

| SEMESTER - I | |
|--------------------|----------------------|
| Course name | Research Methodology |
| Course code | PHDZOO 01 |
| Number of lectures | 60 |
| Credits | 4 |
| Marks | 100 |

Course Objectives:

After completion of this course the student will be able to

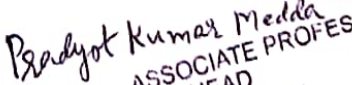
| Sl. No. | Course Objectives: |
|---------|--|
| 1: | Develop the ability to choose methods appropriate to research aims and objectives. |
| 2: | Understand the advantages and disadvantages of particular research method. |
| 3: | Develop skill of critical thinking and the skill of qualitative and quantitative data analysis and presentation. |
| 4: | Prepare students for organizing and conducting research in a more appropriate manner |

Course Content: Research Methodology

Unit 1: Research Formulation: Objectives and motivation of Research –Research Methodology vs methods. Types of research– Descriptive, Analytical, Applied, Fundamental, Quantitative, Qualitative, Conceptual, Empirical etc.; Approaches to Research: Preparation of Schedule, Case study approach, Comparison approach, Definition approach, Descriptive approach, Evaluative approach, Exploratory approach, Interpretive approach, Narrative approach, Persuasive approach, Policy memorandum approach. Definition and formulation of the research problem – Selection of the problem - Necessity of defining the problem - Importance of literature review in defining a problem–Literature review–Primary and secondary sources–reviews, treatise, monographs–patents–webasasource–searching the web–Critical literature review–Development of working hypothesis. [12 hours]

Unit- II: Data Collection and analysis: Execution of the research–Observation and Collection of data - Methods of data collection –Sampling Methods- Data Processing and Analysis strategies – Data Analysis with Statistical Packages–Hypothesis-testing–Generalization and Interpretation. [12 hours]


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Unit III: Reporting and thesis writing: Structure and components of scientific reports - Types of report – Technical reports and thesis –Significance – Different steps in the preparation – Layout, structure and Language of typical reports–Illustrations and tables– Bibliography, referencing and footnotes. **12 hours**

Unit IV: Application of results and ethics:

Environmental impacts – Ethical issues - ethical committees: Guidelines for Bio-safety, functioning of Institutional Bio-safety committee, Institutional Animal ethics committee, and Institutional ethical committee, CPCSEA guidelines for animal experimentation, ICMR guidelines for experiments involving humans, DBT guidelines for Biosafety practices to be followed **5 hours**

Intellectual property rights (IPR): kinds of property, nature of IP, basic principle, major IP, moral rights & economic rights; Copy right, patent, industrial design, trade mark, geographical indication, farmers' right, IPR licensing & technology transfer; Reproduction of published material- plagiarism, citation and acknowledgement. Reproducibility of IP and accountability. **7 hours**


Unit V: Presentation of Results: Poster presentation, Oral presentation, Software related to presentation, layout and structure. Oral presentation–Planning–Preparation–Practice– Making presentation–Use of visual aids–Importance of effective Communication. Writing an Abstract: Importance, Types: Critical Abstract; Descriptive Abstract; Informative Abstract; Highlight Abstract; Writing Style. Writing Introduction: Background Information, Research Questions, Theoretical Framework. Writing a Case Study: Identifying a Case, Structure and writing style, Limitations. Writing a Field Report: Objects to observe, Obtaining consent, Field Notes, Techniques to Record Observation. Writing an Executive Summary; Policy Memo Writing a Book Review: Descriptive; Critical. Proof Reading: Strategies to identify errors; use of computer checking, common grammatical errors. Group Projects: Goals, Planning, Preparation and Implementation. **12 hours**

Course Outcomes

On successful completion of the course students will be able to:

| CO. No. | Course Outcome | Cognitive Level | POs Addressed | PSOs Addressed |
|---------|---|-----------------|---------------|----------------|
| CO1 | Understand the objectives, motivation and types of research | U | PO1 | PSO2 |
| CO2 | Define and formulate a research problem | R, C | PO4 | PSO1 |


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| | | | | |
|-----|---|-------|-----|------|
| CO3 | Collect data (primary or secondary) based on the formulated problem and analyse the data. | An | PO2 | PSO3 |
| CO4 | Analyse the data with hypothesis testing, generalization and interpretation. | An, C | PO3 | PSO4 |
| CO5 | Discuss the application of results and write the thesis. | Ap, E | PO3 | PSO4 |

R= remembering, U = understanding, Ap = applying, An = analysing, E = evaluating, and C = creating

Sri. Kanak

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Pradyot Kumar
ASSOCIATE PROFESSOR
AND HEAD
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| SEMESTER – I | |
|---|-----------|
| Name of the Course: Research Methodology | |
| Course Code: PHDMATH01 | |
| Full Marks: 100 | Credit: 4 |
| Number of classes required: 60 | |
| This course has been newly introduced vide BOS meeting dated 26/02/2019 | |

Course Objectives (PHDMATH01)

The prime objectives of the course are:

- Develop the ability to choose methods appropriate to research aims and objectives.
- Understand the advantages and disadvantages of particular research method.
- Develop skill of critical thinking and the skill of qualitative and quantitative data analysis and presentation.
- Prepare students for organizing and conducting research in a more appropriate manner

Course Content

Unit 1: Research Formulation: Objectives and motivation of Research –Research Methodology vs methods. Types of research– Descriptive, Analytical, Applied, Fundamental, Quantitative, Qualitative, Conceptual, Empirical etc.; Approaches to Research: Preparation of Schedule, Case study approach, Comparison approach, Definition approach, Descriptive approach, Evaluative approach, Exploratory approach, Interpretive approach, Narrative approach, Persuasive approach, Policy memorandum approach. Definition and formulation of the research problem – Selection of the problem - Necessity of defining the problem - Importance of literature review in defining a problem–Literature review–Primary and secondary sources–reviews, treatise, monographs–patents–webasource–searching the web–Critical literature review–Development of working hypothesis. [12]

Unit- II: Data Collection and analysis: Execution of the research–Observation and Collection of data - Methods of data collection –Sampling Methods- Data Processing and Analysis strategies – Data Analysis with Statistical Packages–Hypothesis-testing–Generalization and Interpretation. [12]

Unit III: Reporting and thesis writing: Structure and components of scientific reports - Types of report – Technical reports and thesis –Significance – Different steps in the preparation – Layout, structure and Language of typical reports–Illustrations and tables–Bibliography, referencing and footnotes. [12]

Unit IV: Application of results and ethics: Environmental impacts – Ethical issues - ethical committees, Intellectual property rights (IPR): kinds of property, nature of IP, basic principle, major IP, moral rights & economic rights; Copy right, patent, industrial design,

trade mark, geographical indication, farmers' right, IPR licensing & technology transfer; Reproduction of published material- plagiarism, citation and acknowledgement. Reproducibility of IP and accountability.

[12]

Unit V: Presentation of Results: Poster presentation, Oral presentation, Software related to presentation, layout and structure. Oral presentation-Planning-Preparation-Practice-Making presentation-Use of Visual aids-Importance of effective Communication. Writing an Abstract: Importance, Types: Critical Abstract; Descriptive Abstract; Informative Abstract; Highlight Abstract; Writing Style. Writing Introduction: Background Information, Research Questions, Theoretical Framework. Writing a Case Study: Identifying a Case, Structure and writing style, Limitations. Writing a Field Report: Objects to observe, Obtaining consent, Field Notes, Techniques to Record Observation. Writing an Executive Summary; Policy Memo Writing a Book Review: Descriptive; Critical. Proof Reading: Strategies to identify errors; use of computer checking, common grammatical errors. Group Projects: Goals, Planning, Preparation and Implementation.

[12]

Course Outcomes (PHDMATH01)

On successful completion of the course students will be able to:

| CO. No. | Course Outcome | Cognitive Level | POs Addressed | PSOs Addressed |
|---------|---|-----------------|---------------|----------------|
| CO1 | Understand the objectives, motivation and types of research | U | PO1 | PSO1 |
| CO2 | Define and formulate a research problem | R, C | PO4 | PSO2 |
| CO3 | Collect data (primary or secondary) based on the formulated problem and analyse the data. | An | PO2 | PSO3 |
| CO4 | Analyse the data with hypothesis testing, generalization and interpretation. | An, C | PO3 | PSO3 |
| CO5 | Discuss the application of results and write the thesis. | Ap, E | PO3 | PSO4 |

R= remembering, U = understanding, Ap = applying, An = analysing, E = evaluating, and C = creating

| SEMESTER – I | |
|---|-----------|
| Name of the Course: Computer Applications | |
| Course Code: PHDMATH02 | |
| Full Marks: 100 | Credit: 4 |
| Number of classes required: 60 | |
| This course has been newly introduced vide BOS meeting dated 26/02/2019 | |

Course Objectives (PHDMATH02)

The prime objectives of the course are:

- To develop competency in technical writing.
- To master the fundamentals of writing LaTeX and Python scripts.
- To acquire Object Oriented Skills in Python.

Pravara Mr. Ravi
Dept. of Mathematics
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Sri. K. S. S.
Principal

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| | |
|-----------------------------------|-----------|
| Course Name: Research Methodology | |
| Course Code: PHDBOT01 | |
| Full Marks: 100 | Credit: 4 |
| Number of classes: 60 | |

Course Objectives (PHDBOT01)

The prime objectives of the course are:

- Develop the ability to choose methods appropriate to research aims and objectives.
- Understand the advantages and disadvantages of particular research method.
- Develop skill of critical thinking and the skill of qualitative and quantitative data analysis and presentation.
- Prepare students for organizing and conducting research in a more appropriate manner.

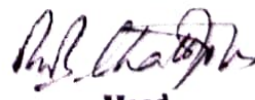
Course Content

- Introduction, Overview, and Research Misconduct, rules and regulations in India
- Data Management
- Mentoring, mentor-mentee responsibilities
- Authorship Guidelines, Publication and Peer Review
- Intellectual property, plagiarism, patents
- Collaboration
- Reporting and representing research, representing images.
- Bias, Conflicts of Interest
- Ethical use of animal subjects
- Protection of Human subjects
- Stem Cell Ethics
- The Ethics of Plant Use, transgenic crops
- Agricultural Ethics
- Ecosourcing-code of practice
- Radioactive, chemical and biohazard safety, waste management and disposal
- Social Responsibility and Whistle blowing
- Definition of problem: Necessity of defining problem, Technique involved in defining a problem.
- Techniques involved in solving the problem: Different methods used to solve a problem.
- Research Design: Subject of study; Place of study; Reason of such study; Type of data required; Method of data collection; Periods of study; Style of data presentation.
- Developing a research plan: Research objective; Informations required for solving the problem; Each major concept should be defined in operational terms; An overall description



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of the approach should be given and assumption if considered should be clearly mentioned in research plan; The details of techniques to be adopted.

(r) Methods of data collection: Experimental methods.

B: Statistical Methods: Numerical and graphical presentation of data; Measures of central tendency; Measures of dispersion; Testing of significance of hypothesis by student's t-test, paired t-test and Fisher's t-test; Determination of correlation coefficient between two variables; Regression analysis; Theories of probability; Analysis of variance; Post-hoc test; Statistical distributions (Normal, binomial and Poisson distributions); Basic statistical modelling.

C: Techniques in Plant Sciences: Algal cell culture - Algal culture, Fungal culture - Fungal culture media, Protoplast and Spore culture, Plant cell Culture- Cellular totipotency, cytodifferentiation, Somatic embryogenesis, Preservation techniques- Histochemical and cytochemical preservation, Herbarium, Molecular biological Techniques- Gene amplification and PCR, Molecular Probes, DNA fingerprinting

D: Analytical Methods: Microscopic Techniques: Light microscope: Resolving power and magnification, Phase Microscope, Fluorescence Microscope, Confocal Microscope, Micrometry. Electron Microscope: Transmission and scanning techniques for E.M. Spectrophotometry: Electromagnetic spectrum, construction of calorimeter and spectrophotometer, Applications. Analytical techniques: GC-MS, HPLC, FT-IR, Maldi, Raman, Etc.

Course Outcomes

On successful completion of the course students will be able to:

| CO. No. | Course Outcome | Cognitive Level | POs Addressed | PSOs Addressed |
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| CO1 | Understand the objectives, motivation and types of research | U | PO1 | PSO1 |
| CO2 | Define and formulate a research problem | R, C | PO4 | PSO2 |
| CO3 | Collect data (primary or secondary) based on the formulated problem and analyse the data. | An | PO2 | PSO3 |
| CO4 | Analyse the data with hypothesis testing, generalization and interpretation. | An, C | PO3 | PSO3 |
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R.K.M.V.C. COLLEGE, RAHARA, KOLKATA - 700 118.

Proceedings of the meeting of the Institutional Animal Ethical Committee (IAEC) held at the Conference Room of the College on Saturday, the 13th February, 2021, at 8.00 p.m.

Swami Kamalasthananda took the Chair.

1. Dr. Koutilya Bhattacharjee, Member Secretary of the committee placed the detailed report regarding the setting up the Animal House in the college:
The College has established a room facility of having a carpet area of 20 ft x 24 ft having two animal rooms, one wash room, one office room, one changing room, one store room & one quarantine room (Detail measurement attached herewith). The ventilation, air conditioning and electrical infrastructures have been made following the guidelines of CPCSEA.
Resolved that the report of the Member Secretary of the committee be adopted for further necessary action.
2. Dr. Apratim Maity, the veterinarian scientist of the committee mentioned and explained the necessity of the quarantine room in the Animal House setup.
Resolved that a quarantine room will be constructed in the Animal House facility of the College, to separate the infected animals in case of emergency.
3. Dr. Koutilya Bhattacharjee, Member Secretary of the committee mentioned the members of the committee that a full body IAEC required to be formed with other three external members of the committee which will be nominated by CPCSEA. All members agreed in this matter of the formation of the committee so that the standard of the Animal House can be properly maintained.
Resolved that the formation of the Institutional Animal Ethical Committee (IAEC) as per the guidelines of CPCSEA be adopted and Member Secretary be authorised to move to the appropriate authority for sanction/nomination/execution of the committee.

The meeting ended with vote of thanks to the Chairman.

Koutilya Bhattacharjee
(Dr. Koutilya Bhattacharjee)
Member Secretary
Institutional Animal Ethics Committee
Ramakrishna Mission Vivekananda Centenary College
Rahara, Kolkata - 700118

Sw. Kamalasthananda
(Swami Kamalasthananda)
Chairman

Chairperson
Institutional Animal Ethics Committee
Ramakrishna Mission Vivekananda Centenary College
Rahara, Kolkata - 700118

C O N F I R M E D



Members present in the meeting of the IAEC on 13.02.2021 at 8.00 p.m.

| Sl no. | Name | Signature |
|--------|--|------------------------|
| 1 | Swami Kamalasthananda Chair Person | Sw. Kam. da. |
| 2 | Dr. Koutilya Bhattacharjee Member Secretary | Koutilya Bhattacharjee |
| 3 | Dr. Swapan Kr. Ghosh Biological Scientist | Swapan Kumar Ghosh |
| 4 | Dr. Bibhabasu Hazra, Biological Scientist | Bibhabasu Hazra |
| 5 | Dr. Apratim Maity, Veterinary Scientist | Apratim Maity |



Associate Professor
P.G. Dept. of Botany
Ramakrishna Mission Vivekananda
Centenary College
Rahara, Kol- 700118

Date: 13.07.2022

Minutes of the 1st meeting of Institutional Biosafety Committee (IBSC) of Ramakrishna Mission Vivekananda Centenary College, West Bengal

Members Present :

1. Swami Kamalasthananda (Chairman)
2. Dr. Koutilya Bhattacharjee (Member Secretary)
3. Dr. Sanjoy Guha (Biosafety Officer)
4. Prof. Tapan Kumar Dutta (DBT Nominee)
5. Prof. Jayanta Tarafdar (External Member)
6. Prof. Kaushik Biswas (External Member)
7. Dr. Swapan Kumar Ghosh (Internal Member)
8. Dr. Ajoy Mallik (Internal Member)
9. Dr. Tanmay Paul (Internal Member)

At the very onset, the convenor, Dr. Koutilya Bhattacharjee introduced the committee members. The Chairman, Swami Kamalasthananda, chaired the meeting.

Agenda I : Inspection of the BSL II facility of the College

All members visited the BSL II facilities, as well as the general laboratories of the College and felt that arrangements were up to the mark to carry out experiments involving organisms upto Risk Group 2 category (RG2). Members further advised in regular evaluation of the Biosafety Cabinets, and to ensure proper and regular maintenance, and keep appropriate records of the same.

Dr. Sanjoy Guha, the biosafety officer detailed the methodology to be followed for proper disposal of the biomedical research wastes, and advised that proper disposal of Bio-Medical waste management procedures must be followed at all time, preferentially by outsourcing to a professionally certified Bio-Medical waste management company.

Agenda II : Numbering and recording of the proposals submitted

The committee instructed that henceforth, all PIs requesting IBSC clearance for proposals that need to be submitted to a funding agency, or for proposals that have already been sanctioned and need IBSC clearance, must be submitted to IBSC

using the IBSC form and checklist alongwith necessary project details to the member secretary, IBSC. A general circular to all concerned PIs should immediately be circulated by email.

It is also decided in the committee, that, henceforth, all proposals submitted to the IBSC will be assigned a number using the format, "**RKMVCC/Biosafety/2022/SI. No.....**", and a copy of the same to be handed over to the Chairman Maharaj's cell for filing.

Agenda III : Format for Provisional IBSC certificate and Final IBSC certificate

The following general templates are to be followed henceforth, for issuance of both the Provisional IBSC certificates and the Final IBSC certificates, as shown in the following pages -

Provisional IBSC certificate Template

Ref. No. _____

Date :

TO WHOM IT MAY CONCERN

This is to certify that the **Institutional Biosafety Committee (IBSC)** of **Ramakrishna Mission Vivekananda Centenary College (RKMVCC)** has recommended the issue of a provisional certificate for the proposed project entitled "**Title of the Project**" submitted by PI - "**PI's name**", Department's name & Co-PI (if any) for submission to "**Funding agency name**".

However, the PI should follow the following instructions before initiation of work.

Instructions :

1. PI should inform in writing to the IBSC on the final sanction of the project.
2. The PI should inform the RCGM, if the project involves working with RG3 pathogens, before initiation of the work upon final sanction of the project by the funding agency.
3. The IBSC holds the right to revoke the IBSC clearance in case of any deviation of proposed plan of work submitted to IBSC previously. However, permission from IBSC has to be taken in case of any change before the start of the work.

Signature of
Member Secretary
Institutional Biosafety Committee (IBSC)
RKMVC College (RKMVCC)

Signature of
Chairman
Institutional Biosafety Committee (IBSC)
RKMVC College (RKMVCC)

Final IBSC certificate Template

Ref. No. _____

Date : _____

TO WHOM IT MAY CONCERN

SUB : "TITLE OF THE PROJECT"

This is to certify that the planned studies and protocols pertaining to the above-mentioned research proposal submitted by PI "**Name of PI**", & Co-PI (if any), has been approved by the Institutional Biosafety Committee (IBSC) during its meeting held on "**Date of Meeting**".

Signature of
Biosafety Officer, IBSC,
RKMVC College
Rahara, West Bengal

Signature of
Member Secretary, IBSC
RKMVC College
Rahara, West Bengal

Signature of
Chairman, IBSC
RKMVC College
Rahara, West Bengal

Agenda IV : Approval of projects submitted by PIs for issuance of IBSC certificate.

The projects were discussed in detail and the following recommendations were made by the IBSC committee for each submitted projects -

Project 1 – Project to be submitted to DBT titled "An approach towards the development of biomarkers linked to WSSV propagation in Penaeus monodon through global transcriptome analysis using next generation sequencing" by Dr.Ajoy Mallik for provisional approval by IBSC :

The committee has gone through the proposal submitted by Dr.Ajoy Mallik, which will be submitted to DBT, Govt. of India for funding. The committee decided that since the project deals with the "white Spot Syndrome Virus" which falls under viral RG2 (according to the Regulations & Guidelines on Biosafety of Recombinant DNA Research & Biocontainment of RCGM, DBT), and hence will need to be contained in an animal BSL2 facility. Since, the PI declared that such BSL2 containment facility is available in Ramakrishna Mission Vivekananda Centenary College, and will be strictly followed by the PI, the committee recommends issuance of provisional IBSC certificate to the PI for the above-mentioned project. However, the committee also

recommends the PI to intimate the IBSC and get the final IBSC clearance upon sanction of the project

Project 2 – Project sanctioned by DST-SERB titled "Detection of emerging viral pathogens and development of molecular diagnostic tools for shrimp (*Penaeus monodon*) aquaculture " by Dr. Ajoy Mallik for final approval by IBSC

The committee has gone through the proposal submitted by Dr Ajoy Mallik, which has been approved for funding by DST-SERB, pending submission of final clearance by IBSC. The committee decided that since the project deals with the White Spot Syndrome Virus (WSSV), which falls under viral RG2 (according to the Regulations & Guidelines on Biosafety of Recombinant DNA Research & Biocontainment of RCGM, DBT), and hence will need to be contained in an animal BSL2 facility. Since, the PI declared that such BSL2 containment facility is available in Ramakrishna Mission Vivekananda Centenary College, and will be strictly followed by the PI, the committee recommends issuance of final IBSC certificate to the PI for the above-mentioned project.

Project 3 – Project submitted to DST-SERB titled "Purification, Characterization and Efficacy Evaluation of the Ethno-therapeutic Anti-Microbial Component(s) from *Duttaphrynus himalayensis* skin and bone in a Mice model" by Dr. Koutilya Bhattacharjee for provisional approval by IBSC :

The committee has gone through the proposal submitted by Dr. Koutilya Bhattacharjee, which has been submitted for funding by DST-SERB, pending submission of clearance by IBSC. The committee decided that since the project deals with the *Alternaria spp.*, *Candida albicans*, *Aspergillus flavus*, *Escherichia coli*, *Staphylococcus aureus* & *Pseudomonas aeruginosa*, which fall under RG2 (according to the Regulations & Guidelines on Biosafety of Recombinant DNA Research & Biocontainment of RCGM, DBT), and hence will need to be contained in an animal BSL2 facility. Since, the PI declared that such BSL2 containment facility is available in Ramakrishna Mission Vivekananda Centenary College, and will be strictly followed by the PI, the committee recommends issuance of provisional IBSC certificate to the PI for the above-mentioned project. However, the committee also recommends the PI to intimate the IBSC and get the final IBSC clearance upon sanction of the project

Agenda V : Any other matter


Prof. Jayanta Tarafdar further suggested that, in cases of proposals containing gene cloning, in addition to the database accession number, detailed sequence of the genes to be cloned and any other genes that may have any kind of new impact alongwith vector map needs to be incorporated in the proposal as annexure, while applying for IBSC clearance.

The committee additionally resolved the following –

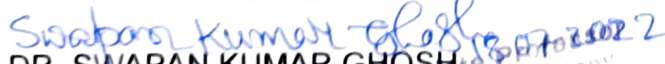
1. Also resolved that final clearance carries the 5 b and 5 c. clauses as prerequisites.
 2. The provisional and final clearance certificates proforma will be as laid in annexure I and II respectively
 3. Resolved further, ink stamps will be prepared as per requirement of IBSC.
- The meeting ended with vote of thanks to the chair.


SIGNATURE OF THE MEMBERS PRESENT –

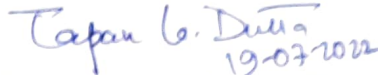

SWAMI KAMALASTHANANDA
CHAIRMAN
Principal
Ramakrishna Mission
Vivekananda Centenary College
Rahara, Kolkata - 700 118



DR. SANJOY GUHA
BIOSAFETY OFFICER
Superintendent
Sree Balaram Seva Mandir
S. G. Hospital, Khardaha
North 24 Parganas



PROF. KAUSHIK BISWAS
OUTSIDE EXPERT
Kaushik Biswas, Ph.D
Professor
Div. of Molecular Medicine
Bose Institute
EN 80, Salt Lake, Sector V
Kolkata-700091, INDIA


DR. SWAPAN KUMAR GHOSH
INTERNAL EXPERT
Associate Professor
P.G. Dept. of Microbiology
Ramakrishna Mission Vivekananda Centenary College
Rahara, Kolkata - 700 118


DR. TANMOY PAUL
INTERNAL EXPERT
Dr. TANMOY PAUL, Ph.D.
Assistant Professor
Department of Zoology
Ramakrishna Mission Vivekananda Centenary College
Rahara, Kolkata - 700 118


PROF. TAPAN KUMAR DUTTA
DBT NOMINEE
Prof. Tapan K. Dutta
Department of Microbiology
BOSE INSTITUTE
EN-80, Sector V, Salt Lake
Kolkata - 700091, India


DR. KOUTILYA BHATTACHARJEE
MEMBER SECRETARY
Dr. Koutilya Bhattacharjee
Assistant Professor
Department of Zoology
Ramakrishna Mission Vivekananda Centenary College
Rahara, Kolkata - 700 118


PROF. JAYANTA TARAFDAR
OUTSIDE EXPERT
Dr. Jayanta Tarafdar
Professor
Department of Plant Pathology
Bidhan Chandra Krishi Viswavidyalaya
Mohampur-741252, Nadia, West Bengal


DR. AJAY MALLIK
INTERNAL EXPERT

Dr. Ajoy Mallik
Assistant Professor
Department of Zoology
Ramakrishna Mission Vivekananda Centenary College
Rahara, Kolkata - 700 118

Signature of the IBSC members present on 13.07.2022 in the 1st meeting of the Institutional Biosafety Committee of Ramakrishna Mission Vivekananda Centenary College, West Bengal –

| Sl No | Name | Designation | Signature |
|-------|----------------------------|-------------------|---|
| 1 | SWAMI KAMALASTHANANDA | CHAIRPERSON | <i>Sw. Kamalasthananda</i> 13/7/22 |
| 2 | PROF. TAPAN KUMAR DUTTA | DBT NOMINEE | <i>Tapan K. Dutta</i> 13/07/2022 |
| 3 | DR. SANJOY GUHA | BIOSAFETY OFFICER | <i>Sanjoy Guha</i> 13.07.22 |
| 4 | DR. KOUTILYA BHATTACHARJEE | MEMBER SECRETARY | <i>Koutilya Bhattacharjee</i> 13.07.2022 |
| 5 | PROF. JAYANTA TARAFDAR | OUTSIDE EXPERT | <i>Jayanta Tarafdar</i> 13/7/2022 |
| 6 | PROF. KAUSHIK BISWAS | OUTSIDE EXPERT | <i>Kaushik Biswas</i> 13/07/2022 |
| 7 | DR. SWAPAN KUMAR GHOSH | INTERNAL EXPERT | <i>Swapan Kumar Ghosh</i> 13.07.2022 |
| 8 | DR. AJOY MALLIK | INTERNAL EXPERT | <i>Ajoy Mallik</i> 13.07.2022 |
| 9 | DR. TANMOY PAUL | INTERNAL EXPERT | <i>Tanmoy Paul</i> 13.07.2022 |



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| <input type="checkbox"/> | Rupak Mahapatra | POLLINATION STRATEGIES OF ORCHIDACEAE W... | 7% | | | 1869164244 | 11-Jul-2022 |
| <input type="checkbox"/> | Narayan Chandra Saha | A NOTE ON THE OBSERVATION OF ROOSTING AN... | 10% | | | 1869057077 | 11-Jul-2022 |
| <input type="checkbox"/> | Ajoy Mallik | An approach towards the development of b... | 12% | | | 1870133343 | 13-Jul-2022 |
| <input type="checkbox"/> | Somashree Roy | Diversity of lepidopteran insects associ... | 12% | | | 1869059606 | 11-Jul-2022 |
| <input type="checkbox"/> | Avilk Sarkar | An approach towards the development of c... | 14% | | | 1927789191 | 17-Oct-2022 |
| <input type="checkbox"/> | Supratim Suin | RECYCLING OF PLASTICS: STATUS, PROCEDURE... | 15% | | | 1874670343 | 25-Jul-2022 |
| <input type="checkbox"/> | Kaustav Chakraborty | Digital Eye Strain: An Emerging Lifestyl... | 16% | | | 1874669785 | 25-Jul-2022 |
| <input type="checkbox"/> | Shivam Sennunta | Plant Pollinator Coordination in Omith... | 17% | | | 1868640344 | 10-Jul-2022 |

3.5.1 & 3.5.2.xlsx | 3.4.4.xlsx | 3.4.3.xlsx | For Ph. D. Regist....docx | For Ph. D. Regist....docx | For Ph. D. Regist....docx | Show all



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Phone- 033- 2568 2049

"Swami Vivekananda Center for Multidisciplinary Research in Basic Science and Social Sciences"

Ph.D. Course- Work Completion Report

Period: From April, 2022 to September, 2022

1. Name of the scholar : Basudev Murmu
2. Topic of Course Work: a. Research Methodology:
b. Computer application in Mathematical Research
c. Literature Review
d. Indepth Study of the Research Area
(Advanced Applied Physiology)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Basudev Murmu
(name of the candidate) for further research work.

| Name | Signature |
|---|--------------------------------------|
| Dr. P.L. Das, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pannala Das</u> 21/4/22 |
| Prof C. Sengupta, External Subject Expert, Nominated by the BOS | <u>Chandan Sengupta</u> 21-4-2022 |
| Dr. H.S. Dey, Ph. D. Supervisor, Convenor | <u>Hari Sankar Dey</u> |

Date: 21.04.2022

Hari Sankar Dey
Signature of the Supervisor

Convenor
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara

Date:

S. K. Das
Signature of Chairman, RAC

Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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"Swami Vivekananda Center for Multidisciplinary Research in Basic Science and Social Sciences"

Ph.D. Course- Work Completion Report

Period: From1/10/2021..... to31/3/2022.....

1. Name of the scholar :PRANAB.....SANTARA

2. Topic of Course Work: a. Research Methodology:

b. Computer application in Mathematical Research

c. Literature Review

☒ In-depth Study of the Research Area
(.....)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to.....Mr. PRANAB SANTARA.....
(name of the candidate) for further research work.

| Name | Signature |
|---|----------------------|
| Dr. P. Medda, Chairman, Nominee of the Principal and Chairman of Academic Council | P. Medda 21/4/22 |
| Prof. P.D. Ghosh; External Subject Expert, Nominated by the BOS | P. D. Ghosh. 21/4/22 |
| Dr. A. Kundu, Ph. D. Supervisor, Convenor | A. Kundu 21/4/22 |

Date: 21/4/22

A. Kundu 21/4/22
Signature of the Supervisor
Convenor
Research Advisory Committee
SVCMBSSS

Date:

Signature of Chairman, RAC
Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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Ph.D. Course- Work Completion Report

Period: From April, 2022 to September, 2022

1. Name of the scholar : Basudev Murmu
2. Topic of Course Work: a. Research Methodology:
b. Computer application in Mathematical Research
c. Literature Review
d. Indepth Study of the Research Area
(Advanced Applied Physiology)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Basudev Murmu
(name of the candidate) for further research work.

| Name | Signature |
|---|--|
| Dr. P.L. Das, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pannalal Das 21/4/22</u> |
| Prof C. Sengupta, External Subject Expert, Nominated by the BOS | <u>Chandran Sengupta.</u> 21.4.2022 |
| Dr. H.S. Dey, Ph. D. Supervisor, Convenor | <u>Hari Shankar Dey</u> |

Date: 21.04.2022

Hari Shankar Dey
Signature of the Supervisor

Convenor
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara

Date:

S. K. Das
Signature of Chairman, RAC
Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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"Swami Vivekananda Center for Multidisciplinary Research in Basic Science and Social Sciences"

Ph.D. Course- Work Completion Report

Period: From April, 2022 to September, 2022

1. Name of the scholar : Suproteem Mukherjee
2. Topic of Course Work: a. Research Methodology:
b. Computer application in Mathematical Research
c. Literature Review
d. Indepth Study of the Research Area
(Plant Biotechnology)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of ~~Mathematics~~ Botany, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to SUPROTEEM MUKHERJEE
(name of the candidate) for further research work.

| Name | Signature |
|---|---------------------------------------|
| Dr. P. Medda, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pradyot Kumar Medda</u> 21/4/22 |
| Prof. P.D. Ghosh; Outside Subject Expert, Nominated by the BOS | <u>Partha Deb Ghosh</u> 21/4/22 |
| Dr. B. Ghosh, Ph. D. Supervisor, Convenor | <u>Biswjit Ghosh</u> 21-4-2022 |

Date: 21-4-2022

Date:

Biswjit Ghosh
Signature of the Supervisor
Convenor
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara

S. K. Ghosh
Signature of Chairman, RAC
Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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"Swami Vivekananda Center for Multidisciplinary Research in Basic Science and Social Sciences"

Ph.D. Course- Work Completion Report

Period: From April, 2022 to September, 2022

1. Name of the scholar : DIPTESH BISWAS
2. Topic of Course Work: a. Research Methodology:
b. Computer application in Mathematical Research
c. Literature Review
d. Indepth Study of the Research Area
(Plant Biotechnology)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of ~~BOTANY~~ Mathematics, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to DIPTESH BISWAS
(name of the candidate) for further research work.

| Name | Signature |
|---|---------------------------------------|
| Dr. P. Medda, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pradyot Kumar Medda</u> 21/4/22 |
| Prof. P.D. Ghosh; Outside Subject Expert, Nominated by the BOS | <u>Prathadeb Ghosh</u> 21/4/22 |
| Dr. B. Ghosh, Ph. D. Supervisor, Convenor | <u>Biswmit Ghosh</u> 21-4-2022 |

Date: 21-4-2022,

Date:

Biswmit Ghosh
Signature of the Supervisor

S. K. ...
Signature of Chairman, RAC
Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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Progress Report Six- Monthly Ph.D. Seminar, Department of Botany

No. of the report (Tick appropriater box):

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From April, 2022 to September, 2022

1. Name of the scholar : Prankrishna Debnath

2. Topic of Research: Studies on cyanobacterial diversity from fresh water
bodies of Nadia District, West Bengal and screening for antimicrobial
potentials of selected species

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Prankrishna Debnath
(name of the candidate) for further research work.

| Name | Signature |
|---|--|
| Dr. P.L. Das, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pannalal Das - 21/4/22</u> |
| Prof C. Sengupta, External Subject Expert, Nominated by the BOS | <u>Chandran Sengupta.</u> 21.4.2022 |
| Dr. H.S. Dey, Ph. D. Supervisor, Convenor | <u>Harisankar Dey</u> 21.04.22 |

Date: 21.04.2022

Harisankar Dey
Signature of the Supervisor

Convenor

Research Advisory Committee

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Date:

S. K. Das
Signature of Chairman, RAC

Chairman

Research Advisory Committee

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Ph.D. Course- Work Completion Report

Period: From ...1/10/2021... to31/3/2022.....

1. Name of the scholar :PARBEJ LASKAR.....

2. Topic of Course Work: a. Research Methodology:

b. Computer application in Mathematical Research

c. Literature Review

indepth Study of the Research Area
(.....)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to.....Mr. Parbej Laskar.....
(name of the candidate) for further research work.

| Name | Signature |
|---|-----------------------------|
| Dr. P. Medda, Chairman, Nominee of the Principal and Chairman of Academic Council | Pradyot Kumar Medda 21/4/22 |
| Prof. P.D. Ghosh; External Subject Expert, Nominated by the BOS | Parthadeb Ghosh 21/4/22 |
| Dr. A. Kundu, Ph. D. Supervisor, Convenor | Anirban Kundu 21/4/22 |

Date: 21/4/22.

Anirban Kundu 21/4/22
Signature of the Supervisor
Convenor
Research Advisory Committee
SVCMBSSS

Date:

Signature of Chairman, RAC
Chairman
Research Advisory Committee
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No. of the report (Tick appropriater box):

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From April, 2022 to September, 2022

1. Name of the scholar : Koushik PANDEX

2. Topic of Research: Study of mycochemistry of Astracus sp. and Pleurotus sp.

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Koushik Pandey
(name of the candidate) for further research work.

| Name | Signature |
|--|-----------------------------------|
| Dr. P. L. Das, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pannab Das</u> |
| Prof. Rabindranath Bhattacharaya, Retired Professor, Presidency University., External Subject Expert, Nominated by the BOS | <u>Rabindranath Bhattacharaya</u> |
| Dr. S. Ghosh, Ph. D. Supervisor, Convenor | <u>Swapan Kumar Ghosh</u> |

Date: 21/04/22

Date:

Swapan Kumar Ghosh
Signature of the Supervisor

Convenor

Research Advisory Committee
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Swapan Kumar Ghosh
Signature of Chairman, RAC

Chairman

Research Advisory Committee

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Progress Report Six- Monthly Ph.D. Seminar, Department of Mathematics

No. of the report (Tick appropriater box):

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|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From April, 2022 to September, 2022

1. Name of the scholar : BHASKAR MANDAL

2. Topic of Research: HOMOLOGY OF SYMMETRIC PRODUCTS OF CW-COMPLEXES

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Mathematics, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Bhaskar Mandal
(name of the candidate) for further research work.

| Name | Signature |
|---|---|
| Dr. C.K. Bandyopadhyay, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Chandrabanti Bandyopadhyay</u> 22/4/22 |
| Prof. R.N. Mukherjee External Subject Expert, Nominated by the BOS | <u>R.N. Mukherjee</u> 22/4/22 |
| Dr. P.K.Rana, Ph. D. Supervisor, Convenor | <u>Pravaranjan Kumar Rana</u> |

Date: 22-04-22

Date:

Pravaranjan Kumar Rana
Signature of the Supervisor

Convenor

Research Advisory Committee

SVCMBRSS

RKMVC College, Rahara

S.N. Mandal
Signature of Chairman, RAC

Chairman

Research Advisory Committee

SVCMBRSS

RKMVC College, Rahara



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Progress Report Six- Monthly Ph.D. Seminar, Department of Botany

No. of the report (Tick appropriater box):

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From April, 2022 to September, 2022

1. Name of the scholar : Indranil Sankar

2. Topic of Research: Biotechnological approaches to modulate the plumbagin
Synthesis in Plumbago Species.

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to... Indranil Sankar
(name of the candidate) for further research work.

| Name | Signature |
|---|---------------------------------------|
| Dr. P. Medda, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pradyot Kumar Medda</u> 21/4/22 |
| Prof. P.D. Ghosh; Outside Subject Expert, Nominated by the BOS | <u>Parthabrata Ghosh</u> 21/4/22 |
| Dr. B. Ghosh, Ph. D. Supervisor, Convenor | <u>Biswjit Ghosh</u> 21-4-2022 |

Date: 21-4-2022

Date:

Biswjit Ghosh
Signature of the Supervisor

Dr. P. Medda
Signature of Chairman, RAC
Chairman

Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara

Convenor
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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Progress Report Six- Monthly Ph.D. Seminar, Department of Mathematics

No. of the report (Tick appropriater box):

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From ... April 2022 ... to ... September 2022 ...

1. Name of the scholar : ... SUDIP SAHA ...

2. Topic of Research: ... VALUE DISTRIBUTION THEORY ...

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Mathematics, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to ... Sudip Saha ...
(name of the candidate) for further research work.

| Name | Signature |
|---|---|
| Dr. C.K. Bandyapadhyay, Chairman. Nominee of the Principal and Chairman of Academic Council | <u>Chandrasekhar Bandyopadhyay</u> 22/4/22 |
| Prof. R.N. Mukherjee External Subject Expert, Nominated by the BOS | <u>R.N. Mukherjee</u> 22/4/22 |
| Dr. B. Chakraborty, Ph. D. Supervisor, Convenor | <u>Birash Chakraborty</u> |

Date: 22/04/2022

Date:

Signature of the Supervisor Birash Chakraborty Convenor
Research Advisory Comm
SVCMBSSS
RKMVC College, Rahara

Signature of Chairman, RAC C.K. Bandyopadhyay Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From April, 2022 to September, 2022

1. Name of the scholar : Avijit Chakraborty

2. Topic of Research: Study of phytochemical, nutritional and antimicrobial properties of naturally occurring economically important species of Zingiberaceae and their in-vitro conservation

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Botany, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Avijit Chakraborty
(name of the candidate) for further research work.

| Name | Signature |
|---|---------------------------------------|
| Dr. P. Medda, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Pradyot Kumar Medda</u> 21/4/22 |
| Prof. P.D. Ghosh; Outside Subject Expert, Nominated by the BOS | <u>Parthadeb Ghosh</u> 21/4/22 |
| Dr. B. Ghosh, Ph. D. Supervisor, Convenor | <u>Biswjit Ghosh</u> 21-4-2022 |

Date: 21-4-2022

Date:

Biswjit Ghosh 21-4-2022
Signature of the Supervisor

Sn. K. B.
Signature of Chairman, RAC
Chairman

Research Advisory Committee
SVCMBSSS
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Convenor
Research Advisory Committee
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Progress Report Six- Monthly Ph.D. Seminar, Department of Mathematics

No. of the report (Tick appropriater box):

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|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Period: From April, 2022 to September, 2022

1. Name of the scholar : Sarmad Hossain

2. Topic of Research: A study of covering spaces, Galois group of the covering spaces and their Applications

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Mathematics, in our view, the scholar concerned has been able to defend his work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to Sarmad Hossain
(name of the candidate) for further research work.

| Name | Signature |
|---|---|
| Dr. C.K. Bandyopadhyay, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Chandrakanti Bandyopadhyay</u> 22/4/22 |
| Prof. R.N. Mukherjee External Subject Expert, Nominated by the BOS | <u>R.N. Mukherjee</u> 22/4/22 |
| Dr. P.K.Rana, Ph. D. Supervisor, Convenor | <u>Pravaranjan Kumar Rana</u> |

Date: 22-04-22

Date:

Pravaranjan Kumar Rana
Signature of the Supervisor **Research Advisory Committee**
SVCMBSSS

Sri. K. Rana
Signature of Chairman, RAC **RKMVC College, Rahara**

Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara



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Ph.D. Course- Work Completion Report

Period: From .. April, 2022 .. to .. September, 2022 ..

1. Name of the scholar : .. Partha Ganguly ..

2. Topic of Course Work: a. Research Methodology:

b. Computer application in Mathematical Research

c. Literature Review

d. In-depth Study of the Research Area

(.....)

We do hereby certify that Six- Monthly Ph.D Course Work was duly held in the department of Zoology ~~Biology~~, in our view, the scholar concerned has been successfully completed to the whole Course Work satisfactory and has given evidence of substantial research work.

We recommend that to be allowed to.....
(name of the candidate) for further research work.

| Name | Signature |
|---|--|
| Dr. P.L. Das, Chairman, Nominee of the Principal and Chairman of Academic Council | <u>Panna Lal Das</u> 21.4.22 |
| Prof S. C. Dasgupta, WBSES, External Subject Expert, Nominated by the BOS | <u>Satish Chandra Dasgupta</u> 21.4.22 |
| Dr. K. Bhattacharjee, Ph. D. Supervisor, Convenor | <u>Kautilya Bhattacharjee</u> |

Date: 21. 04. 2022

Kautilya Bhattacharjee
Convenor
Signature of the Supervisor Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara

Date:

G. K. Das
Signature of Chairman, RAC
Chairman
Research Advisory Committee
SVCMBSSS
RKMVC College, Rahara