.S.)  
 Bidhannagar College  
 EB-2, Salt Lake, Sector - I  
 Kolkata - 700064

27/6/2023

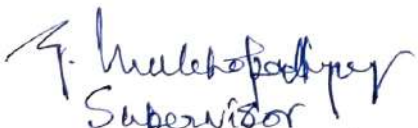


Department Of Chemistry  
BIDHANNAGAR COLLEGE  
EB-2, Salt Lake, Sector-I, Kolkata-700064

CERTIFICATE

This is to certify that **Swani Dey**, a student of M.Sc( Inorganic Chemistry Special) has carried out a project work entitled “**Synthesis and Characterization of Cu(II) and Ni(II) complexes with 2-hydroxybenzylhydrazone of salicylaldehyde**”, for partial fulfillment of M.Sc degree in Chemistry for Bidhannagar College, affiliated to West Bengal State University, under my direct supervision and guidance.

Date: 18/7/22.

  
Supervisor  
(Head of the Department)

Associate Professor  
Department of Chemistry  
Bidhannagar College  
Kolkata-64

  
(Supervisor) HOD

Dr. Achintya K. Saha, WSES  
Professor & HOD  
Department of Chemistry  
Bidhannagar College  
Salt Lake, Kolkata-700064



**⊕ CERTIFICATE ⊕**

This to certify that the project entitled "One pot Synthesis of Pyrido-pyrimidinium ion" submitted by PAYEL GHOSAL, Roll: BNC/CEM – IV, NO: 009, Registration no: 1071821400039 of 2021-2023, for the award of Master of science (chemistry) to the Bidhannagar college, salt lake, Kolkata, is bonafied project work carried out by her under my supervision. The project work has reached the standard necessary for submission.

*N. Pramanik 24/7/23*

Dr. Nikhil Ranjan Pramanik (HOD)  
Head  
Professor in chemistry Department of Chemistry  
Bidhannagar College  
Kolkata-64

*Manna 24.07.23*

Mr. Susanta Kumar Manna  
Assistant professor in chemistry

Assistant Professor (WSES)  
Bidhannagar College  
E.C.-2, Sector-I, Salt Lake  
Kolkata-700064







सत्यमेव जयते

**BIDHANNAGAR COLLEGE**  
**GOVERNMENT OF WEST BENGAL**  
**DEPARTMENT OF CHEMISTRY**

EB-2, SECTOR -I, SALT LAKE CITY, KOLKATA-700064

PHONE: 033-2337-4761

Email: bnc\_chem15@gmail.com

Date: 28.06.2023

I hereby certify the review work entitled "A Brief Survey on Advancement and Applications of Polyoxometalates" was performed by Sudeshna Dutta, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfillment of Masters of Science in Chemistry.

*Dr. Rajarsi Chatterjee*  
28.6.23

Dr. Rajarsi Chatterjee

Assistant professor

Bidhan Nagar College

*R. Pramanik*  
28/6/23  
Head  
Department of Chemistry  
Bidhannagar College  
Kolkata-64





# VIJAYGARH JYOTISH RAY COLLEGE

Phone : 2412-4082

(Affiliated to The University of Calcutta)

8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032

**ACCREDITED BY THE NAAC - B+ Grade.**

Ref. No.....

Date.....

## TO WHOM IT MAY CONCERN

I hereby certify the review work entitled "**A Brief Review On COVID 19 AND ITS CHEMICAL PREVENTIONS**" was performed by **ARGHA DASGUPTA**, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Vijaygarh Jyotish Ray College, 2023 as a partial fulfilment of Masters of Science in Chemistry.

 9/6/23

Dr. Dasarath Mal

Dr. Dasarath Mal  
Assistant Professor, Department of Chemistry  
Vijaygarh Jyotish Ray College  
Jadavpur, Kolkata-700 032



सत्यमेव जयते

**BIDHANNAGAR COLLEGE**  
**GOVERNMENT OF WEST BENGAL**  
**DEPARTMENT OF CHEMISTRY**  
**EB-2, SECTOR -I, SALT LAKE CITY, KOLKATA-700064**  
**PHONE: 033-2337-4761**  
**Email: bnc.chem15@gmail.com**

Date: 28.06.2023

I hereby certify the review work entitled "**A Brief Survey on Advancement and Applications of Polyoxometalates**" was performed by Subhra Jyoti Sarkar, M.Sc. student of Bidhannagar College under my guidance at Department of Chemistry, Bidhannagar College, 2023 as a partial fulfilment of Masters of Science in Chemistry.

*NRamank*  
28/6/23  
Head

Department of Chemistry  
Bidhannagar College  
Kolkata-64 ,

*RChatterjee*  
28.6.23

Dr. Rajarshi Chatterjee  
Assistant Professor  
Bidhannagar College



Department Of Chemistry (UG and PG)

Bidhannagar College

Salt Lake City, Kolkata

North 24-Parganas

Government Of West Bengal

This is to certify that the project entitled "Synthesis Of Fused Bicyclic 5-6 and 6-6 nitrogen containing heterocyclic compound by 2-amino Methyl Pyridine" submitted by Mrs. KOUSHANY MUKHERJEE for the award of Master Of Science (Chemistry) to the Bidhannagar College, Salt-lake City, Kolkata, is bonafied project work carried out by her under my supervision. The projectwork has reached the standard necessary for submission. The contents of this project work have not been submitted for the award of any other degree or diploma.

*NPramanik*  
.....  
24/7/23

Dr. Nikhil Ranjan Pramanik (HOD)

Head

Professor In Chemistry, Department of Chemistry  
Bidhannagar College  
Kolkata-64 .

*Susanta*  
.....  
24.07.23

Mr.Susanta Kumar Manna

Assistant Professor In Chemistry

Assistant Professor (WBES)

Bidhannagar College

Est-2, Sector-I, Salt Lake



Assistant Professor (WBES)

Bidhannagar College

Est-2, Sector-I, Salt Lake

Kolkata-700064



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "India's Poverty puzzle- decoding its multidimensional nature", is a record of research work done by Preetam Bhattacharya (**Roll No:** 623112514651; **Registration Number:** 1082011400213 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

Signature of the Guide

Department of Economics



Signature of Head of the Department

Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "MGNREGA and its impact on Rural Employment and Development in India", is a record of research work done by Soumyadeep Guha (**Roll No:** 623112514645; **Registration Number:** 1082011400219 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

*Jina Banerjee*

Signature of the Guide

Department of Economics



*[Signature]*  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal

Signature of Head of the Department

Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal

Tapas Kumar Pal

(Associate Professor)

Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Indian Jute Industry: A study", is a record of research work done by Rouhin Bhakta (**Roll No:** 623112514647; **Registration Number:** 1082011400210 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

*Ina Balme.*

Signature of the Guide

Department of Economics



*Tapas Kumar Pal*

Signature of Head of the Department  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Unveiling the role of oil: Analysing the impact of crude oil price in Indian Economy", is a record of research work done by Anindya Singh (**Roll No:** 623112514648; **Registration Number:** 1082011400214 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

*Jina Dasgupta*

Signature of the Guide  
Department of Economics



*Tapas Kumar Pal*

Signature of Head of the Department  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Tapas Kumar Pal  
(Associate Professor)  
Department of Economics





## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "An insight into the cause of child marriage in India", is a record of research work done by Stotropama Bandopadhyay (**Roll No:** 623212514650; **Registration Number:** 1082021400215 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by her under our supervision.

Date: 09.08.2023

Signature of the Guide  
Department of Economics

Signature of Head of the Department  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Tapas Kumar Pal  
(Associate Professor)  
Department of Economics





## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Crime and worsening labour market", is a record of research work done by Suchismita Bandopadhyay (Roll No: 623212514646; Registration Number: 1082021400220 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by her under our supervision.

Date: 09.08.2023

Signature of the Guide  
Department of Economics



Signature of Head of the Department  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Mid-day Meal in West Bengal", is a record of research work done by Niladri Sekhar Nath (**Roll No:** 623112514640; **Registration Number:** 1082011400207 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

Signature of the Guide

Department of Economics



Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal

Signature of Head of the Department

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Tribal Development and Well-being: study with special reference to BIRBHUM district in West Bengal", is a record of research work done by Soumyadip Ray (**Roll No:** 623112514641; **Registration Number:** 1082011400217 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023.

Signature of the Guide

Department of Economics



Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Signature of Head of the Department

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Contribution of different sectors in India's GDP", is a record of research work done by Biva Mondal (**Roll No:** 623212514644; **Registration Number:** 1082021100218 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by her under our supervision.

Date: 09.08.2023 .

*Biva Mondal*

Signature of the Guide  
Department of Economics

*M. K. Pal*

Signature of Head of the Department

Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal



Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



सत्यमेव जयते

## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Empowering Women in India: A review", is a record of research work done by Adarsh Chakraborty (**Roll No:** 623112514643; **Registration Number:** 1082011400205 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

Signature of the Guide  
Department of Economics

Signature of Head of the Department

Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal



Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Importance of state-wise literacy in India's economic GDP", is a record of research work done by Abhishek Payra (**Roll No:** 623112514642; **Registration Number:** 1082011400216 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023

Signature of the Guide  
Department of Economics



Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Signature of Head of the Department

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Share of Agriculture, Forestry and Fishing in India's GVA", is a record of research work done by Pramiti De Roy (**Roll No:** 623212514649; **Registration Number:** 1082021400212 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by her under our supervision.

Date: 09.08.2023

Signature of the Guide  
Department of Economics



Signature of Head of the Department  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics





सत्यमेव जयते

## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Human Capital Accumulation Economic Growth of India", is a record of research work done by Soham Gangopadhyay (**Roll No:** 623112514652; **Registration Number:** 1082011400206 of 2020), a student of B.Sc Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023 .

*Jiner Prasad*

Signature of the Guide

Department of Economics



*M. K. Pal*

Signature of Head of the Department

Associate Professor

Head, Department of Economics

Bidhannagar College

Govt. of West Bengal

Tapas Kumar Pal

(Associate Professor)

Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Primary Education in India", is a record of research work done by Arko Chakraborty (**Roll No:** 623112514638; **Registration Number:** 1082011400209 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by him under our supervision.

Date: 09.08.2023 .

Signature of the Guide

Department of Economics



  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Signature of Head of the Department  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Govt. of West Bengal  
Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the project, "Women education in India with special emphasis on Rural Sector", is a record of research work done by Jaita Paul (**Roll No:** 623212514639; **Registration Number:** 1082021600211 of 2020), a student of B.Sc. Honours in Economics, during the sixth semester of the UG course.

It is an independent work done by her under our supervision.

Date: 09.08.2023

*Jaita Paul*

Signature of the Guide  
Department of Economics



*Tapas Kumar Pal*  
Associate Professor  
Head, Department of Economics  
Bidhannagar College  
Department of Economics  
Bengal

Tapas Kumar Pal  
(Associate Professor)  
Department of Economics



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll No BNC/EDU-IV 011** and **Registration Number. 1181821404124 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic Relationship Between Procrastination And Creativity Of Post Graduate Students In North 24 Parganas for partial fulfillment of M.A in Education .

We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

Head of the Department

*Jhuma Bandyopadhyay*  
Dr. Jhuma Bandyopadhyay  
(Associate Professor)  
Department of Education



*Shoumoysee Sen*  
Shoumoysee Sen  
Head of the Department  
Department of Education  
Salt Lake, Kolkata-64



**Bidhannagar College**

**CERTIFICATE**

**To Whom it may concern**

This is to certify that the student bearing **Roll. No BNC/EDU-IV 010** and **Registration Number. 1151821400021(2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **Online Learning Attitude Among Undergraduate College Students In North 24 Parganas District** for partial fulfillment of M.A in Education

We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

*Jhuma Bandyopadhyay*

Dr. Jhuma Bandyopadhyay  
(Associate Professor)  
Department of Education



Head of the Department

*Shoumoysree Sen*  
Shoumoysree Sen  
Head, Department of Education  
(Associate Professor)  
Bidhannagar College  
Department of Education  
Salt Lake, Kolkata



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll. No BNC/EDU-IV 002** and **Registration Number.1321821400041 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic Study Of The Stress And Job Satisfaction Of Primary School Teachers In North 24 Parganas District for partial fulfillment of M.A in Education

We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

*Jhuma Bandyopadhyay*

Dr. Jhuma Bandyopadhyay  
(Associate Professor)  
Department of Education



Head of the Department

*Shoumoysree Sen*

Shoumoysree Sen  
(Associate Professor)  
Head, Department of Education  
Department of Education  
Bidhannagar College  
Salt Lake, Kolkata



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll. No BNC/EDU-IV 008** and **Registration Number. 1082121100299 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic Study Of Career Awareness Among HIGHER secondary Students for partial fulfillment of M.A in Education

We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

*Jhuma Bandyopadhyay*  
Dr. Jhuma Bandyopadhyay  
(Associate Professor)  
Department of Education



Head of the Department

*Shoumoysree Sen*  
Shoumoysree Sen  
(Associate Professor)  
Head, Department of Education  
Department of Education  
Bidhannagar College  
Salt Lake, Kolkata-64



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll. No BNC/EDU-IV 005** and **Registration Number.1081721400344 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **Unpacking Categorical Determinants Of Under graduate Students Well Being In North 24 Parganas District** for partial fulfillment of M.A in Education

We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date:21.07.23

*Jhuma Bandyopadhyay*

Dr. Jhuma Bandyopadhyay  
(Associate Professor)  
Department of Education



Head of the Department

*Shoumoysee Sen*

Shoumoysee Sen  
(Associate Professor)  
Department of Education  
Bidhannagar College  
Salt Lake, Kolkata-64





**Bidhannagar College**

**CERTIFICATE**

**To Whom it may concern**

This is to certify that the student bearing **Roll. No BNC/EDU-IV 013** and **Registration Number. 1081821400076 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **Life Skills Empowerment Of Women : A Relationship Study Among Tribal Women** for partial fulfillment of M.A in Education


We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

  
Shikha Roy  
(Assistant Professor)  
Department of Education



Head of the Department

  
Dr. Shoumyasree Sen  
Head, Department of Education  
Associate Professor  
Bidhannagar College  
Department of Education  
Salt Lake, Kolkata-64



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll. No BNC/EDU-IV 003** and **Registration Number. 1081821100080 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **Family Environment Of Secondary School Students In Relation To Their Study Habit** for partial fulfillment of M.A in Education


We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

Head of the Department

  
Shikha Roy  
(Assistant Professor)  
Department of Education



  
Dr. Shoumyasree Sen  
(Associate Professor) Education  
Department of Education  
Salt Lake, Kolkata-64



**Bidhannagar College**

**CERTIFICATE**

**To Whom it may concern**

This is to certify that the student bearing **Roll. No BNC/EDU-IV 009** and **Registration Number. 1081721100338 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **Self Regulated Learning Among Higher Secondary School Students In Relation to Their Motivational Beliefs** for partial fulfillment of M.A in Education


We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

  
Shikha Roy  
(Assistant Professor)  
Department of Education



Head of the Department

  
Dr. Shoumyasree Sen  
(Associate Professor)  
Department of Education



**Bidhannagar College**

**CERTIFICATE**

**To Whom it may concern**

This is to certify that the student bearing **Roll No BNC/EDU-IV 007** and **Registration Number. 1082121400320 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **A Comparative Study Of Environmental Awareness Ability Among The Students of Rural And Urban Colleges Under State University In North 24 Parganas, District** for partial fulfillment of M.A in Education


We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

  
Shikha Roy  
(Assistant Professor)  
Department of Education



Head of the Department

  
Dr. Shoumyasree Sen  
(Associate Professor)  
Head, Department of Education  
Department of Education  
Bidhannagar College  
North 24 Parganas, West Bengal



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll. No BNC/EDU-IV 004** and **Registration Number. 1181821104116 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic Higher Secondary Level Student Motivation Towards Higher Education , Of Gobardanga , North 24 Parganas , In West Bengal , India for partial fulfillment of M.A in Education


We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date:21.07.23

Head of the Department

  
Dr. Shoumyasree Sen  
(Associate Professor)  
Department of Education



  
Dr. Shoumyasree Sen  
(Associate Professor)  
Department of Education  
Salt Lake, Kolkata-64



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll No BNC/EDU-IV 001** and **Registration Number.1351821100159 (2021-2023)** of M.A. Semester-IV of the Department of Education has completed the M.A Dissertation on the topic Higher Secondary Level Student Attitude Towards Private Tuition of Ichapur, North 24 Parganas for partial fulfillment of M.A in Education.

We wish him / her best of luck for the M.A. Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

Head of the Department

Dr. Shoumyasree Sen  
(Associate Professor)  
Department of Education



Dr. Shoumyasree Sen  
Head, Department of Education  
(Associate Professor)  
Department of Education



**Bidhannagar College**

**CERTIFICATE**

**To Whom it may concern**

This is to certify that the student bearing **Roll No BNC/EDU-IV- 012** and **Registration Number. 1081812400090** (2021-2023) of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic **A Co-relational Study On Socio-Economic Status And Academic Achievement of Urban Higher Secondary Level Students, Barasat North 24 Parganas** for partial fulfillment of M.A in Education.


We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation.

Date: 21.07.23

Head of the Department

  
Dr. Shoumyasree Sen  
(Associate Professor)  
Department of Education



  
Dr. Shoumyasree Sen  
Head, Department of Education  
(Associate Professor)  
Department of Education



## Bidhannagar College

### CERTIFICATE

#### To Whom it may concern

This is to certify that the student bearing **Roll. No BNC/EDU-IV 006** and **Registration Number. 1081721100340 (2021-2023)** of M.A Semester-IV of the Department of Education has completed the M.A Dissertation on the topic Higher Secondary Level Students Social Media Uses Habits And Its Influence On Their Study Habits for partial fulfillment of M.A in Education

We wish him / her best of luck for the M.A Semester-IV End Term Examination and hereby forward the report for evaluation .

Date: 21.07.23

Head of the Department

Dr. Shoumyasree Sen  
(Associate Professor)  
Department of Education



Dr. Shoumyasree Sen  
(Associate Professor)  
Head, Department of Education  
Department of Education  
Salt Lake, Kolkata-64



राष्ट्रीय कॉलरा और आंत्र  
रोग संस्थान

(भारतीय आयुर्विज्ञान अनुसंधान परिषद्)



NATIONAL INSTITUTE OF CHOLERA  
AND ENTERIC DISEASES

(INDIAN COUNCIL OF MEDICAL RESEARCH)

WHO COLLABORATING CENTRE FOR RESEARCH AND TRAINING ON DIARRHOEAL DISEASES

पी-33, सी. आई. टी रोड, स्किम - XM, बेलियाघाटा, कोलकाता - 700 010, भारत

P-33, C.I.T Road, Scheme - XM, Beliaghata, Kolkata - 700 010, India

6<sup>th</sup> July, 2023

*Asish K. Mukhopadhyay, Ph.D., F.W.A.S.C.I., F.N.A.S.C.*  
*Scientist F (Sr. Deputy Director)*

TO WHOM IT MAY CONCERN

This is to certify that Ms. APURBAA BANERJEE (Registration no-1081821400260 of 2018-2019), student of M.Sc MICROBIOLOGY at BIDHANNAGAR COLLEGE, KOLKATA under WEST BENGAL STATE UNIVERSITY (WBSU), has undergone a training under my supervision at the Bacteriology division of ICMR-NICED on "ISOLATION AND IDENTIFICATION OF *SHIGELLA* SPP. FROM CLINICAL STOOL SAMPLE AND ITS VIRULENCE AND ANTIMICROBIAL RESISTANCE PROFILE". Apurbaa has worked full time for 10 weeks between 15<sup>th</sup> March 2023 and 31<sup>st</sup> May 2023 and has learned classical microbiological techniques for the isolation and identification of diarrhoeal pathogens along with PCR techniques and antimicrobial profiling. I have found her to be a hardworking and diligent worker with high aptitude and I wish her success in future endeavours.

*Asish K. Mukhopadhyay*

Asish K. Mukhopadhyay

**Dr. Asish K. Mukhopadhyay**  
Scientist F (Sr. Deputy Director)  
Division of Bacteriology  
ICMR National Institute of Cholera and Enteric Diseases  
P-33, C.I.T Road, Scheme XM  
Kolkata-700010; India

## TO WHOM IT MAY CONCERN

This is to certify that **Mr. SAURAJIT DEBROY** (Registration No. A01-1112-116-012-2018), a bonafide student of M.sc in **MIROBIOLOGY** (2021 - 2023), Bidhannagar Government College, Bidhannagar and has completed his project work in the Department of Pathology (Biochemistry).

He had taken part in the project work in " **A NOVEL IN-HOUSE MATRIX SYNCED METHOD OF OVERCOMING INTERFERENCE DUE TO LIPEMIA IN SELECTED BIOCHEMICAL PARAMETERS**" from 13<sup>th</sup> of March 2023 to 8<sup>th</sup> of June 2023.

He has successfully completed the project work under our supervision and guidance in the Department of Pathology.

Date – 04/07/2023



**Ms. Indrani Pathak**  
Senior Technical Officer  
Department of Pathology



**Dr. Susruta Sen**  
Laboratory Director  
Department of Lab Medicine,  
CK Birla Hospitals –  
CMRI & BMBHRC

## TO WHOM IT MAY CONCERN

This is to certify that **Mr. SAURAJIT DEBROY** (Registration No. A01-1112-116-012-2018), a bonafide student of M.sc in **MIROBIOLOGY** (2021 - 2023), Bidhannagar Government College, Bidhannagar and has completed his project work in the Department of Pathology (Biochemistry).

He had taken part in the project work in "**ANALYSIS AND CORRELATION OF BLOOD HBA1C PERCENTAGES WITH MICROALBUMINURIA AND DYSLIPIDEMIA AMONG DIABETES IN A TERTIARY CARE MULTI-SPECIALTY HOSPITAL OF EASTERN INDIA.**" from 13<sup>th</sup> of March 2023 to 8<sup>th</sup> of June 2023.

He has successfully completed the project work under our supervision and guidance in the Department of Pathology.

Date –



**Ms. Indrani Pathak**  
Senior Technical Officer  
Department of Pathology



**Dr. Suhruta Sen**  
Laboratory Director  
Department of Lab Medicine,  
CK Birla Hospitals –  
CMRI & BMBHRC



## INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B Raja SC Mullik Road, Jadavpur, Kolkata 700032, India

### To whom it may concern

It is my pleasure to certify that **Mr. Arindam Haldar** has satisfactorily worked on the project entitled “Scarless deletion of flagellar export apparatus coding gene *fliR* in attenuated Enteropathogenic *Escherichia coli* strain” for the period of 1<sup>st</sup> March to 30<sup>th</sup> May, 2023 in my laboratory at the **School of Biological Sciences (SBS)** in the **Indian Association for the Cultivation of Science (IACS), Kolkata**. The original research work has carried out by herself under my guidance and she completed the project successfully.

I wish her all the best in her quest for higher learning.

 **Dr. Ritesh Ranjan Pal, Ph.D.**  
Assistant Professor  
School of Biological Sciences  
Indian Association for the Cultivation of Science  
2A & 2B, Raja S. C. Mullik Road, Kolkata - 700032, INDIA

  
21.7.2023  
**Ritesh Ranjan Pal, PhD**

Assistant Professor,  
School of Biological Sciences (SBS),  
Indian Association for the Cultivation of Science (IACS),  
Jadavpur, Kolkata-700032, INDIA.

# GOVERNMENT OF WEST BENGAL

Post Graduate Department of Microbiology  
Bidhannagar College



EB-2, Salt Lake City, Kolkata - 700 064  
Phone : 2237-4761

Dated 18.07.2023

## To Whom It May Concern

This is to certify that Prasanta Poddar of P.G Department of Microbiology, Bidhannagar College, has successfully completed his project titled "Isolation, Characterization of Protease Producing Bacteria from Soil and Characterization of the Protease Enzyme" under my supervision from 15<sup>th</sup> March to 31<sup>st</sup> May 2023.

I wish him every success in his future.

*Parama Das Gupta*

Parama Das Gupta

Assistant Professor

Department of Microbiology

Bidhannagar College

Kolkata-700064



## CERTIFICATE

This is to certify the dissertation entitled '**Assessing the adaptability of a green algal taxon in presence of plastic**' submitted by '**Chandrayee Talukdar**' in partial fulfilment of the requirement for the Master of Science submitted to the Bidhannagar Government College bearing **Registration Number** 1161821400509 is a bonafide research work carried out by her under my guidance and supervision.

Further, it is also to certify that the above said work has not been previously submitted for the award of any degree, diploma, or fellowship in any Indian or foreign University.

*Punyasloke Bhadury*

**PUNYASLOKE BHADURY**

*Professor, IISER Kolkata.*



**icmr**  
INDIAN COUNCIL OF  
MEDICAL RESEARCH

**NICED**  
NATIONAL INSTITUTE OF  
CHOLERA AND ENTERIC DISEASES

आई. सी. एम. आर. – राष्ट्रीय कॉलरा और आंत्र रोग संस्थान  
ICMR - NATIONAL INSTITUTE OF CHOLERA AND ENTERIC DISEASES  
स्वास्थ्य अनुसंधान विभाग, स्वास्थ्य और परिवार कल्याण मंत्रालय, भारत सरकार  
Department of Health Research, Ministry of Health and Family Welfare, Govt. of India

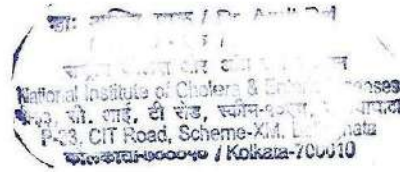
WHO COLLABORATING CENTRE FOR RESEARCH AND TRAINING ON DIARRHOEAL DISEASES

June 27, 2023

TO WHOM IT MAY CONCERN

This is to certify that, **Arihant Dey, Reg no: 1081811400279 of 2021-23**, a post graduate student of the Department of Microbiology, Bidhannagar College (affiliated to West Bengal State University), West Bengal, has completed his summer training project work from **March 15, 2023 to May 31, 2023** under my guidance in the **Division of Molecular Pathophysiology, ICMR-NICED, Kolkata**. He has worked on the project “**Hemagglutinin Protease (HAP) induced induction of autophagy mediated by PAR-1 in human breast cancer cells**”. I wish him success in his future endeavours.

**Dr. Amit Pal, Ph.D.**



**Scientist-'G' & Head**  
**Division of Molecular Pathophysiology**  
**ICMR-NICED**  
**Beliaghata, Kolkata-700010**  
**Contact: Mob: +91-9831361740**  
**Email: [palamit.app@gmail.com](mailto:palamit.app@gmail.com) / [apal7364@rediffmail.com](mailto:apal7364@rediffmail.com)**



# SISTER NIVEDITA UNIVERSITY

## To Whom It May Concern

This is to certify that Ms. Poulami Roy, Final Semester Microbiology Student (M.Sc. Microbiology) from **Bidhannagar College, Kolkata** has completed a Project on “Theoretical Investigation of an Intrinsically Disordered Protein: Amyloid beta Peptide” at Department of Biotechnology, Sister Nivedita University from 15.03.2023 to 31.05.2023 under guidance of Dr. Asis K. Jana, Assistant Professor, Department of Biotechnology, Sister Nivedita University.

Asis Jana  
19/7/23

Dr. Asis K. Jana  
Assistant Professor  
Department of Biotechnology,  
Sister Nivedita University  
Kolkata

Assistant Professor  
Dept. of Microbiology and Biotechnology  
Sister Nivedita University  
Block-DG, Action Area-1/2  
New Town, Kolkata-700 156



## GOVERNMENT OF WEST BENGAL

Post Graduate Department of Microbiology  
Bidhannagar College



EB-2, Salt Lake City, Kolkata - 700 064  
Phone : 2237-4761

Dated .....

### To Whom It May Concern

This is to certify that Mr. Dipankar Mondal of PG Department of Microbiology, Bidhannagar College, has successfully completed his project entitled "**Isolation and characterization of Protease Producing bacteria from soil**" under my supervision from 16<sup>th</sup> March 2023 to 31<sup>st</sup> May 2023.

I wish him every success in his future.

*Sourav Pakrashi*

05.07.2023

Sourav Pakrashi  
Assistant Professor  
Department of Microbiology  
Bidhannagar College  
Kolkata – 700064, West Bengal

**SOURAV PAKRASHI**  
Assistant Professor, WBES  
PG. Department of Microbiology  
Bidhannagar College, Kolkata-64

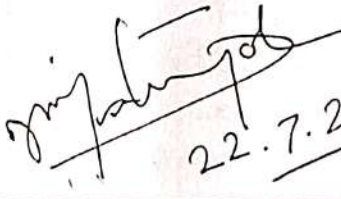


# SISTER NIVEDITA UNIVERSITY

Date: 22.07.2023

## To whom it may concern

This is to certify that the project entitled "ISOLATION & CHARACTERIZATION OF PETROLEUM DEGRADING BACTERIA FROM THE OIL CONTAMINATED SOIL OF HALDIA & COMPARATIVE ANALYSIS ON ITS BIOREMEDIATION POTENTIAL", submitted by Ms. Neha Chanda, a final semester M.Sc. Microbiology student of Bidhannagr College, Kolkata for the partial fulfilment of the degree of Master of Science is a record of bonafide research carried out by her under my supervision and guidance. The content of this report in full or part has not been submitted to any other institution or University for any other degree or diploma.

  
22.7.23

Dr. Rajat Pal  
Assistant Director  
Department of Microbiology and Biotechnology  
Sister Nivedita University  
Kolkata

**Dr. Rajat Pal**  
Assistant Director  
Department of Microbiology & Biotechnology  
Sister Nivedita University  
Kolkata- 700156



# SISTER NIVEDITA UNIVERSITY

This is to certify that Mr. Shahin Ahmad, Final semester Microbiology student (MSc. Microbiology) from Bidhannagar College, Kolkata has completed a project of '**Antifungal activity of medicinal plant extract against fungus isolated from scalp**' at Department of Microbiology, Sister Nivedita University from 15.3.2023 to 31.5.2023 under the guidance of Dr. Atreyi Ghosh, Assistant Professor and Head, Dept. of Microbiology, Sister Nivedita University.

*Atreyi Ghosh, 05/07/23*

---

(Dr. Atreyi Ghosh)  
Assistant Professor and Head,  
Dept of Microbiology  
Sister Nivedita University  
Kolkata

**Head**  
Department of Microbiology  
**Sister Nivedita University**  
Block DG-1/2, Action Area 1  
New Town, Kolkata-700 156



# NILRATAN SIRCAR MEDICAL COLLEGE & HOSPITAL

140 Years in the service of the nation

138, AJC BOSE ROAD, KOLKATA - 700014

DEPARTMENT OF MICROBIOLOGY

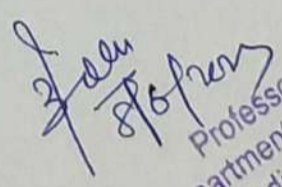
Memo No:

Date: 08.06.2023

## *Certificate*

*This is to certify that **Dropa Sarkar** have successfully completed Non Stipendiary training in the Department of Microbiology from 15.03.2023 to 31.05.2023 and submitted a project on “**Aerobic Bacteriological Profile of Lower Respiratory Tract Infections**” under my guidance.*

*I wish her every success in life.*

  
8/6/2023  
Professor & Head  
Department of Microbiology  
N.R.S. Medical College, Kol-14

Prof.(Dr.) Jayanta Bikash Dey  
Professor and Head,  
Department of Microbiology,  
N.R.S. Medical College , Kolkata-700014



Phone : 2412-4082

# VIJAYGARH JYOTISH RAY COLLEGE

(Affiliated to The University of Calcutta)

8/2, BEJOYGARH, JADAVPUR, KOLKATA - 700 032

ACCREDITED BY THE NAAC - B+ Grade.

Ref. No: STC/2023/1

Date: 30.05.2023

## ***Dr. Shilajit Barua***

Assistant Professor Department of Microbiology Vijaygarh Jyotish Ray College

Email: [shilajitj82@gmail.com](mailto:shilajitj82@gmail.com); [shilajit\\_barua@vjrc.ac.in](mailto:shilajit_barua@vjrc.ac.in)

## Certificate

*This is to certify that the project entitled, "Microcosm based study on the effect of nitrate on microbial arsenic mobilization in deep aquifer ecosystem of Bengal Delta Plain" submitted by Ms. Sneha Batabyal in partial fulfillment for the award of the degree of Master of Science in Microbiology at Bidhannagar College College (affiliated to West Bengal State University) is a bonafide piece of research work carried out and written by her, under my supervision during the year 2023.*

**Dr. Shilajit Barua**  
Assistant Professor  
Department of Microbiology  
Vijaygarh Jyotish Ray College

**Dr. Shilajit Barua**  
Assistant Professor  
Department of Microbiology  
Vijoygarh Jyotish Ray College



NILRATAN SIRCAR MEDICAL COLLEGE & HOSPITAL

*140 Years in the service of the nation*

138, AJC BOSE ROAD, KOLKATA - 700014

DEPARTMENT OF MICROBIOLOGY

Memo No:

Date: 08.06.2023

## *Certificate*

*This is to certify that Afrin Kalam have successfully completed Non Stipendiary training in the Department of Microbiology from 15.03.2023 to 31.05.2023 and submitted a project on "Bacteriological Profile of Blood stream infection" under my guidance.*

*I wish her every success in life.*

*Afrin*  
*8/6/2023*  
Professor & Head  
Department of Microbiology  
N.R.S. Medical College, Kol-14

Prof(Dr.) Jayanta Bikash Dey  
Professor and Head,

Department of Microbiology,

N.R.S. Medical College , Kolkata-700014



A Satyam Roychowdhury Initiative

**SNU**  
SISTER NIVEDITA  
UNIVERSITY

# SISTER NIVEDITA UNIVERSITY

## To Whom It May Concern

This is to certify that **Mr. Abhranil Samanta**, Final Semester Microbiology Student (M.Sc. Microbiology) from **Bidhangannar College, Kolkata** has completed a Project on “**Lignocellulosic Biomass Based Ethanol Production for Sustainable Fuel Ethanol blending Programme**” at Department of Biotechnology, Sister Nivedita University from 15.03.2023 to 31.05.2023 under guidance of Dr. Somsubhra Thakur Choudhury, Assistant Professor and Head, Dept. of Biotechnology, Sister Nivedita University.

**Head**  
Department of Biotechnology  
**Sister Nivedita University**  
Block DG-1/2, Action Area 1  
New Town, Kolkata-700 156

(Dr. Somsubhra Thakur Choudhury)  
Assistant Professor and Head,  
Dept. of Biotechnology,  
Sister Nivedita University  
Kolkata



NILRATAN SIRCAR MEDICAL COLLEGE & HOSPITAL

140 Years in the service of the nation

138, AJC BOSE ROAD, KOLKATA - 700014

DEPARTMENT OF MICROBIOLOGY

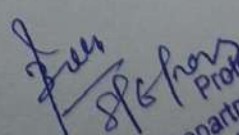
Memo No:

Date: 08.06.2023

## *Certificate*

*This is to certify that **Urvashi Singh** have successfully completed Non Stipendiary training in the Department of Microbiology from 15.03.2023 to 31.05.2023 and submitted a project on “**Bacteriological Profile of Uropathogens in a Hospital in central Kolkata**” under my guidance.*

*I wish her every success in life.*

  
Professor & Head  
Department of Microbiology  
N.R.S. Medical College, Koi-14

Prof(Dr.) Jayanta Bikash Dey  
Professor and Head,  
Department of Microbiology,  
N.R.S. Medical College, Kolkata-700014





# CNCI

## Chittaranjan National Cancer Institute

(An Autonomous Body under Ministry of Health & Family Welfare, Govt. of India)

37, S. P. Mukherjee Road, Kolkata 700 026, INDIA

Tel: 2476 5101/02/04/20/22; Fax: 91-33-2475 7606

E-mail: [cncinst@gmail.com](mailto:cncinst@gmail.com)

Web site: [www.cnci.ac.in](http://www.cnci.ac.in)

### CERTIFICATE

This is to certify that Mr. Snehasish Ghosal, a student of Bidhannagar College, West Bengal State University (M.Sc. Microbiology), has successfully completed his summer training project entitled "*Sequence dependent interaction of tumor suppressor p53 protein with Hepatitis B virus genome represses the viral transcription activity*" under my supervision in the Department of Signal Transduction and Biogenic Amines, CNCI, Kolkata, for two months April-May, 2023. He acquired certain molecular biology related technical skills, which will hopefully help him in future academic and research related activities. Wishing him all the success for her future endeavors.

This is to declare that the above-mentioned project has not been previously submitted for the award of any degree in any Indian or foreign universities.

Signature of the guide

Date: 31/05/2023

Place: Kolkata.



# Bidhannagar College

(Government of West Bengal)

EB-2, Sector-I, Salt Lake City, Kolkata-700 064

[Affiliated to West Bengal State University]

Department of Statistics

August 10, 2023

## CERTIFICATE

This is to certify that **Mr. Souhrid Santra (Regn. No. 1082011400136)**, B.Sc. 6<sup>th</sup> semester student, 2023 in the Department of Statistics, Bidhannagar College has done his Project Work titled “**ANALYSIS OF GROSS DOMESTIC PRODUCT**” in our Department of Statistics as a part of CBCS curriculum (STSADSE06P) under West Bengal State University.

*[Signature]* 10-08-2023

Head

Department of Statistics  
Bidhannagar College

*Head*

Department of Statistics  
Bidhannagar College, Kolkata - 84  
Government of West Bengal



**Bidhannagar College**  
(Government of West Bengal)  
EB-2, Sector-I, Salt Lake City, Kolkata-700 064  
[Affiliated to West Bengal State University]  
Department of Statistics

August 10, 2023

## CERTIFICATE

This is to certify that **Mr. Swapnanil Mondal (Regn. No. 1082011400131)**, B.Sc. 6<sup>th</sup> semester student, 2023 in the Department of Statistics, Bidhannagar College has done his Project Work titled “**STATISTICAL ANALYSIS ON HAPPINESS INDEX OF THE WORLD**” in our Department of Statistics as a part of CBCS curriculum (STSADSE06P) under West Bengal State University.

Head

10-08-2023

Department of Statistics  
Bidhannagar College

*Head*

Department of Statistics  
Bidhannagar College, Kolkata - 700 064  
Government of West Bengal





**Bidhannagar College**  
(Government of West Bengal)  
EB-2, Sector-I, Salt Lake City, Kolkata-700 064  
[Affiliated to West Bengal State University]  
Department of Statistics

August 10, 2023

**CERTIFICATE**

This is to certify that **Mr. Swapnil Roy (Regn. No. 1082011400148)**, B.Sc. 6<sup>th</sup> semester student, 2023 in the Department of Statistics, Bidhannagar College has done his Project Work titled **“INVESTIGATING THE IMPACT OF MEDICAL FACTORS ON HEART FAILURE”** in our Department of Statistics as a part of CBCS curriculum (STSADSE06P) under West Bengal State University.

*Sw*  
10-08-2023

Head

Department of Statistics  
Bidhannagar College

*Head*

Department of Statistics  
Bidhannagar College, Kolkata - 64  
Government of West Bengal



सत्यमेव जयते

## Department of Zoology

Under Graduate and Post Graduate

**Bidhannagar College**

Govt. of West Bengal  
EB-2, Sector-I, Saltlake  
Kolkata- 700064

## প্রাণিবিদ্যা বিভাগ

মাস্টার এবং পোস্টগ্রেজুয়েট

**বিধাননগর কলেজ**

পশ্চিমবঙ্গ সরকার

ছবি - ২, সেক্টর ১, সল্টলেক  
কলকাতা ৭০০০৬৪

## CERTIFICATE

Date 27.07.21

This is to certify that the Project entitled **Captive Necrophoric Behaviour of Small and Fragmented Colony Members of an Indian Ant Species *Diacamma rugosum* (Hymenoptera: Formicidae: Ponerinae)** submitted by **Ms. Ankita Dey**, (Roll: BNC/ZOO-IV; No: 014, Registration No: 1111821400119 Of 2021-2023) a student of M.Sc. semester IV of the Department of Zoology of this college is absolutely based upon her own work under my supervision for the partial fulfillment of Master Degree Course in Zoology of the Bidhannagar College affiliated with the West Bengal State University, Barasat, N. 24 Parganas, West Bengal, India.

Head of The Department  
**Prof. Dr. Nimai Chandra Saha**  
Professor of Zoology

Head  
Department of Zoology  
Bidhannagar College

Supervisor  
**Dr. Ranajit Karmakar**  
Associate Professor of Zoology

Dr. RANAJIT KARMAKAR  
Associate Professor & Head  
PG & UG Dept of Zoology  
BIDHANNAGAR COLLEGE  
Govt. of Wb, WBES  
Saltlake, Kolkata - 700064





**Department of Zoology**  
Under Graduate and Post Graduate  
**Bidhannagar College**  
Govt. of West Bengal  
EB-2, Sector-I, Saltlake  
Kolkata- 700064

**প্রাণিবিদ্যা বিভাগ**  
স্নাতক এবং স্নাতকোত্তর  
**বিধাননগর কলেজ**  
পশ্চিমবঙ্গ সরকার  
ইবি - ২, সেক্টর - ১, সল্টলেক  
কলকাতা-৭০০০৬৪

Ref. No.

Date: 27.07.23

## CERTIFICATE

This is to certify that the Project entitled **Lipid Food Preference and Foraging Activity of an Indian Ant Species *Monomorium pharaonis* (Hymenopters: Formicidae: Myrmicinae): A Field Study** submitted by Ms. Sohini Sarkar, (Roll: BNC/ZOO-IV; No: 004, Registration No: 1082121400318 Of 2021-2023) a student of M.Sc. semester IV of the Department of Zoology of this college is absolutely based upon her own work under my supervision for the partial fulfilment of Master Degree Course in Zoology of the Bidhannagar College affiliated with the West Bengal State University, Barasat, N. 24 Parganas, West Bengal, India.

**Head**  
**Prof. Dr. Nimai Chandra Saha**  
Professor of Zoology

Head  
Department of Zoology  
Bidhannagar College

**Supervisor**  
**Dr. Ranajit Karmakar**  
Associate Professor of Zoology

Dr. RANAJIT KARMAKAR  
Associate Professor  
PG & UG Dept. of Zoology  
BIDHANNAGAR COLLEGE  
Govt. of WB, WBES  
Saltlake, Kolkata - 700064





**Department of Zoology**  
Under Graduate and Post Graduate  
**Bidhannagar College**  
Govt. of West Bengal  
EB-2, Sector-I, Saltlake  
Kolkata- 700064

**প্রাণিবিদ্যা বিভাগ**  
স্নাতক এবং স্নাতকোত্তর  
**বিধাননগর কলেজ**  
পশ্চিমবঙ্গ সরকার  
ইবি - ২, সেক্টর - ১, সল্টলেক  
কলকাতা-৭০০০৬৪

Ref. No.

Date: 27.07.23

## CERTIFICATE

This is to certify that the project entitled **Comparison of Genotoxicity Concerning Micronucleus, Nuclear Abnormality and Shapes of the Red Blood Cells Following Antifouling Paint Exposure in Three Catfishes *Clarius gariepinus*, *Clarias batrachus* and *Heteropneustes fossilis*** submitted by **Ms. Sruti Banerjee**, (Roll: *BNC/ZOO-IV; No: 010, Registration No: 1351821400241 Of 2021-2023*) a student of M.Sc semester IV Zoology of the Department of Zoology of this college is absolutely based upon her own work under my supervision for the partial fulfillment of Master's degree Course in Zoology of Bidhannagar College affiliated with West Bengal State University, Barasat, WB.

**Dr. Nimai Chandra Saha**

Head of the Department  
of Zoology (UG&PG)  
Bidhannagar College  
Kolkata

Head  
Department of Zoology  
Bidhannagar College

**Dr. Ranajit Karmakar**

Associate Professor  
Department of Zoology  
Bidhannagar College  
Kolkata

**Dr. RANAJIT KARMAKAR**  
Associate Professor & Head  
PG & UG Dept. of Zoology  
BIDHANNAGAR COLLEGE  
Govt. of WB, WBES  
Saltlake, Kolkata - 700064





## Department of Zoology

Under Graduate and Post Graduate

**Bidhannagar College**

Govt. of West Bengal

EB-2, Sector-I, Saltlake

Kolkata- 700064

## প্রাণিবিদ্যা বিভাগ

স্নাতক এবং স্নাতকোত্তর

**বিধাননগর কলেজ**

পশ্চিমবঙ্গ সরকার

স্থি - ২, সেক্টর - ১, সল্টলেক

কলকাতা- ৭০০০৬৪

## CERTIFICATE

Date 27.07.23

This is to certify that the Project entitled **A Comparative Account of Hepatotoxic Effect of an Antifouling Agent on Three Catfishes *Heteropneustes fossilis*, *Clarias batrachus* and *Clarias geriepinus*. Histological and Histochemical Studies.** submitted by **Ms. Arti kumari Ram.** (Roll: BNC/ZOO-IV; No: 011, Registration No: 1301821100197 Of 2021-2023) a student of M.Sc. semester IV of the Department of Zoology of this college is absolutely based upon her own work under my supervision for the partial fulfillment of Master Degree Course in Zoology of the Bidhannagar College affiliated with the West Bengal State University, Barasat, North 24 Parganas, West Bengal, India.

**Head of The Department**  
**Prof. Dr. Nimai Chandra Saha**  
Professor of Zoology

Head  
Department of Zoology  
Bidhannagar College

**Supervisor**  
**Dr. Ranajit Karmakar**  
Associate Professor of Zoology

Dr. RANAJIT KARMAKAR  
Associate Professor & Head  
PG & UG Dept. of Zoology  
BIDHANNAGAR COLLEGE  
Govt. of WB, WBES  
Saltlake, Kolkata - 700064







Government of West Bengal

# BIDHANNAGAR COLLEGE

PG Department of Zoology  
EB-2, Sector -I, Salt Lake, Kolkata-700064



## CERTIFICATE OF DISSERTATION

It is Certified that Susmita Nath a student of M.Sc. Semester IV (2021-2023) of Department of Zoology, Bidhannagar College, Kolkata-64, bearing Registration Number 1371821400093 of 2018 and Roll number BNC/ZOO-IV 013 completed her dissertation work (paper ZP405) under my direct supervision. The research work presented in the dissertation report is her original work needed for the partial fulfillment in obtaining the M.Sc. degree by the student. It is also certified that the work presented in the dissertation is scientifically relevant in context of Zoology as a course.

**Prof. (Dr.) Nimai Chandra Saha**  
Head  
P.G. Department of Zoology  
Bidhannagar College  
Salt-Lake, Kolkata-700064

Head  
Department of Zoology  
Bidhannagar College

**Dr. Suman Bej**  
Supervisor  
Assistant Professor of Zoology  
Bidhannagar College  
Salt -Lake, Kolkata-700064

**SUMAN BEJ**  
Assistant Professor (WBES)  
P. G. Department of Zoology  
Bidhannagar College, Kol-64



Government of West Bengal

# BIDHANNAGAR COLLEGE

PG Department of Zoology

EB-2, Sector -I, Salt Lake, Kolkata-700064



## CERTIFICATE OF DISSERTATION

This is Certified that **Aditi Sandilya**, a student of M.Sc. Semester IV (2021-2023) of Department of Zoology, Bidhannagar College, Kolkata-64, bearing Registration Number **1081821400234 of 2018** and Roll number **BNC/ZOO-IV 001** completed her dissertation work entitled as “**Comparative study of selected pyrazole insecticides at their sublethal doses on Histology and Histochemistry of different tissues of freshwater edible fish *Cyprinus carpio* (Linnaeus 1758)**” under my direct supervision. The research work presented in the dissertation report is her original work needed for the partial fulfillment in obtaining the M.Sc. degree by the student. It is also certified that the work presented in the dissertation is scientifically relevant in the context of Zoology as a course.

Prof. (Dr.) Nimai Chandra Saha  
**Head**  
PG Department of Zoology  
Department of Zoology  
Bidhannagar College  
Salt-Lake, Kolkata-700064

Head  
Department of Zoology  
Bidhannagar College

Dr. Suman Bej  
**Supervisor**  
Department of Zoology  
Bidhannagar College  
Salt-Lake, Kolkata-700064

**SUMAN BEJ**  
Assistant Professor (WBES)  
P. G. Department of Zoology  
Bidhannagar College, Kol-64



सत्यमेव जयते

Government of West Bengal  
**BIDHANNAGAR COLLEGE**

**PG Department of Zoology**  
EB-2, Sector- I, Salt Lake, Kolkata-70006



**CERTIFICATE OF M.Sc. DISSERTATION**

It is Certified that **Nazia Naaz**, a student of M.Sc. Semester IV (2021-2023) of Department of Zoology, Bidhannagar College, Kolkata-64, bearing Registration Number:-**1082122500314** of **2021-23** and Roll number:-**BNC/ZOO-IV-006** completed her dissertation work *Quantitative estimation of Gut-micro biota population fluctuation of Cyprinus carpio exposed to sub-lethal doses of two insecticides Fipronil 5% and Tolfenpyrad 15%* under my direct supervision. The research work presented in the dissertation report is her original work needed for the partial fulfillment in obtaining the M.Sc. degree by the student. It is also certified that the work presented in the dissertation is scientifically relevant in context of Zoology as a course.

**Prof. (Dr.) Nimai Chandra Saha**

**Head**

Department of Zoology  
Bidhannagar College  
Salt-Lake, Kolkata- 700064

Head  
Department of Zoology  
Bidhannagar College

**Dr. Suman Bej**

**Supervisor**

Department of Zoology  
Bidhannagar College  
Salt-Lake, Kolkata- 700064

**SUMAN BEJ**  
Assistant Professor (WBES) | Page  
P. G. Department of Zoology  
Bidhannagar College, Kol-64



Government of West Bengal

# BIDHANNAGAR COLLEGE

PG Department of Zoology  
EB-2, Sector -I, Salt Lake, Kolkata-700064



## Certificate of Dissertation

It is Certified that Sabari Das, a student of M.Sc. Semester IV (2021-2023) of Department of Zoology, Bidhannagar College, Kolkata-64, bearing Registration Number 1371821400063 and Roll number BNC/ZOO-IV-002 completed her dissertation work (paper ZP 405A) under my direct supervision. The research work presented in the dissertation report is her original work needed for the partial fulfillment in obtaining the M.Sc. degree by the student. It is also certified that the work presented in the dissertation is scientifically relevant in context of Zoology as a course.

Prof. Nimai Chandra Saha

Head

P.G. Department of Zoology

Bidhannagar College

Salt-Lake, Kolkata-700064

Head  
Department of Zoology  
Bidhannagar College

Dr. Suman Bej

Supervisor

Assistant Professor

Bidhannagar College

Salt-Lake, Kolkata-700064

SUMAN BEJ  
Assistant Professor (WBES)  
P. G. Department of Zoology  
Bidhannagar College, Kol-64

# CERTIFICATE OF DISSERTATION:

It is Certified that SUMANA GHOSH a student of M.Sc. Semester IV (2021-2023) of Department of Zoology, Bidhannagar College, Kolkata-64, bearing Registration Number 1171821400222 of 2018 and Roll number BNC/ZOO-IV/003 completed her dissertation work Pesticides Induced Toxicity in Fish: A Review under my supervision. The review work presented in the dissertation report is her original work needed for the partial fulfilment in obtaining the M.Sc. degree by the student. It is also certified that the work presented in the dissertation is scientifically relevant in context of Zoology as a course.



Prof. Nimai Chandra Saha

Head

P.G. Department of Zoology

Bidhannagar College

Salt-Lake, Kolkata-700064

Head  
Department of Zoology  
Bidhannagar College



Dr. Somnath Mandal

Supervisor

Assistant Professor

Bidhannagar College

Salt-Lake, Kolkata-700064

Assistant Professor  
A B E S  
Govt. of W. B.  
Bidhannagar College  
Salt Lake, Kolkata - 64



## BIDHANNAGAR COLLEGE

Govt. of West Bengal

EB-2, Saltlake, Sector-I

Kolkata - 700 064

Phone : (033) 2337 4761

(033) 2337 4782

## বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার

ব্লক - ই.বি. - ২, সল্টলেক, সেক্টর - ১

কলকাতা - ৭০০০৬৪

দূরভাষ - (০৩৩) ২৩৩৭-৪৭৬১

(০৩৩) ২৩৩৭-৪৭৮২



## CERTIFICATE

This is to certify that the work embodied in the dissertation entitled "Nematodes in Humans: Prevalence Pathogenesis and Treatment" has been carried out by Rohit Das, student of M.Sc, Semester-IV, 2023, bearing Registration No: 1081811100252 of 2021-23 and Roll BNC/ZOO-IV No: 007 of Bidhannagar College under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.

Countersigned

Prof. (Dr.) Nimai Chandra Saha

Head of department

PG & UG Department of Zoology

Bidhannagar College

Head  
Department of Zoology  
Bidhannagar College

Supervisor

Dr. Somnath Mondal

Assistant Professor

PG & UG Department of Zoology

Bidhannagar College

Assistant Professor  
WBES  
Govt. of W. B.  
Bidhannagar College  
Salt Lake, Kolkata - 84



Government of West Bengal  
**BIDHANNAGAR COLLEGE**



PG Department of Zoology  
EB-2, Sector -I, Salt Lake, Kolkata-700064

**CERTIFICATE**

This is to certify that the work presented in this research entitled “**Comparative Study of Butterfly Diversity in Bidhannagar College Campus and Ambika Kalna Town Area**” has been carried out **MOUMI MALLICK** a student of M.Sc. Zoology, Semester IV 2023 of this college bearing Registration Number **1081821100317 of 2021-2023** and Roll Number **BNC/ZOO-IV – 016**

This is as per the syllabus as laid down by Bidhannagar College (affiliated by West Bengal State University, Barasat ,West Bengal) for the partial fulfilment of End Term Semester examination of Semester IV for the Masters of Science in Zoology (Paper: ZPE 405C: Review paper/ Thesis )

**Prof. Nimai Chandra Saha**  
**Head**  
**P.G. Department of Zoology**  
**BIDHANNAGAR COLLEGE**  
**Salt Lake, Kolkata-700064**

Head  
Department of Zoology  
Bidhannagar College

**Dr. Somnath Mandal**  
**Supervisor**  
**Assistant Professor**  
**BIDHANNAGAR COLLEGE**  
**Salt Lake, Kolkata-700064**

Assistant Professor  
WBES  
Govt. of W. B.  
Bidhannagar College  
Salt Lake, Kolkata - 84



GOVERNMENT OF WEST BENGAL  
**BIDHANNAGAR COLLEGE**  
Post Graduate and Undergraduate Department of  
**ZOOLOGY**

EB-2, SECTOR-1, SALT LAKE CITY, KOLKATA - 700 064, INDIA  
Phone : 033-2337-4761, Fax : (033) 2237-4782,  
Website : [http://education.vsnl.com / bidhannagarcollege](http://education.vsnl.com/bidhannagarcollege)  
E-mail : [bnc\\_principal@yahoo.com](mailto:bnc_principal@yahoo.com)



Ref. No

Date

**CERTIFICATE**

This is to certify that the work presented in this Project “**STUDY ON VARIATION OF SOME PHENOTYPIC CHARACTERS FROM HUMAN POPULATION IN AND AROUND KOLKATA AND SUB-URBAN AREAS**” entitled has been carried out by **RIMPA MAJUMDER**, a student of M.Sc. Zoology, Semester IV 2023 of this college bearing Roll-**BNC/ZOO-IV No- 008 & Registration No. 1071821101127 of 2021-23.**

This is as per the syllabus as laid down by Bidhannagar College (affiliated by West Bengal State University, Barasat, WB) for the partial fulfillment of this Semester End Examination of Semester IV for the Masters of Science in Zoology (Paper: ZPE 405 A: Project Work/ Review).

Date: July 28, 2023.  
Kolkata

*Biswatosh Ghosh.*

Biswatosh Ghosh, PhD  
Assistant Professor of  
Dept. of Zoology

*Assistant Professor*  
West Bengal Education Service  
Higher Education Department  
Government of West Bengal

Prof. Nimai Chandra Saha  
Head of the  
Dept. of Zoology (UG & PG)  
Bidhannagar College,  
Kolkata.

Head  
Department of Zoology  
Bidhannagar College





## CERTIFICATE

This is to certify that **MADHURIMA DUTTA**, Roll NO: BNC/ZOO/IV-009, Registration No: 1351821400220, student of M. Sc, semester-IV of Post-Graduation Department of Zoology, Bidhannagar College, has carried out her dissertation entitled "**TOPOISOMERASE INDUCED DNA DAMAGE REPAIR MECHANISM ASSOCIATED DISEASES AND THERAPEUTIC POTENTIAL**" for the partial fulfilment of the award of Master's Degree in Zoology, of Bidhannagar College for academic session 2021-2023, under my supervision.

The student has completed his work sincerely and to my satisfaction. The work has not been published elsewhere.

.....  
*Prof. Dr. Nimai Chandra Saha*  
Professor & head of the Department  
Of the Zoology  
UG & PG) Bidhannagar College  
College

Head  
Department of Zoology  
Bidhannagar College

.....  
*Dr. Somnath Mandal*  
Assistant professor  
of the Department of the Zoology  
(UG & PG) Bidhannagar College

Assistant Professor  
NBES  
Govt. of W. B.  
Bidhannagar College  
Salt Lake, Kolkata - 64



GOVERNMENT OF WEST BENGAL  
**BIDHANNAGAR COLLEGE**  
Post Graduate and Undergraduate Department of  
**ZOOLOGY**

EB-2, SECTOR-1, SALT LAKE CITY, KOLKATA - 700 064, INDIA  
Phone : 033-2337-4761, Fax : (033) 2237-4782,  
Website : [http://education.vsnl.com / bidhannagarcollege](http://education.vsnl.com/bidhannagarcollege)  
E-mail : [bnc\\_principal@yahoo.com](mailto:bnc_principal@yahoo.com)



Ref. No. : .....

Date : .....

**CERTIFICATE**

This is to certify that the work presented in this Project "ISOLATION OF BACTERIA FROM POULTRY FECES AND A COMPARATIVE STUDY ON THEIR RESISTANCE PROPERTIES" entitled has been carried out by SANJUKTA GUHA, a student of M.Sc. Zoology, Semester IV 2023 of this college bearing Roll- BNC/ZOO- IV No- 020, & Registration No. 1161821400129 Of 2021-2023

This is as per the syllabus as laid down by Bidhannagar College (affiliated by West Bengal State University, Barasat, WB) for the partial fulfillment of this Semester End Examination of Semester IV for the Masters of Science in Zoology (Paper: ZPE 405 A: Project Work/ Review).

Date: July 28, 2023.  
Kolkata

*Biswatosh Ghosh*

Dr. Biswatosh Ghosh  
Assistant Professor of  
Dept. of Zoology

*Assistant Professor*  
West Bengal Education Service  
Higher Education Department  
Government of West Bengal

*Sandip Misra*  
28.7.2023

Dr. Sandip Misra  
Assistant Professor of  
Dept. of Microbiology

Assistant Professor, WBES  
P. G. Department of Microbiology  
Bidhannagar College, Kol-64

*Nimai Chandra Saha*

Prof. Nimai Chandra Saha  
Head of the  
Dept. of Zoology (UG & PG)  
Bidhannagar College,  
Kolkata.

Head  
Department of Zoology  
Bidhannagar College

## BIDHANNAGAR COLLEGE

Govt. of West Bengal

EB-2, Saltlake, Sector-I

Kolkata - 700 064

Phone : (033) 2337 4761

(033) 2337 4782



सत्यमेव जयते

## বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার

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(০৩৩) ২৩৩৭-৪৭৮২

## Post Graduate and Undergraduate Department of Zoology

### CERTIFICATE

This is to certify that the work embodied in the dissertation entitled **STUDY OF PARASITIC INFESTATION OF GUT ASSOCIATED NEMATODE IN THE FRESH WATER SNAIL (*Pila globosa*)** has been carried out by **Sangeeta Paul**, student of M.Sc, Semester-IV, 2023, bearing **Registration No: 1201821400314 of 2021-2023** and **Roll BNC/ZOO-IV No: 021** of BIDHANNAGAR COLLEGE under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.



Countersigned

**Prof. (Dr.) Nimai Chandra Saha**

Head of department

PG & UG Department of Zoology

Bidhannagar College.

Head  
Department of Zoology  
Bidhannagar College

Supervisor

**Mrs. Urmi Mitra**

Review Guide

Assistant Professor

Department of Zoology

**URMI MITRA**

Assistant Professor, W.B.E.S.

Bidhannagar College

Salt Lake, W.B.



**BIDHANNAGAR COLLEGE**  
**Post Graduate and Undergraduate Department of**  
**ZOOLOGY**  
**EB-2, SECTOR-1, SALT LAKE CITY, KOLKATA-700064,**  
**INDIA**

**Phone :033-2337-4761, Fax: (033) 2237-4782,**

**Website: bidhannagarcollege.org**

**E-mail: bnckol@gmail.com**



**CERTIFICATE**

This is to certify that the review entitled *Review on Parasitic infection on domestic ducks in India* has been carried out by **Sampurna Roy**, student of M.Sc., Semester-IV, 2023, bearing **Registration No. 1231821101011, Roll No. BNC/ZOO-IV/005** of BIDHANNAGAR COLLEGE under WEST BENGAL STATE UNIVERSITY.

This is as per the syllabus as laid down by PGEC, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.

Countersigned by

(Prof.) Dr Nimai Chandra Saha

Head of the Department

Department of Zoology (UG and PG)

Bidhannagar College

Department of Zoology  
Bidhannagar College

Supervisor

Dr Somnath Mandal

Assistant Professor

Department of Zoology (UG and PG)

Bidhannagar College

Assistant Professor  
WBES  
Govt. of W. B.  
Bidhannagar College  
Salt Lake, Kolkata - 34

**BIDHANNAGAR COLLEGE**

Govt of West Bengal

EB-2, Saltlake, Sector-I

Kolkata - 700 064

Phone : (033) 2337 4761

(033) 2337 4782



सत्यमेव जयते

বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার

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দূরভাষ - (০৩৩) ২৩৩৭-৪৭৬১

(০৩৩) ২৩৩৭-৪৭৮২

## Post Graduate and Undergraduate Department of Zoology

### CERTIFICATE

This is to certify that the work embodied in the dissertation entitled **EFFECTS OF PARASITIC DISEASES ON COVID-19** has been carried out by **Nilesh Kundu**, student of M.Sc., Semester-IV, 2023, bearing **Registration No: 1082111400316** of 2018 and **Roll BNC/ZOO-IV No: 018** of BIDHANNAGAR COLLEGE under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.



Countersigned by

**Prof. (Dr.) Nimai Chandra Saha**

Head of department

PG & UG Department of Zoology

Bidhannagar College.

Head  
Department of Zoology  
Bidhannagar College

Dissertation Supervisor

**Mrs. Urmi Mitra**

Assistant Professor

Department of Zoology

**URMI MITRA**  
Assistant Professor, W.B.E.S.  
Bidhannagar College  
Salt Lake, W.B.

## BIDHANNAGAR COLLEGE

Govt. of West Bengal

EB-2, Saltlake, Sector-I

Kolkata - 700 064

Phone (033) 2337 4761

(033) 2337 4782



सत्यमेव जयते

বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার

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(০৩৩) ২৩৩৭-৪৭৮২

## Post Graduate and Undergraduate Department of Zoology

### CERTIFICATE

This is to certify that the work embodied in the dissertation entitled **Circadian Rhythm and Its Relation to Immunity and Parasitic Infections and Diseases in Mammals** has been carried out by **Soumyadeep Das**, student of M.Sc., Semester-IV, 2023, bearing **Registration No: 3071811400153 of 2018** and **Roll BNC/ZOO-IV No: 022** of BIDHANNAGAR COLLEGE under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.



Countersigned by

**Prof. (Dr.) Nimai Chandra Saha**

Head of department

PG & UG Department of Zoology

Bidhannagar College.

**Head**  
**Department of Zoology**  
**Bidhannagar College**

Dissertation Supervisor

**Mrs. Urmi Mitra**

Assistant Professor

Department of Zoology

Bidhannagar College

**URMI MITRA**  
**Assistant Professor, W.B.E.S.**  
**Bidhannagar College**  
**Salt Lake, W.B.**

## BIDHANNAGAR COLLEGE

Govt. of West Bengal  
EB-2, Saltlake, Sector-I  
Kolkata - 700 064  
Phone : (033) 2337 4761  
(033) 2337 4782



## বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার  
ব্লক - ই.বি. - ২, সল্টলেক সেক্টর - ১  
কলকাতা - ৭০০০৬৪  
দূরভাষ: (০৩৩) ২৩৩৭-৪৭৬১  
(০৩৩) ২৩৩৭-৪৭৮২

### CERTIFICATE

This is to certify that the work embodied in the dissertation entitled "ASSOCIATION OF HAEMATOLOGICAL AND BIOCHEMICAL PARAMETERS WITH IMMUNE MEDIATED PATHOGENESIS IN DENGUE VIRUS INFECTION" has been carried out by SUROVI MAJI, student of M.Sc. Semester-IV, 2023, bearing **Registration No: 102121100315** of 2021-23 and **Roll BNC/ZOO-IV No: 019** of BIDHANNAGAR COLLEGE under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGEC, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.

Countersigned

Prof. (Dr.) Nimai Chandra Saha  
Head of department  
PG & UG Department of Zoology  
Bidhannagar College.

Head  
Department of Zoology  
Bidhannagar College

Supervisor

Suman Mukherjee 26/7/2023

Dr. Suman Mukherjee  
Dissertation guide  
Assistant Professor  
PG & UG Department of Zoology  
Bidhannagar College

Assistant Professor  
West Bengal Education Service  
Higher Education Department,  
Government of West Bengal

## BIDHANNAGAR COLLEGE

Govt. of West Bengal  
EB-2, Saltlake, Sector-I  
Kolkata - 700 064  
Phone : (033) 2337 4761  
(033) 2337 4782



## বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার  
ব্লক - ই.বি. - ২, সল্টলেক (সেক্টর - ১)  
কলকাতা - ৭০০০৬৪  
দূরভাষ : (০৩৩) ২৩৩৭-৪৭৬১  
(০৩৩) ২৩৩৭-৪৭৮২

## CERTIFICATE

This is to certify that the work embodied in the dissertation entitled "STUDY ON SURVILLANCE OF PARASITIC INFESTATION OF *Litopenaeus vannahmei*" has been carried out by **Soumavo Kumar**, student of M.Sc, Semester-IV, 2023, bearing **Registration No: 1111811400124 of 2021-23 and Roll BNC/ZOO-IV No: 012** of Bidhannagar College under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.

### Countersigned

**Prof. (Dr.) Nimai Chandra Saha**  
**Head of department**  
**PG & UG Department of Zoology**  
**Bidhannagar College**

Head  
Department of Zoology  
Bidhannagar College

### Supervisor

*Suman Mukherjee 26/7/23*

**Dr. Suman Mukherjee**  
**Dissertation Supervisor**  
**Assistant Professor**  
**PG & UG Department of Zoology**  
**Bidhannagar College**

Assistant Professor  
WBES  
Govt. of W. B.  
Bidhannagar College  
Salt Lake, Kolkata - 64



## BIDHANNAGAR COLLEGE

Govt. of West Bengal  
EB-2, Saltlake, Sector-I  
Kolkata - 700 064  
Phone : (033) 2337 4761  
(033) 2337 4782



## বিধাননগর কলেজ

পশ্চিমবঙ্গ সরকার  
ব্লক - ই.বি. ২, সল্টলেক সেক্টর ১  
কলকাতা - ৭০০০৬৪  
দূরভাষ (০৩৩) ২৩৩৭ ৪৭৬১  
(০৩৩) ২৩৩৭ ৪৭৮২

## CERTIFICATE

This is to certify that the work embodied in the dissertation entitled "**Comparative study on biochemical profile in *Pila globosa* and *Bellamya bengalensis* exposed to Bordeaux mixture**" has been carried out by **Pallabi Paul**, student of M.Sc, Semester-IV, 2023, bearing **Registration No: 1351821400219 of 2021-23** and **Roll BNC/ZOO-IV No: 015** of Bidhannagar College under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfillment for the Degree of Master of Science in Zoology.

Countersigned

Prof. (Dr.) Nimai Chandra Saha  
Head of department  
PG & UG Department of Zoology  
Bidhannagar College.

Head  
Department of Zoology  
Bidhannagar College

Supervisor

Suman Mukherjee 26/7/23  
Dr. Suman Mukherjee

Dissertation Supervisor  
Assistant Professor  
PG & UG Department of Zoology  
Bidhannagar College

## Department of Zoology

Under Graduate and Post Graduate

**Bidhannagar College**

Govt. of West Bengal  
EB-2, Sector-1, Saltlake  
Kolkata- 700064



## প্রাণিবিদ্যা বিভাগ

স্নাতক এবং স্নাতকোত্তর

**বিধাননগর কলেজ**

পশ্চিমবঙ্গ সরকার  
ছবি ২, সেক্টর ১, সল্টলেক  
কলকাতা ৭০০০৬৪

## CERTIFICATE

This is to certify that the work embodied in the dissertation entitled “**Survey Report on Seasonal Abundance of Protozoan and Tick infestation among Stray Dogs of Barrackpore, North 24 Parganas, West Bengal**” has been carried out by **Anjali Singh**, student of **M.Sc., Semester-IV, 2023**, bearing Registration No. **1082121400317**, Roll No. **BNC/ZOO-IV/017** of Bidhannagar College under WEST BENGAL STATE UNIVERSITY. This is as per the syllabus as laid down by PG-BOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.

**Countersigned**

**Supervisor**

**Prof. (Dr.) Nimai Chandra Saha**

**Head of the Department.**

**UG & PG Department of Zoology**

**Bidhannagar College**

**Head**  
**Department of Zoology**  
**Bidhannagar College**

*Suman Mukherjee 26/7/23*  
**(Dr. Suman Mukherjee)**

**Dissertation Supervisor**

**Assistant Professor**

**UG & PG Department of  
Zoology**

**Bidhannagar College**

*Assistant Professor*  
**West Bengal Education Service**  
**Higher Education Department**  
**Government of West Bengal**

## BIDHANNAGAR COLLEGE

Govt. of West Bengal  
EB-2, Saltlake, Sector-I  
Kolkata - 700 064  
Phone : (033) 2337 4761  
(033) 2337 4782



सत्यमेव जयते

## বিধাননগর কলেজ

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(০৩৩) ২৩৩৭-৪৭৮২



## Post Graduate and Undergraduate Department of Zoology

### CERTIFICATE

This is to certify that the work embodied in the dissertation entitled **MONKEY POX: EPIDEMIOLOGY AND IMMUNOLOGY OF A SIGNIFICANT VIRAL ZONOTIC DISEASE** has been carried out by **Bidisha Mandal**, student of M.Sc., Semester-IV, 2023, bearing Registration No: 1201721100213 of 2017 and Roll BNC/ZOO-IV No: 023 of BIDHANNAGAR COLLEGE under WEST BENGAL STATE UNIVERSITY.

This is as per the syllabus as laid down by PGBOS, PG Department of Zoology for the partial fulfilment for the Degree of Master of Science in Zoology.

Countersigned by

Prof. (Dr.) Nimai Chandra Saha

Head of department

PG & UG Department of Zoology

Bidhannagar College.

**Head**  
**Department of Zoology**  
**Bidhannagar College**

Dissertation Supervisor

Mrs. Urmi Mitra

Assistant Professor

Department of Zoology

**URMI MITRA**  
Assistant Professor, W.B.E.S.  
Bidhannagar College  
Salt Lake, W.B.