Additional Documents of 1.3.2

BANWARILAL BHALOTIA COLLEGE Report on Educational Excursion Department of Botany

Date: 14.06.2022

Participating Students:- 6th Semester Honours and Programme

6 th Sem Hons list		6 th Sem Program list	
1	Amisha Bhagat	1	Sonali Biswas
2	Keser Kumari	2	Salu Halder
3	Shafakat Parveen	3	Supriya Ruidas
4	Bindi Shaw	4	Chandan Kumar
5	M D Sultan	5	Rajib BAuri
6	Subraneel Roy	6	Abhijit Murmu
7	Promita Mondal	7	Atba Aijaz
8	Ronit Kumar Yadav	8	Soumya Tewari
9	Sweta Shaw	9	Avisha Nandy
10	Bidisha Roy	10	

Place:- Beharinath Forest and a Vermicomposting Unit.

Participating Teachers:- Dr Sanjeev Pandey, Dr Chanchal Kumar Biswas, Dr Animesh Mondal, Dr Sunrit Basu Sarbadhikari, Dr Sucheta Mondal and Dr Sabina Pradhan

Brief Description Of the tour: A one day educational excursion is organized by the Department on 14.06.2022 with all the students. Majority of the students of all semester including hons and program participate in this educational tour. We start our journey nearly 7 am in the morning from the college campus by some hired vehicles.

Description of Place:- Biharinath Hill resides at a distance of 57 km from Bankura district and 24 km from Raniganj. It is considered that the hill is a witness of old Jain culture. The tallest hill of Bankura District, Biharinath 1449 feet welcomes you with its mesmerizing beauty and religious vibes.

A rich casing of lively green, flowing river Damodar and unspoiled Nature are embracing the hill so affectionately that you will definitely fall in love with the trio of 'Jal-Jungle-Pahar'. The hill changes its color with the seasons. During the season of Monsoon, it becomes green from all sides. Wet leaves, rain-drops on branches and soft sunshine make an ambience that loves the dominating hue of green. In Spring, you will see blooming 'Palash' accompanying by 'Shimul' everywhere. It seems like you are breathing under a canopy of orange leaves. Impressive tribal cultural and village-stories add an extra charm to this place. Biharinath Hill is blessed with a rich collection of fauna and flora as well. Not only flowers, colorful birds and dancing butterflies are

waiting here to walk hand in hand only with you. You may get a glimpse of wildlife in the hill. Biharinath is an attractive place for trekkers for its figure. You can start your journey as a rock climber from here.

After completion of our observation in the hill surrounding and its forest we go a pre planned hotel for our refreshment and after completion we back to another place i.e. the Vermicomposting Unit. It is about 15 Km away from this hill region and that composting unit is maintain by a modern farmer named Nemai Layek. All students minutely listen the demonstration by the lucid language of the farmer. Students also note the important parts of his lecture and correlate it with their theoretical knowledge.



Photograph of our Upward movement in Beharinath Hill.





Photograph in the Vermicomposting Unit.

Department of BBA

Project Work as a part of course curriculum

The final semester students of our dept undertake academic project work in different organizations as a part of their course curriculum in various specialization as per their choice. These projects are guided by all the teachers of our dept. project completion certificate of some students are given below.



B. B. College, Asansol Department of Business Administration

Date: 27.05.2022

Certificate of Completion of The Academic Project For BBA 6th. Semester Examination, 2022

This is to certify that Md. Haris Alqma has successfully completed the academic project on "Marketing Project On Computer Industry" for the partial fulfilment of the BBA (Hons.) Programme under Kazi Nazrul University.

His University Roll: 102190612800, No.: 7029 and Registration No. KNU19102004015 of 2019-2020.

He has done the original project work on the above subject for completing the academic project.

I wish him all success in his professional endeavour.

Buddha Prasad Shatak 27/02/2022

(Sri Buddha Prasad Ghatak)

Project Guide

Department of Business Administration

B. B. College, Asansol





Date: 03rd May 2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that *Pratik Ganeriwala* pursuing *BBA(H)* from *Banwarilal Bhalotia College Asansol* 2019-2022 batch, has successfully completed a Project based internship with us from 07th Mar' 2022 to 07th April' 2022

Project Title: "Compensation Management at Asansol Regal Plaza Mall Pantaloons"

Throughout the internship, we found him to be sincere and hardworking.

We wish him all the best in all his future endeavors.

For Aditya Birla Fashion & Retail Ltd

Sushmita Dey Human Resources

pantalons

B. B. College, Asansol Department of Business Administration

Date: 24.05.2022

Certificate of Completion of The Academic Project For BBA 6th. Semester Examination, 2022

This is to certify that **Pratik Ganeriwala** has successfully completed the academic project on "Compensation Management From Pantaloons Pvt. Ltd., Asansol" for the partial fulfilment of the BBA (Hons.) Programme under Kazi Nazrul University.

His University Roll: 102190612800, No.: 7039 and Registration No. KNU19102003212 of 2019-2020.

He has done the original project work on the above subject for completing the academic project.

I wish him all success in his professional endeavour.

Sonn Dayosha

(Dr. Souvik Dutta)
Project Guide
Department of Business Administration
B. B. College, Asansol





Burnpur Court more, GT Road, , Asansol- 703303

22nd April 2022

TO WHOME SO EVER IT CONCERN

This is to certify that Miss Rimi Chartterjee, a student of Banwarilal Bhalotia college, Asansol did his project training at HDFC Bank, Asansol from 2nd of February 2022 to 10th of march 2022.

During this period Rimi Chatterjee successfully completed her project on "FINANCIAL STATEMENT ANALYSIS ON HDFC BANK".

We wish her all the best for his future endeavors.



B. B. College, Asansol Department of Business Administration

Date: 19.05.2022

Certificate of Completion of The Academic Project BBA 6th. Semester Examination, 2022

This is to certify that Rimi Chatterjee has successfully completed the academic project on "Financial Project Report On Financial Statement Analysis On HDFC Bank" for the partial fulfilment of the BBA (Hons.) Programme under Kazi Nazrul University.

Her University Roll: 102190512800, No.: 7046 and Registration No. KNU19102003524 of 2019-2020

She has done the original project work on the above subject for completing the academic project.

I wish her all success in her professional endeavour.

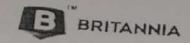
GHEZ-1. 19.05.2022.

(Sri Gunamoy Hazra) Project Guide B. B. College, Asansol

(Dr. Amitava Basu) Principal & Co-ordinator Department of Business Administration Department of Business Administration B. B. College, Asansol



Principal Banwarilai Bhalotia College Asansol-713303



TO WHOM IT MAY CONCERN

This is to certify that Kundan Kr Yadav pursuing B.B.A(H) from Banwarilal Bhalotia College, Asansol 2019-2022 batch, has successfully completed a Project based Internship with us from 15th April to 15th May, 2022.

Project Title - "TRAINING AND DEVELOPMENT PROGRAMME" at Kolkata, West Bengal.

Throughout the internship, we found him to be sincere and hardworking. We wish him all the best in all his future endeavours.

For.

18

BRITANNIA INDUSTRIES LIMITED

FACTORY HR MANAGER

B. B. College, Asansol Department of Business Administration

Date: 26.05.2022

Certificate of Completion of The Academic Project For BBA 6th. Semester Examination, 2022

This is to certify that **Kundan Kr. Yadav** has successfully completed the academic project on "Training and Development Programme" for the partial fulfilment of the BBA (Hons.) Programme under Kazi Nazrul University.

His University Roll: 102190612800, No.: 7025 and Registration No. KNU19102002470 of 2019-2020.

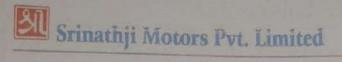
He has done the original project work on the above subject for completing the academic project.

I wish him all success in his professional endeavour.

Gunn Dur

(Dr. Souvik Dutta)
Project Guide
Department of Business Administration
B. B. College, Asansol





TATA MOTORS

PASSENGER CAR DEALER, SAHIBABAD

REF NO. - JH/2022/14/TATA/MKTG/24/17

DATE - APRIL 29 TH, 2022

TO WHOM SO EVER IT MAY CONCERN

This is to certify that ISHIKA BEGUM student of BBA (Hons.) 6^{TH} Semester (Session 2019-2022) of B.B. College, Asansol has done her internship in the field of Marketing from our esteemed concern.

During her internship period she had done online/telephonic market survey.

We wish her all the best in her future endeavors.

(Seal/Stappe of the organization)

General Manager (sales)

Srinathji Motors Pvt. Ltd.

B. B. College, Asansol Department of Business Administration

Date:

Certificate of Completion of The Academic Project For BBA 6th. Semester Examination, 2022

This is to certify that <u>Ishika Begum</u> has successfully completed the academic project on <u>"Business Strategies of TATA Motors"</u> for the partial fulfilment of the BBA (Hons.) Programme under Kazi Nazrul University.

Her University Roll: 102190112800, No.: 7019 and Registration No. KNU19102003884 of 2019-2020.

She has done the original project work on the above subject for completing the academic project.

I wish her all success in her professional endeavour.

Buddha Prasad Ghatak 25/05/2022 (Sri Buddha Prasad Ghatak)

(Sri Buddha Prasad Ghatak)
Project Guide
Department of Business Administration
B. B. College, Asansol





Name: ARITRA ROUTH

Enrolment Number: KNU19102002352

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: Air Pollution and its impact on the

health status of urban India

Certificate

This is to certify that **ARITRA ROUTH**, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

Air Pollution and its impact on the health status of urban India

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BA program curriculum** and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **ARITRA ROUTH** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **ARITRA ROUTH** showcased ingenuity and creativity in approaching the project's challenges.

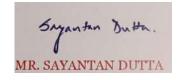
On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **ARITRA ROUTH** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **ARITRA ROUTH** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I.

Dept. of Environmental Science, BB College, Asansol.





Air pollution and its impact on the health status of urban India

Air pollution is a significant environmental issue that has a profound impact on the health status of urban India. The country's rapid urbanization, industrialization, and increased vehicular traffic have led to elevated levels of air pollution, especially in major cities. The primary sources of air pollution in urban areas include vehicular emissions, industrial activities, construction dust, burning of waste, and emissions from power plants.

The health effects of air pollution are diverse and can affect people of all age groups, but certain vulnerable populations such as children, the elderly, and individuals with pre-existing health conditions are at a higher risk. Here are some of the major health impacts of air pollution on urban India:

- 1. Respiratory problems: Air pollution is strongly linked to various respiratory issues, including asthma, chronic obstructive pulmonary disease (COPD), bronchitis, and exacerbation of existing respiratory conditions. Particulate matter (PM), nitrogen dioxide (NO2), sulfur dioxide (SO2), and ozone (O3) are major air pollutants responsible for respiratory problems.
- 2. <u>Cardiovascular diseases:</u> Long-term exposure to air pollution has been associated with an increased risk of cardiovascular diseases, including heart attacks, strokes, and hypertension. Fine particulate matter (PM2.5) and black carbon are particularly harmful to cardiovascular health.
- 3. Reduced lung function: Prolonged exposure to air pollution can lead to reduced lung function, especially in children whose lungs are still developing. This reduction in lung function can have long-term consequences on respiratory health throughout life.

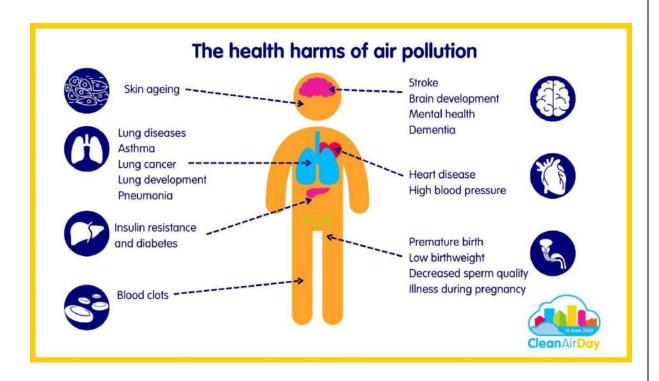
- 4. <u>Allergies and skin problems:</u> Air pollution can exacerbate allergies and skin conditions, leading to symptoms like itching, redness, and rashes.
- 5. <u>Mental health impacts:</u> Studies have suggested a link between air pollution and mental health issues, such as anxiety and depression. The association is likely due to the neuroinflammatory effects of air pollutants.
- 6. Adverse pregnancy outcomes: Pregnant women exposed to high levels of air pollution are at an increased risk of premature birth, low birth weight, and developmental issues in their children.
- 7. <u>Increased mortality:</u> Long-term exposure to high levels of air pollution has been associated with increased mortality rates, primarily due to its effects on cardiovascular and respiratory health.

To combat air pollution and improve the health status of urban India, several measures have been suggested and implemented:

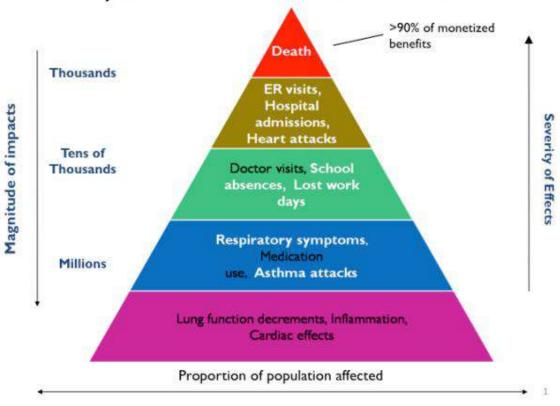
- Improving public transportation: Encouraging the use of public transportation, cycling, and walking can reduce vehicular emissions and improve air quality.
- Promoting clean energy: Transitioning to cleaner and renewable energy sources for power generation can significantly reduce emissions from power plants.
- Implementing stricter emission norms: Enforcing stricter emission standards for vehicles and industries can help curb pollution at the source.

- Waste management: Proper waste management practices, including waste segregation, recycling, and reducing open burning, can help decrease air pollution caused by waste.
- 5. <u>Urban planning:</u> Incorporating green spaces, parks, and trees in urban planning can act as natural air purifiers and provide healthier living environments.
- Public awareness and education: Raising awareness about the health impacts of air
 pollution and promoting individual actions to reduce pollution can have a positive
 impact.

While progress has been made in addressing air pollution in some cities, more comprehensive and sustained efforts are required to protect the health of urban India's growing population. Public health policies and coordinated actions at the local, regional, and national levels are crucial to mitigating the adverse health effects of air pollution.



A "Pyramid of Effects" from Air Pollution







Name: REKHA KUMARI

Enrolment Number: KNU19102003185

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: Water Borne Diseases- Approaches to

prevention and treatment

Certificate

This is to certify that **REKHA KUMARI**, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

Water Borne Diseases- Approaches to prevention and treatment

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BA program curriculum** and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **REKHA KUMARI** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **REKHA KUMARI** showcased ingenuity and creativity in approaching the project's challenges.

On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **REKHA KUMARI** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **REKHA KUMARI** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I,

Dept. of Environmental Science, BB College, Asansol.





Water borne diseases: Approaches to prevention and treatment

Waterborne diseases are illnesses that are transmitted through contaminated water sources. These diseases are a significant public health concern worldwide, particularly in areas with poor water quality and sanitation. Prevention and treatment of waterborne diseases require a multi-faceted approach that addresses both the source of contamination and the health impact on affected individuals. Here are some key approaches to prevention and treatment:

1. Prevention:

- **a. Water Source Protection:** Ensuring a clean and safe water supply is crucial to preventing waterborne diseases. Protecting water sources from contamination through proper watershed management and monitoring is essential.
- **b. Water Treatment:** Implementing effective water treatment processes is vital to remove or kill pathogens from the water supply. Common methods include filtration, chlorination, UV irradiation, and ozonation.
- **c. Improved Sanitation:** Proper disposal of human waste and waste water is essential to prevent water contamination. Promoting the use of sanitary facilities and wastewater treatment can significantly reduce the risk of waterborne diseases.
- **d. Education and Awareness:** Public awareness campaigns and educational programs are essential to inform communities about the importance of clean water, proper sanitation, and personal hygiene.

e. Water Quality Monitoring: Regular monitoring of water quality in both rural and urban areas helps identify contamination sources and ensures that treated water meets safety standards.

2. Treatment:

- **a. Oral Rehydration Therapy (ORT):** For mild to moderate cases of waterborne diseases, oral rehydration solutions are essential to replace lost fluids and electrolytes. ORT can be lifesaving, especially for diarrheal diseases.
- **b. Antibiotics:** In more severe cases of certain waterborne infections, such as cholera or dysentery, antibiotics may be prescribed by healthcare professionals to treat the underlying bacterial infection.
- **c. Intravenous Fluids:** In severe cases with significant dehydration, intravenous (IV) fluid therapy may be required to restore fluid and electrolyte balance rapidly.
- **d. Anti-parasitic Medications:** Some waterborne diseases are caused by parasites, and specific antiparasitic medications are used to treat infections caused by organisms like Giardia or Cryptosporidium.
- **e. Hospitalization:** In severe cases, hospitalization may be necessary for close monitoring and appropriate medical intervention.

3. Vaccination:

Vaccination plays a crucial role in preventing certain waterborne diseases, such as cholera and typhoid fever. Vaccination campaigns can be effective in high-risk areas and during outbreaks to control the spread of the diseases.

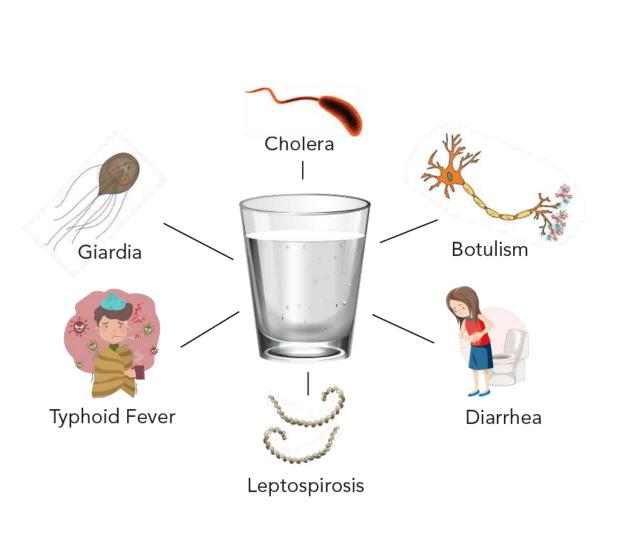
4. Community Health Programs:

Community engagement and participation are essential in implementing effective prevention and treatment strategies. Community-based health programs can help raise awareness, promote proper hygiene practices, and ensure access to clean water and sanitation facilities.

5. International Collaboration:

Waterborne diseases are often more prevalent in regions with limited resources and infrastructure. International organizations and collaborations can provide support, expertise, and resources to improve water quality and reduce the burden of waterborne diseases in vulnerable communities.

In conclusion, preventing and treating waterborne diseases require a comprehensive and multi-faceted approach involving water source protection, proper water treatment, improved sanitation, education, vaccination, and community involvement. By addressing both the root causes of water contamination and the health impact on affected individuals, we can make significant progress in reducing the prevalence of waterborne diseases and improving public health worldwide.



How to prevent infection in places where cholera is found





drink bottled water or water that'been treated



foods should be thoroughly cooked



Individuals shopuld peel their own fruits



be wary if ice, raw foods, ice cream and street food



wash hands frequently and thoroughly



Name: RIYA MARODIA

Enrolment Number: KNU19102003671

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: The menace of municipal solid waste -

Glimpses of urban India

Certificate

This is to certify that *RIYA MARODIA*, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

The menace of municipal solid waste – Glimpses of urban India

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BCOM Hons** curriculum and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **RIYA MARODIA** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **RIYA MARODIA** showcased ingenuity and creativity in approaching the project's challenges.

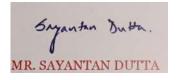
On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **RIYA MARODIA** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **RIYA MARODIA** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I.

Dept. of Environmental Science, BB College, Asansol.





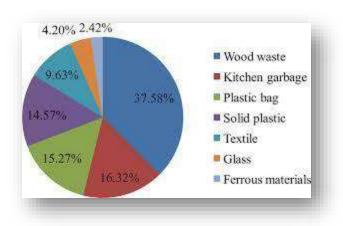
The menace of municipal solid waste: Glimpses of urban India

The issue of municipal solid waste (MSW) is a significant challenge in urban India. As cities continue to grow, the generation of waste increases, and the management of this waste becomes a critical concern. Here are some glimpses of the challenges posed by MSW in urban India:

- 1. Rapid Urbanization and Increasing Waste Generation: With the rapid urbanization and population growth in India, the amount of municipal solid waste generated has been escalating. As people migrate to cities in search of better opportunities, the waste generation per capita increases, putting tremendous pressure on existing waste management systems.
- **2. Inadequate Waste Collection and Segregation:** One of the primary issues is the inadequate collection and segregation of waste at the source. Many cities lack a comprehensive waste collection system, resulting in improper disposal of waste, including dumping in open spaces, rivers, and other water bodies.
- **3.Limited Waste Treatment and Disposal Infrastructure:** The treatment and disposal infrastructure for solid waste in urban areas is often insufficient and outdated. Landfills, which are commonly used for waste disposal, can cause environmental and health hazards due to leachate and methane gas generation.
 - **4. Recycling and Informal Waste Sector:** While the informal waste sector plays a crucial role in recycling and waste management, it often lacks proper regulations and infrastructure. Waste pickers and recyclers often work under harsh conditions without adequate protection or support from the government.

- **5. Health and Environmental Impacts:** Improper waste management leads to health and environmental hazards. Open dumping and burning of waste release harmful pollutants into the air and water, contributing to air pollution and contaminating soil and water sources.
- **6. Public Awareness and Behavior Change:** There is a need for increased public awareness regarding waste management and responsible waste disposal practices. Behavioral changes, such as waste segregation at source and reduced single-use plastic consumption, are essential to tackle the waste problem effectively.
- **7. Policy and Governance Challenges:** Solid waste management in India involves multiple stakeholders, including municipal bodies, state governments, and various private players. Coordination among these entities and clear policies are necessary to address the issue efficiently.
- **8. Financial Constraints:** Adequate funding for waste management projects is often a challenge, particularly for smaller cities and towns with limited financial resources.
- **9. Technology and Innovation:** Embracing modern waste management technologies and innovative solutions can significantly improve waste handling, recycling, and waste-to-energy conversion.
- 10. Waste-to-Energy Projects: Waste-to-energy projects, such as waste incineration and biogas generation, have the potential to convert waste into useful energy. However, they must be carefully planned to ensure environmental sustainability and social acceptance.

Addressing the menace of municipal solid waste in urban India requires a comprehensive approach involving improved waste collection and segregation, enhanced treatment and disposal infrastructure, public awareness and behavior change, better policy frameworks, and sustainable financial models. By tackling these challenges collectively, India can move towards a cleaner and more sustainable urban environment.







Name: AVISHA NANDY

Enrolment Number: KNU19102004004

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: India's Forest Wealth with special

reference to West Bengal

Certificate

This is to certify that **AVISHA NANDY**, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

India's Forest Wealth with special reference to West Bengal

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BSC Hons** curriculum and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **AVISHA NANDY** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **AVISHA NANDY** showcased ingenuity and creativity in approaching the project's challenges.

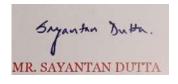
On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **AVISHA NANDY** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **AVISHA NANDY** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I.

Dept. of Environmental Science, BB College, Asansol.





India's forest wealth with special reference to West Bengal

India's forest wealth is significant and diverse, providing various ecological, economic, and social benefits to the country. Forests in India are classified as Reserved Forests, Protected Forests, and Unclassed Forests, each serving specific purposes for conservation and utilization.

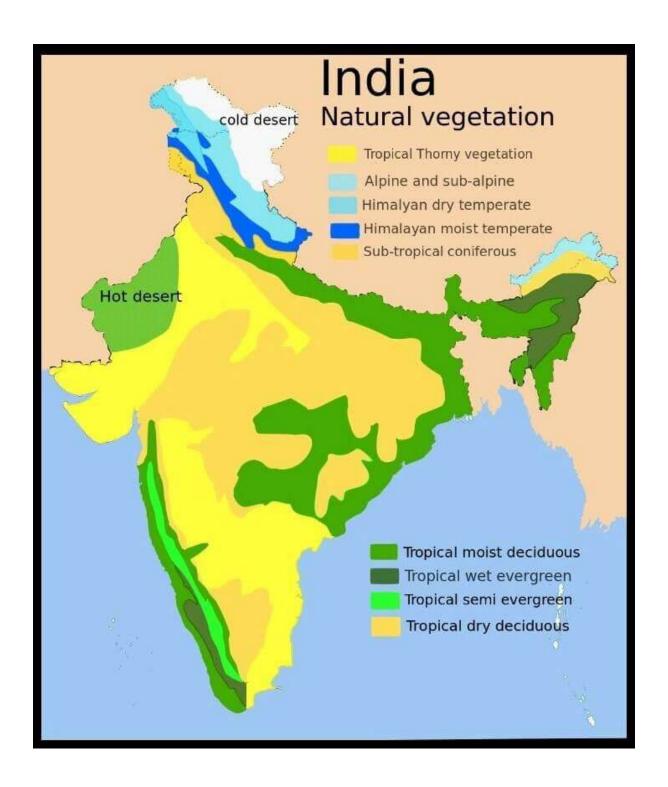
When it comes to the state of West Bengal, it is situated in the eastern part of India and shares its borders with Bangladesh, Nepal, Bhutan, and the Indian states of Sikkim, Assam, Bihar, and Odisha. West Bengal has a mix of forest types, including tropical evergreen, deciduous, and mangrove forests. The state's forest cover has been facing challenges due to urbanization, industrialization, and agricultural expansion.

As of 2019, the total forest cover in West Bengal was about 12,120 square kilometers, which is approximately 15.68% of the state's geographical area. This forest cover includes both reserved and protected forests.

Some of the notable forest areas in West Bengal include:

- Sundarbans: The Sundarbans is the largest mangrove forest in the world and is spread across West Bengal and Bangladesh. It is a UNESCO World Heritage Site and home to the Royal Bengal Tiger. The mangrove ecosystem of the Sundarbans is crucial for protecting coastal areas from natural disasters and preserving biodiversity.
- 2. Buxa Tiger Reserve: Located in the northern part of West Bengal, Buxa Tiger Reserve is an essential part of the Buxa National Park. It is known for its diverse flora and fauna and plays a crucial role in the conservation of the Bengal tiger and other endangered species.
- 3. Jaldapara National Park: Situated in the Alipurduar district of West Bengal, Jaldapara National Park is famous for its population of Indian one-horned rhinoceros, elephants, and other wildlife species.
- 4. Neora Valley National Park: Located in the Kalimpong district, this national park is known for its unique and fragile ecosystem. It is home to a variety of flora and fauna, including several rare and endangered species.

The West Bengal government, along with various environmental organizations, has been making efforts to conserve and protect these forests from deforestation, illegal logging, and encroachments. They also strive to promote sustainable practices and ecotourism to balance conservation and local livelihoods.





Name: SONU PASWAN

Enrolment Number: KNU19116000984

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: Exploring the Indian Biodiversity

Certificate

This is to certify that **SONU PASWAN**, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

Exploring the Indian Biodiversity

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BA Hons** curriculum and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **SONU PASWAN** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **SONU PASWAN** showcased ingenuity and creativity in approaching the project's challenges.

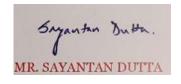
On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **SONU PASWAN** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **SONU PASWAN** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I.

Dept. of Environmental Science, BB College, Asansol.





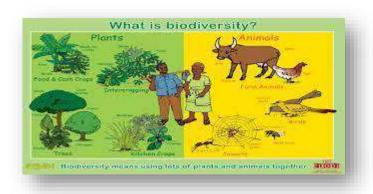
Exploring Indian Biodiversity

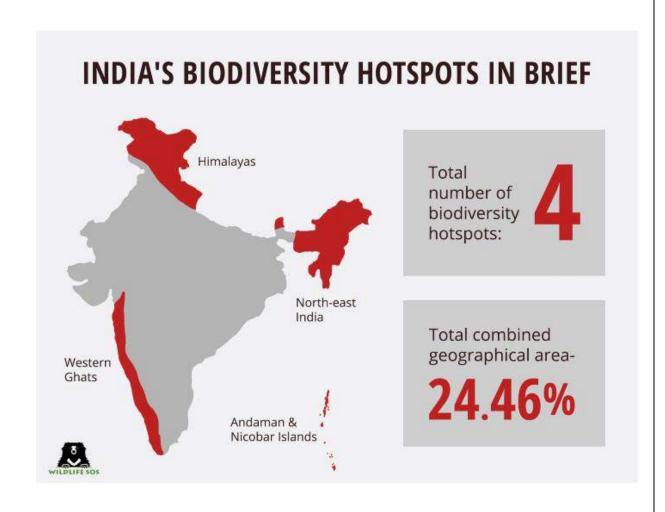
Exploring Indian biodiversity can be an incredibly rewarding experience due to the country's vast and diverse ecosystems. India is home to a wide array of landscapes, climates, and habitats, ranging from the towering Himalayan mountains in the north to the tropical rainforests in the south. Here are some key aspects of Indian biodiversity worth exploring:

- Flora and Fauna Diversity: India is one of the world's 17 megadiverse countries, boasting an impressive variety of plant and animal species. It is estimated to harbor around 7-8% of the world's recorded species. From the Royal Bengal Tiger to the Indian Elephant, Indian wildlife is truly captivating.
- Western Ghats: This mountain range along the western coast of India is a UNESCO
 World Heritage site and a biodiversity hotspot. It's renowned for its rich floral
 diversity and endemic species.
- 3. Eastern Himalayas: The eastern region of the Himalayan mountain range, including states like Sikkim, Arunachal Pradesh, and parts of West Bengal, are biologically diverse and home to rare species like the Red Panda and Snow Leopard.
- 4. Western India: The Thar Desert in Rajasthan and the unique Rann of Kutch in Gujarat offer a glimpse into desert biodiversity, showcasing adaptations of life to arid conditions.
- Eastern India: The Sundarbans mangrove forest in West Bengal is famous for being the largest mangrove ecosystem in the world and is a critical habitat for the Bengal Tiger.

- 6. Marine Biodiversity: India has an extensive coastline, making its marine biodiversity a significant area of interest. The Andaman and Nicobar Islands and Lakshadweep are known for their diverse marine life and coral reefs.
- 7. **National Parks and Wildlife Sanctuaries**: India has numerous national parks and wildlife sanctuaries dedicated to the conservation of its unique biodiversity. Some prominent ones include Jim Corbett National Park, Ranthambore National Park, Kaziranga National Park, and Sundarbans National Park.
- 8. Sacred Groves and Traditional Knowledge: India's cultural heritage is intertwined with biodiversity through sacred groves and traditional knowledge systems that promote conservation practices.
- Birdwatching: India is a haven for birdwatchers, with over 1,300 bird species. Bird sanctuaries like Bharatpur Bird Sanctuary and Nal Sarovar in Gujarat are popular birdwatching destinations.
- 10. **Heritage Trees and Forests**: India also boasts several heritage trees, some of which have cultural and historical significance.

When exploring Indian biodiversity, it's essential to do so responsibly and sustainably, respecting the environment and local communities. Consider hiring local guides and tour operators who prioritize eco-friendly practices to minimize your impact on these delicate ecosystems. Also, be mindful of wildlife conservation and the importance of preserving these habitats for future generations.







Name: SOUVIK KUMBHAKAR

Enrolment Number: KNU20102005190

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: Global Warming and the ongoing

Climate Change- Who is responsible?

Certificate

This is to certify that **SOUVIK KUMBHAKAR**, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

Global Warming and the ongoing Climate Change- Who is responsible?

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BA Hons curriculum** and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **SOUVIK KUMBHAKAR** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **SOUVIK KUMBHAKAR** showcased ingenuity and creativity in approaching the project's challenges.

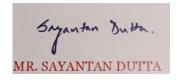
On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **SOUVIK KUMBHAKAR** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **SOUVIK KUMBHAKAR** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I,

Dept. of Environmental Science, BB College, Asansol.





Global Warming and the ongoing climate change: Who is responsible?

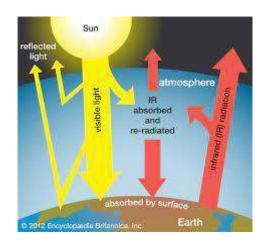
Global warming and ongoing climate change are complex issues with multiple factors contributing to their occurrence. It is important to recognize that responsibility for these problems is shared among various actors, including countries, industries, individuals, and other entities. Here are some key contributors to global warming and climate change and their respective responsibilities:

- 1. Greenhouse Gas Emissions: The primary driver of global warming is the increase in greenhouse gas emissions, particularly carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). The major sources of these emissions include the burning of fossil fuels (coal, oil, and natural gas) for energy, deforestation, agriculture (especially livestock), and industrial processes. Both developed and developing countries are responsible for greenhouse gas emissions, with developed nations historically having higher cumulative emissions.
- 2. Fossil Fuel Industry: The fossil fuel industry has played a significant role in the rise of greenhouse gas emissions. Companies involved in the extraction, production, and distribution of fossil fuels have a responsibility to transition to cleaner energy sources and invest in renewable energy technologies.
- 3. Governments: Governments have a crucial role in shaping policies and regulations that can address climate change. They are responsible for setting emission reduction targets, implementing climate mitigation and adaptation strategies, supporting renewable energy development, and encouraging sustainable practices across various sectors.

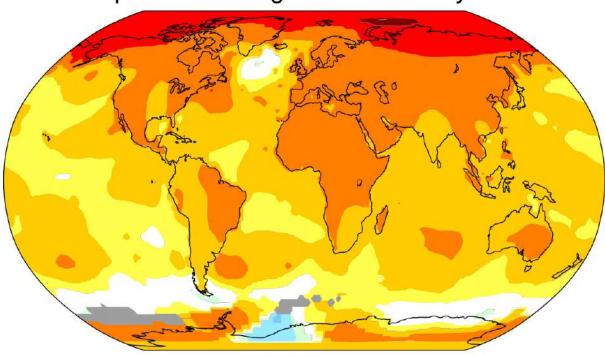
- 4. **Consumers:** Individuals and households also bear some responsibility as consumers of energy and goods. Choices regarding energy use, transportation, diet, and consumption habits can collectively influence greenhouse gas emissions. Raising awareness and making environmentally conscious choices can have a positive impact.
- 5. Deforestation and Land Use Change: Activities like deforestation, particularly in tropical regions, contribute to increased carbon dioxide levels in the atmosphere. Governments, companies involved in agriculture and logging, and consumers who demand products linked to deforestation share responsibility for curbing these practices.
- 6. Industrial Processes: Certain industrial processes release potent greenhouse gases.
 For instance, the production of cement, certain chemicals, and refrigerants can be significant contributors. Industries need to adopt cleaner production methods and technologies.
- 7. International Cooperation: Climate change is a global issue, and international cooperation is essential. Countries need to work together to set ambitious emission reduction goals, support climate-vulnerable nations, and share clean technologies and knowledge.

It is vital to emphasize that no single entity is solely responsible for global warming and climate change. Tackling these challenges requires collective action, involving governments, businesses, communities, and individuals, to make significant strides in

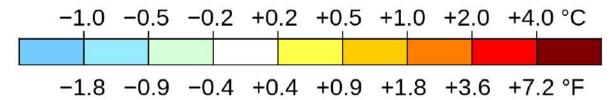
reducing emissions, adopting sustainable practices, and mitigating the impacts of climate change.

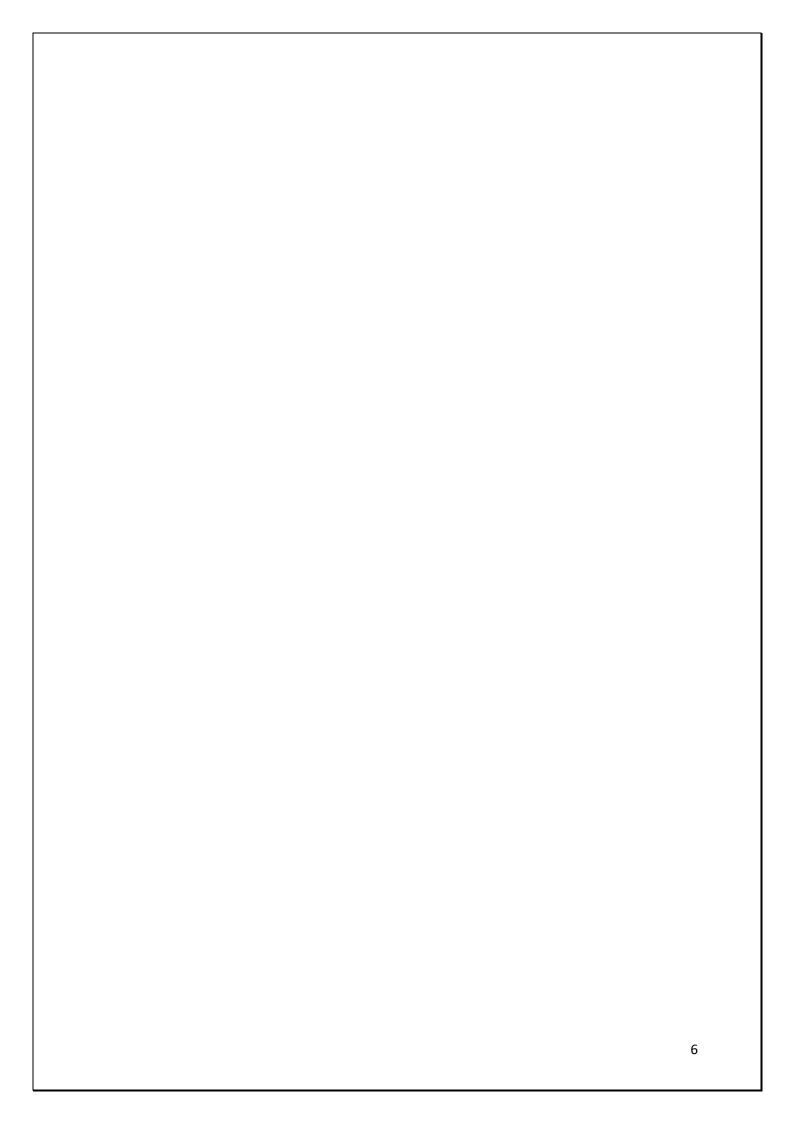


Temperature change in the last 50 years



2011-2021 average vs 1956-1976 baseline







Name: SUBHAJIT MONDAL

Enrolment Number: KNU20102005594

Subject: *Environmental Studies*

Subject Code: AECC

Project Topic: International Environmental

Agreements – How successful are they?

Certificate

This is to certify that **SUBHAJIT MONDAL**, a student of **Banwarilal Bhalotia College**, **Asansol** has successfully completed the college project titled:

International Environmental Agreements – How successful are they?

under the guidance of Mr. Sayantan Dutta, Dept. of Environmental Science, BB College, Asansol, WB.

The college project was undertaken as a part of the **BA program** and was completed with diligence and dedication. The project involved [Briefly describe the main objectives and scope of the project].

Throughout the duration of the project, **SUBHAJIT MONDAL** demonstrated a profound understanding of the subject matter and exhibited exceptional problem-solving skills. The final deliverables presented by **SUBHAJIT MONDAL** showcased ingenuity and creativity in approaching the project's challenges.

On behalf of **Banwarilal Bhalotia College**, **Asansol**, we extend our heartiest congratulations to **SUBHAJIT MONDAL** for the successful completion of this project. The hard work and commitment demonstrated during this endeavour are commendable and reflect the high standards of our institution.

We wish **SUBHAJIT MONDAL** the best for their future endeavours and have no doubt that they will continue to excel in their academic and professional pursuits.

Mr. Sayantan Dutta

SACT-I,

Dept. of Environmental Science, BB College, Asansol.





<u>International Environmental Agreements: How successful they are?</u>

The success of international environmental agreements varies depending on several factors, including the level of commitment and cooperation among participating countries, the effectiveness of the agreements' mechanisms, the extent of compliance with the agreed-upon targets, and the specific environmental challenges being addressed. Here are some key points to consider:

- 1. Success Stories: There have been some notable success stories in international environmental agreements. For instance, the Montreal Protocol (1987) aimed at phasing out ozone-depleting substances has been highly successful, leading to a gradual recovery of the ozone layer. Similarly, the Paris Agreement (2015) brought together nearly all countries to combat climate change, encouraging countries to set voluntary emission reduction targets.
- 2. **Challenges and Weaknesses:** However, many agreements face significant challenges. Some agreements lack the enforcement mechanisms needed to ensure compliance, making it difficult to hold countries accountable when they fail to meet their commitments. Additionally, some nations may prioritize short-term economic interests over long-term

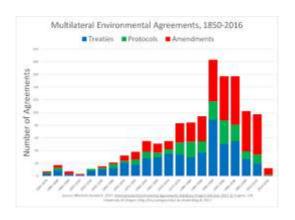
- environmental concerns, leading to inadequate implementation of the agreements.
- 3. **Global Cooperation:** The success of international environmental agreements largely depends on global cooperation. Issues like climate change and biodiversity loss require a collective effort from all countries to be truly effective. When major players, such as the United States, China, and the European Union, demonstrate strong commitment and cooperation, the chances of success improve
- 4. **Different Perspectives and Priorities**: Countries have diverse economic and social priorities, making it challenging to find common ground in some negotiations. Developing nations, for example, may argue that their economic growth should take precedence over environmental concerns, while developed nations may emphasize the need for shared responsibility and greater contributions from all.
- 5. **Changing Political Landscapes**: The success of international environmental agreements can also be influenced by changing political landscapes within countries. Leadership changes and shifts in political priorities may impact a country's commitment to an agreement.
- 6. . Adaptive Nature: Some agreements have an adaptive nature, meaning they can be revised and updated over time based on new scientific

evidence and changing circumstances. This allows for continuous improvement and increased effectiveness.

7. **Non-Binding Nature**: Some agreements are non-binding, meaning countries are not legally obligated to meet the set targets. While they may foster cooperation and encourage voluntary actions, non-binding agreements lack the same level of accountability as legally binding ones.

Overall, international environmental agreements play a crucial role in raising awareness, fostering cooperation, and setting common goals to address global environmental challenges. While they may not always achieve all desired outcomes, they provide a framework for nations to work together toward a more sustainable future. To enhance their success, it is essential for countries to strengthen enforcement mechanisms, increase funding and technical support for developing nations, and promote a broader understanding of the interconnectedness of environmental issues with other global challenges.

Agreement	Date	Issue addressed
International Convention for		
the Regulation of Whaling	1946	Whale depletion
Nuclear Test Ban Treaty	1962	Atmospheric nuclear weapons testing
Biological and Toxic Weapons Treaty	1972	Chemical and biological weapons
London Convention	1972	Ocean pollution
Montreal Protocol	1987	Ozone-layer depletion
Basel Convention	1989	Transport of hazardous wastes
Convention on Biological Diversity	1992	Biodiversity loss
Kyoto Protocol	1997	Carbon emissions and global climate change
Mine Ban Treaty	1997	Landmines



QUALITATIVE ASSAY AND BACTERIAL ISOLATION, CHARACTERIZATION OF WATER SAMPLE COLLECTED FROM RAILWAY TRACK

SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

PRAMIT CHAKRABORTI

REG- KNU20102005385, SESSION- 2020-2023

UNDER THE SUPERVISION OF MS. MONAMI MONDAL DEPT. OF MICROBIOLOGY

BANWARILAL BHALOTIA COLLEGE, ASANSOL



Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)



Constituent College of the KAZI NAZRUL UNIVERSITY, Asensol (GOVT. SPONSORED U. G. & P. G. College)

WATER QUALITY ASSESSMENT OF MUNICIPAL WATER

SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

ASISH PATRA

REG-KNU20102004911, SESSION-2020-2023

UNDER THE SUPERVISION OF MRS. SANGHAMITA DAS GUPTA DEPT. OF MICROBIOLOGY

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Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

Project on: Water quality and assessment of municipal corporation water.

Semester VI examination - 2023

By

Vivek Dutta Singh

KNU20102006666 of 2020-21

Under the supervision of Sanghamita Das Gupta

Dept. of Microbiology

CHARACTERIZATION OF WATER SAMPLE COLLECTED FROM RAILWAY TRACK.

SUBMITTED FOR PARTIAL COMPLETION OF B.SC (HONS)
IN MICROBIOLOGY SEMESTER VI EXAMINATION - 2023

BY

KRITI DAS

REGISTRATION NO- KNU20102004966

SESSION- 2020-2023

UNDER THE SUPERVISION OF MS. MONAMI MONDAL.

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Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

Practical File

On

Basic Computer and Bioinformatics

(Subject Code - BSCHMCBDSE602)

Branch/Year - Micsobiology (2023)

Session:

Submitted To:

Submitted By:

Milyumoy Kundu

<u>Water sample Collected from</u> Railway Track

SUBMITTED BY PARTIAL COMPLEMENTTION OF B.SC (HONS) IN MICROBIOLOGY

Semester VI examination – 2023

Ву

Bikramaditya Maji

KNU20102006643 of 2020-21

Under the supervision of Monami Mondal

Dept. of Microbiology

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Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

Water Quality Assessment Of Municipal Water

Submitted for partial completion of B.Sc. (Hons.) in Microbiology Semester VI examination - 2023

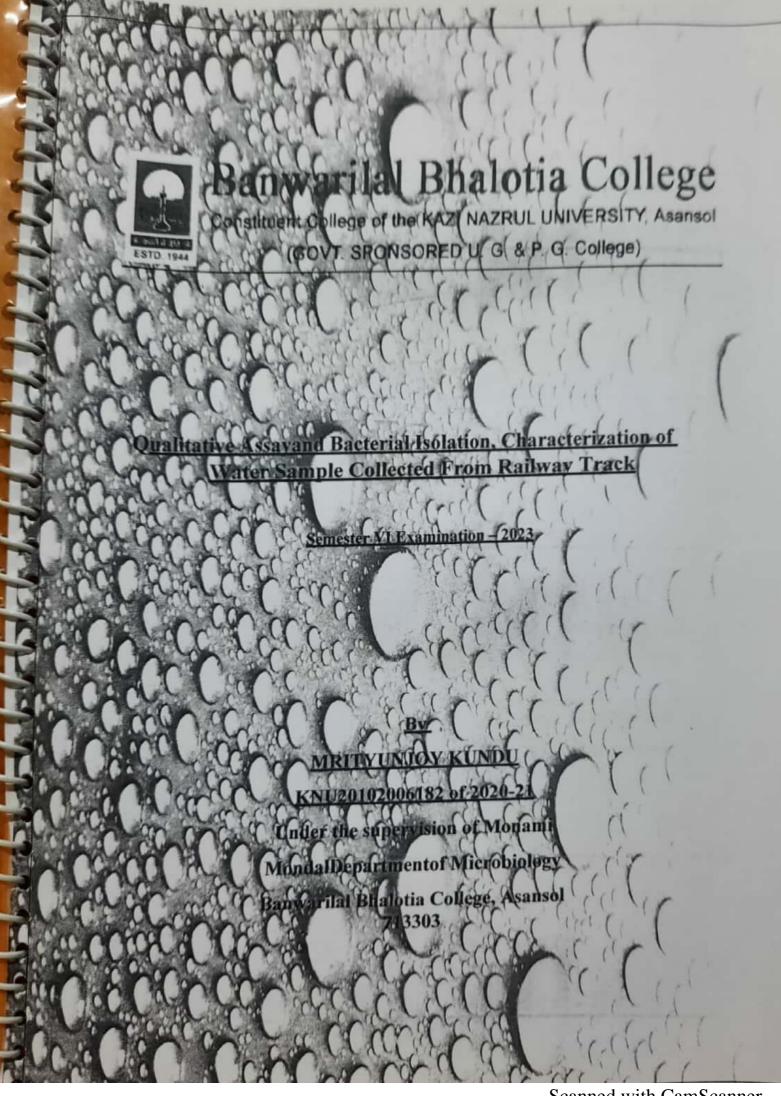
By
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Reg:KNU20102006589 Session:2020-23

Under the Supervision of Mrs.Sanghamita Das Gupta

Department of Microbiology

B.B College, Ushagram







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WATER QUALITY ASSESSMENT OF MUNICIPAL CORPORATION WATER

B.SC HONOURS IN MICROBIOLOGY SEMESTER VI EXAMINATION -2023

BY

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REG. NO- KNU20202005915(2020-21)

UNDER THE SUPERVISION OF MRS. SANGHAMITRA

DASGUPTA MA'AM

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BANWARILAL BHALOTIA COLLEGE

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Pond Water Quality Assessment
Submitted for partial completion of B.Sc. (Hons.) in
Microbiology Semester VI examination - 2023

By Eshita Chatterjee

Registration Number: KNU20102005335 of 2020-2021

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WATER QUALITY ASSESSMENT OF MUNICIPAL WATER

SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

SOVAN KUMAR SHOW

REG- KNU20102005841, SESSION- 2020-2023

UNDER THE SUPERVISION OF MRS. SANGHAMITRA DAS GUPTA DEPT. OF MICROBIOLOGY

BANWARILAL BHALOTIA COLLEGE, ASANSOL



Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

Physicochemical and biochemical assessment of hospital waste water at urban area of Paschim

Bardhhaman, W.B. India

Submitted for partial completion of B.Sc. (Hons.) in Microbiology Semester VI examination-2023

Ву

PARUMITA BHANDARY

Registration number - KNU20102005416, Session -2020 -2023

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Qualitative Assay and Bacterial Isolation, Characterization of Water Sample Collected From Railway Track

Semester VI Examination - 2023

By

KUSHAL MUKHERJEE

KNU20102005732 of 2020-21

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Qualitative Assay and Bacterial Isolation, characterization of Water Sample Collected from Railway Track

Submitted for partial completion of B.Sc. (Hons.) in Microbiology

Semester VI examination – 2023

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Chandni kumari

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WATER QUALITY ASSESSMENT OF MUNICIPAL WATER

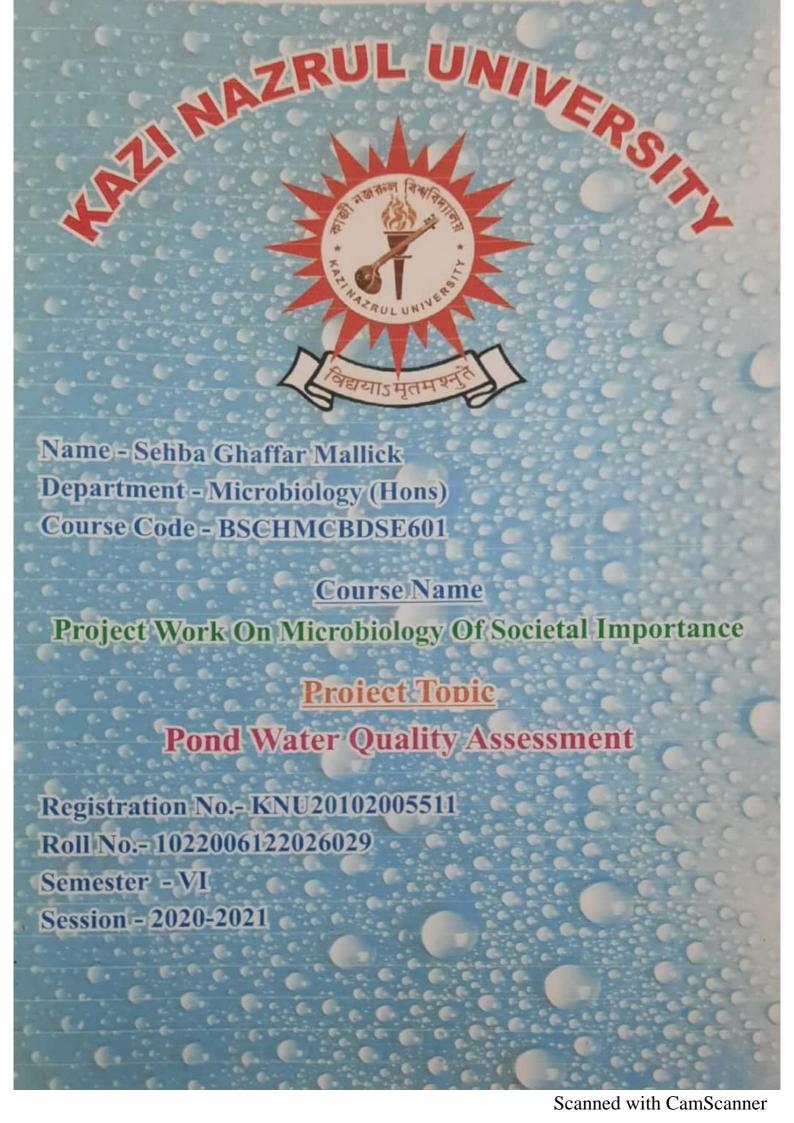
SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

SAZMA SHAHAR

REG-KNU20102004459, SESSION-2020-2023

UNDER THE SUPERVISION OF MRS. SANGHAMITA DAS GUPTA DEPT. OF MICROBIOLOGY





PHYSICOCHEMICAL AND BIOCHEMICAL ASSESSMENT OF HOSPITAL WASTE WATER AT URBAN AREA OF PASCHIM BARDHAMAN, W.B, INDIA

Submitted for partial completion of B.Sc. (Hons.) in Microbiology Semester VI examination – 2023

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Registration No: KNU20102005120 Session: 2020-2021

Under the supervision of Mrs. SUDESHNA MITRA Dept. of Microbiology

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Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

Physicochemical and Biochemical Assessment of Hospital Waste Water at Urban Area of Paschim Bardhhaman, W.B, India

Submitted for partial completion of B.Sc. (Hons.) in Microbiology

Semester VI examination – 2023

By ANKITA KUMARI

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Banwarilal Bhalotia College

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Qualitative Assay and Bacterial Isolation, Characterization of Water Sample Collected from Railway Track

Submitted for Partial Completion of B.Sc. (Hons.) in Microbiology

Semester VI Examination - 2023

BY

Saria Amrin

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Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

PROJECT: - WATER QUALITY ASSESSMENT OF MUNICIPAL WATER

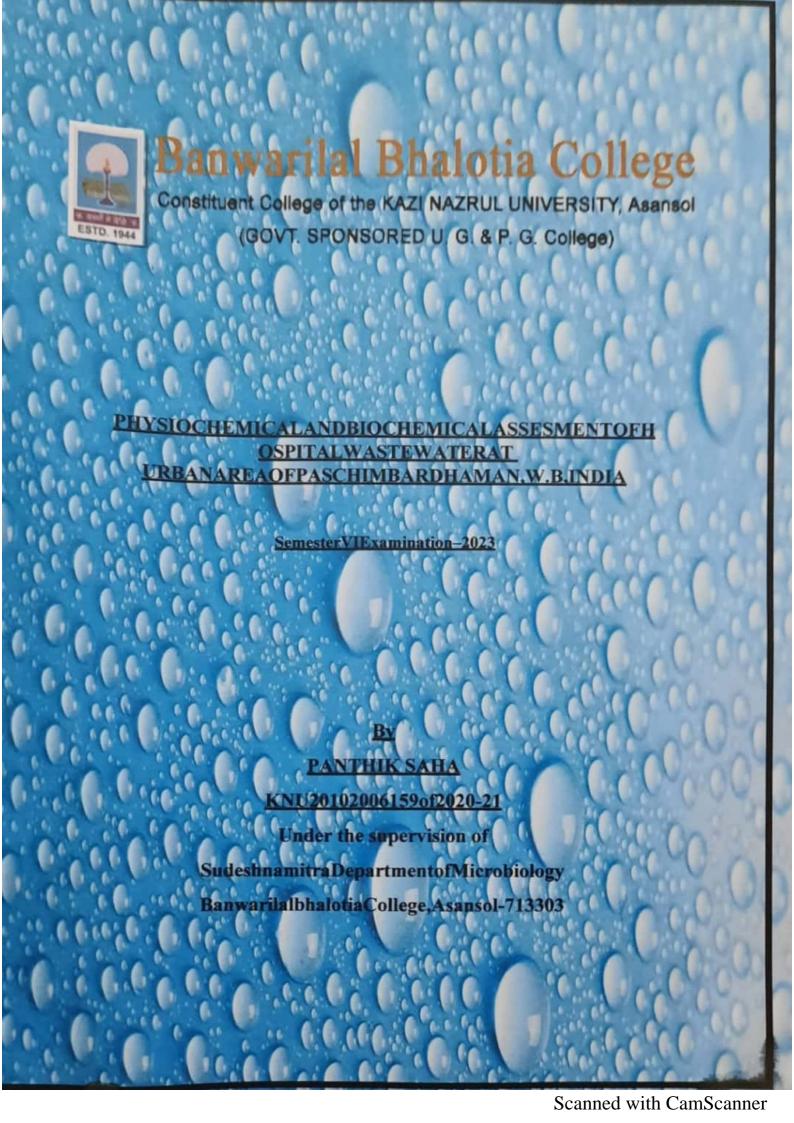
Semester VI examination - 2023

AFIFA SIDDIQA

KNU20102004476 of 2020-21

Under the supervision of SANGHAMITA DASGUPTA

Dept. of Microbiology





Estd. -1944

PHYSICOCHEMICAL AND BIOCHEMICAL ASSESMENT OF HOSPITAL BASED WATER AT URBAN AREA OF PASCHIM BARDDHAMAN, W.B. INDIA

Submitted for partial completion of B.Sc. (Hons.) in Microbiology Semester

VI examination - 2023

By

SOUMIK NANDI

Registration Number: KNU20102006440 of 2020-2021

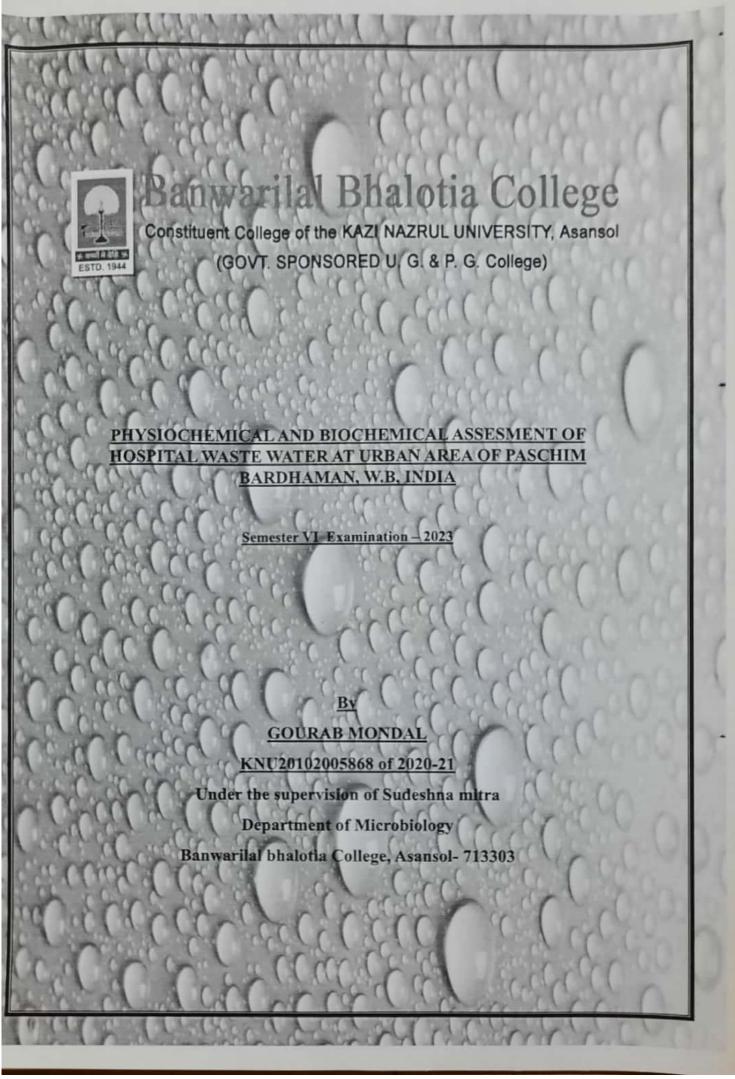
Under the supervision of Ms. SUDESHNA MITRA

Dept. of Microbiology

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Ushagram, Asansol, West Bengal

713303



POND WATER QUALITY ASSESSMENT

SUBMITTED FOR PARTIAL COMPLETION OF B.SC.(Hons.) IN MICROBIOLOGY

SEMESTER VI EXAMINATION -2023

BY

NAME :- ISHITA GHANTY

REGISTRATION NO:- KNU20102004716

SESSION :- 2020-2023

Dr. MAHUA SINHA CHAKRABORTY

DEPARTMENT OF MICROBIOLOGY



Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)



Estd. -1944

Pond Water Quality Assessment

Submitted for partial completion of B.Sc. (Hons.) in Microbiology Semester

VI examination - 2023

By

Tathagata Dutta

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POND WATER QUALITY ASSESSMENT

SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

ARUNAVA SENGUPTA

REG- KNU20102005888, SESSION- 2020-2023

UNDER THE SUPERVISION OF Dr. MAHUA SINHA CHAKRABORTY
DEPT. OF MICROBIOLOGY

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Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

POND WATER QUALITY ASSESSMENT

Submitted for partial completion of B.Sc. (Hons.) in Microbiology

Semester VI examination – 2023

By

Chandan Mondal

Reg. No - KNU20102004428 , 2020-21

Under the supervision of Dr. Mahua Sinha Chakraborty

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WATER QUALITY ASSESSMENT OF MUNICIPAL WATER

SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

SOUVICK MONDAL

REG- KNU20102004737, SESSION- 2020-2023

UNDER THE SUPERVISION OF MRS. SANGHAMITRA DAS GUPTA DEPT. OF MICROBIOLOGY

BANWARILAL BHALOTIA COLLEGE, ASANSOL



Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

POND WATER QUALITY ASSESSMENT

Submission for partial completion of B.Sc.(hons) in microbiology

Semester VI examination - 2023

By TITLI SADHU

Registration no: KNU20102005496, 2020-21

Under the supervision of Dr. Mahua Sinha Chakraborty

Dept . of Microbiology

Banwarilal Bhalotia College, Ushagram, Asansol





PHYSIOCHEMICAL AND BIOCHEMICAL ASSESSMENT OF HOSPITAL WASTE WATER AT URBAN AREA OF PASCHIM BARDHAMAN, W.B., INDIA

Submitted for partial completion of B.SC. (Hons.) in Microbiology

Semester VI examination -2023

By

SHIVAM KUMAR SAW

Registration No-KNU20102004629, 2020-2021

Under the supervision of Mrs. SUDESHNA MITRA

Department of Microbiology

Banwarilal Bhalotia College

Ushagram, Asansol - 713303

WATER QUALITY ASSESSMENT OF MUNICIPAL WATER

SUBMITTEED FOR PARTIAL COMPLETION OF B.SC (HONS.) IN MICROBIOLOGY SEMESTER VI EXAMINATION – 2023

BY

SOVAN KUMAR SHOW

REG-KNU20102005841, SESSION-2020-2023

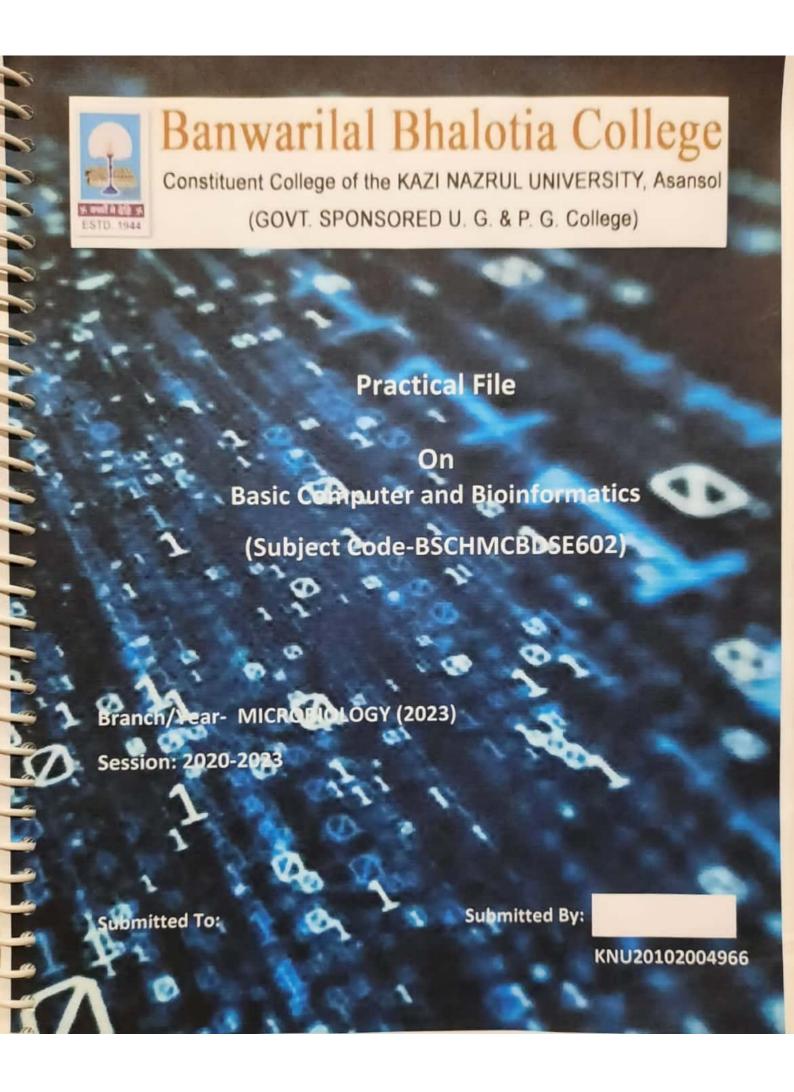
UNDER THE SUPERVISION OF MRS. SANGHAMITRA DAS GUPTA DEPT. OF MICROBIOLOGY

BANWARILAL BHALOTIA COLLEGE, ASANSOL



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Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)





Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

Practical File

On

Basic Computer and Bioinformatics

(Subject Code – BSCHMCBDSE602)

Branch/Year - Micorobiology (Hons.), 3ord year

Session: 2020-21

Submitted To: Sachin Maji

Submitted By: Titli Sadhu

Qualitative Assay and bacterial isolation, Characterization of Water sample Collected from Railway Track

SUBMITTED BY PARTIAL COMPLEMENTTION OF B.SC (HONS) IN MICROBIOLOGY

Semester VI examination – 2023

By
Debobrata Das
KNU20102005555 of 2020-21
Under the supervision of Monami Mondal
Dept. of Microbiology

Banwarilal Bhalotia College, Asansol-713303



Banwarilal Bhalotia College

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Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Assersol (GOVT. SPONSORED U. G. & P. G. College)

Practical File

On

Basic Computer and Bioinformatics

(Subject Code - BSCHMCBDSE602)

Branch/Year - MICROBIOLOGY (2023)

Session:

Submitted To: Sachin May!

Submitted By: Kushal Mulcherjan



Physicochemical and biochemical assessment of hospital waste water at urban area of Paschim Bardhhaman, W.B,

India

Submitted for partial completion of B.Sc. (Hons.) in Microbiology

Semester VI examination – 2023

By NAUSHIN FATMI

Registration No., Session: KNU20102004666 2022-2023

Under the supervision of Mrs. SUDESHNA MITRA

Dept. of Microbiology

Banwarilal Bhalotia College, Ushagram, Asansol-713303

Pond Water Quality Assessment

Submitted for partial completion of B.Sc. (Hons.) in Microbiology Semester VI examination - 2023

> Submitted by: RISHABHA KUMAR RAUTH

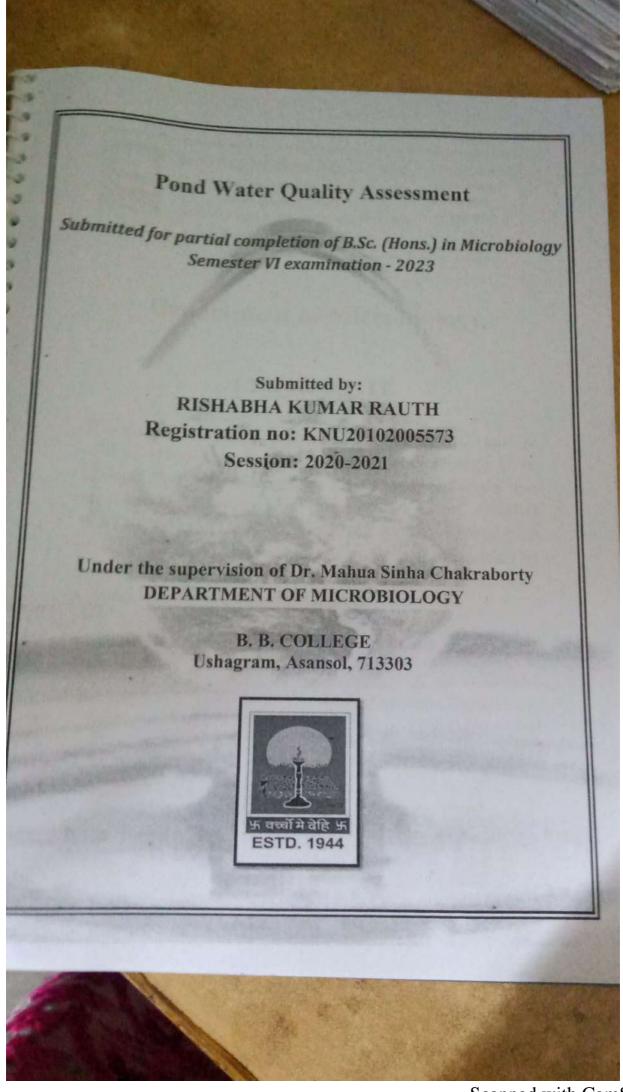
Registration no: KNU20102005573

Session: 2020-2021

Under the supervision of Dr. Mahua Sinha Chakraborty
DEPARTMENT OF MICROBIOLOGY

B. B. COLLEGE Ushagram, Asansol, 713303





Department of Physics, B. B. College, Asansol Project Distribution of MSc 4th Semester 2021

Sl. No.	Project Guide	Project Students				
1	Dr. A. K. Mukherjee	Narayan Ram				
2	Dr. P. Ghosh	Humaira				
3	Dr. K. Mukherjee	Swarnendu Banerjee				
4	Shri J. K. Majhi	Debojyoti Dey				
5	Dr. R. K. Roy	Anupam Mukherjee				
6	Dr. K. K. Dey	Koustav Bhandary				
7	Dr. Shilpi S Mandal	Sunanda Ray				
8	Dr. Abhik Ghosh	Subhranil Mukherjee				

KKKOZ

PG – In Charge

Department of Physics,

B. B. College, Asansol.

Department of Physics, B. B. College, Asansol List for Project Supervision of M.Sc. 4th semester students 2022

Sl. No.	Teacher	Name of the Student	Registration No.	
1	DR A. K. MUKHERJEE	BULTI ROY	KNU20007497	
2	DR P. GHOSH	BISHNU CHAKRABORTY	KNU20002056	
3	DR K. MUKHERJEE	TANUSHREE CHAKRABORTY	KNU20001407	
	DICK. WORTERSEE	SUBHAJIT PANDA	KNU20000532	
4	DR J. K. MAJHI	AVIJIT SADHU	KNU20007012	
5	DR R. K. ROY	MEGHALI PAUL	KNU20000820	
6	DR K. K. DEY	SRAYOSI CHATTERJEE	KNU20009367	
7	SRI K. MAJI	SOUMAVA MONDAL	KNU20003448	
8	DR S. MONDAL	KEYA GHOSH	KNU20004757	
9	DR S. S. MANDAL	SUMAN SHAW	KNU20009282	
10	DR A. GHOSH	RICKTA PAUL	KNU20001394	
11	DR A. BISWAS	SUBHRADIPA PAUL	KNU20000343	

K K Dey
PG Coordinator

PHASE DEPENDENCES OF OPTICAL DISPERSION & GROUP VELOCITY IN A CLOSED THREE LEVEL SYSTEM

PROJECT WORK SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCINECE IN PHYSICS

OF

KAZI NAZRUL UNIVERSITY



2022

RV

SRAYOSI CHATTERJEE

ROLL NO: 1022004332032010

REGISTRATION NO: KNU20009367 OF 2020 - 2022

UNDER THE GUIDENCE OF

Dr. KAJAL KRISHNA DEY

DEPARTMENT OF PHYSICS

BANWARILAL BHALOTIA COLLEGE

ASANSOL-713303



Banwarilal Bhalotia College

Affiliated to Kazi Nazrul University Govt. Sponsored (U.G & P.G.) Asansol-713303, West Bengal (India)

Date: 01-08-2022

CERTIFICATE

This is to certify that the projectwork entitled 'Phase dependences of optical dispersion and group velocity in a closed three level system' submitted by Srayosi Chatterjee with Reg. No. KNU20009367 of 2020-'22 in partial fulfilment for obtaining the degree of Master of Science in Physics, Kazi Nazrul University, Asansol is absolutely based on her own work under my supervision and guidance.

WD-

(Dr. Kajal Krishna Dey)
Associate Professor in Physics
Department of Physics
B. B. College, ASANSOL-713303

NANOMATERIALS: A REVIEW

PROJECT WORK SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN PHYSICS

OF

KAZI NAZRUL UNIVERSITY



2012

MEGHALI PAUL

ROLL NO- 1022004332032006

REGISTRATION NUMBER – KNU20000820 OF 2020-2021

UNDER THE GUIDANCE OF

Dr. RITWIK ROY

DEPARTMENT OF PHYSICS

BANWARILAL BHALOTIA COLLEGE

ASANSOL-713303



DEPARTMENT OF PHYSICS (PG & UG) BANWARILAL BHALOTIA COLLEGE

Constituent College of the Kazi Nazrul University Govt. Sponsored (U.G & P.G)

Asansol - 713303, West Bengal, India

CERTIFICATE

This is to certify that the project entitled "NANOMATERIALS: A REVIEW" submitted by MEGHALI PAUL having Roll number 1022004332032006, Registration number KNU20000820 for the partial fulfilment of M.SC semester IV in Physics under Banwarilal Bhalotia College, Asansol has been carried out under my guidance and supervision.

I wish her all success in life.

RKRON Supervisor,

Dr. Ritwik Kumar Roy Assistant

Professor

Department of Physics

B.B College, Asansol





Carbon Nanotube: A Review

M.Sc. 4th Semester Research Project

Submitted By – Anupam Mukherjee

Registration No. – KNU19004756 of 2019-2021

Roll No. – 1021904332032006

Under the guidance of-

DR. Ritwik Kumar Roy

Department of Physics

Banwarilal Bhalotia College

Dissertation Submitted for the partial fulfilment of the requirement of the Degree of Master of Science in Physics, B.B College, Kazi Nazrul University.

Kazi Nazrul University

ACCELERATED EXPANSION OF UNIVERSE: DISCOVERY OF DARK ENERGY USING TYPE Ia SUPERNOVAE

PROJECT WORK SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN PHYSICS

OF

KAZI NAZRUL UNIVERSITY



2021

BY

SUBHRANIL MUKHERJEE

ROLL NO.: 1021904332032008

REGN NO.: KNU19004563 OF 2019-20

UNDER THE GUIDANCE OF

DR. ABHIK GHOSH

DEPARTMENT OF PHYSICS

BANWARILAL BHALOTIA COLLEGE

(KAZI NAZRUL UNIVERSITY)

The 1.4 GHz radio luminosity function of high and low-excitation radio galaxies and their redshift evolution to z=0.75

PROJECT WORK SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN PHYSICS OF KAZI NAZRUL UNIVERSITY



2022

BY

RICKTA PAUL

ROLL NO.: 102202332032007

REGN. NO.: KNU20001394 OF 2020-2021

UNDER THE GUIDANCE OF DR. ABHIK GHOSH

DEPARTMENT OF PHYSICS

BANWARILAL BHALOTIA COLLEGE, ASANSOL

BANWARILAL BHALOTIA COLLEGE



ESTD: 1945

Affiliated to Kazi Nazrul University Government Sponsored (UG & PG) ASANSOL-713303, WEST BENGAL

CERTIFICATE

This is to certify that project work entitled "ACCELERATED EXPANSION OF UNIVERSE: DISCOVERY OF DARK ENERGY USING TYPE Ia SUPERNOVAE" submitted by SUBHRANIL MUKHERJEE, ROLL NO.: -1021904332032008 in partial fulfilment for obtaining the degree of Masters of Science in Physics, Kazi Nazrul University, Asansol is based on his work under my supervision and guidance.

Ablik Gloss

Department of Physics B.B.COLLEGE, Asansol – 713303

BANWARILAL BHALOTIA COLLEGE



ESTD: 1945 Affiliated to Kazi Nazrul University Government Sponsored (UG & PG) ASANSOL-713303, WEST BENGAL

CERTIFICATE:

This is to certify that project work entitled "THE 1.4GHz

RADIO LUMINOSITY FUNCTIONS OF HIGH AND LOW EXCITATION RADIO GALAXIES AND THEIR REDSHIFT EVOLUTION TO Z=0.75"

submitted by RICKTA PAUL, ROLL NO.: - 102202332032007 in partial fulfillment for obtaining the degree of Masters of Science in Physics, Kazi Nazrul University, Asansol is based on his work under my supervision and guidance.

Ablik Gloss

Department of Physics

B.B.COLLEGE, Asansol – 713303



DEPARTMENT OF PHYSICS (PG & UG) Banwarilal Bhalotia College

Constituent College of the Kazi Nazrul University Govt. Sponsored (U.G & P.G.)

Asansol-713303, West Bengal, India

TO WHOM IT MAY CONCERN

This is to certify that the project entitled "INTRODUCTION TO NANOMATERIALS & STUDY OF X-RAY DIFFRACTION PATTERN" submitted by KEYA GHOSH having Roll Number 1022004332032005, Registration number KNU20004757 for the partial fulfillment of M.SC Semester IV in Physics under Banwarilal Bhalotia College, Asansol has been carried out under my guidance and supervision.

I wish her all success in life.

Supervisor,

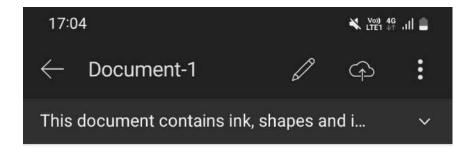
Dr. Shrabani Mondal

Assistant Professor

Department of Physics

B B College, Asansol





On synthesis, characterization and application of nanoparticles

PROJECT WORK SUBMITTED BY IN PARTIAL FULFILMENT OF THE FOR THE DEGREE OF MASTERS OF PHYSICS OF

KAZI NAZRUL UNIVERSITY



BY SUMAN SHAW

REG. NO:- KNU20009282(2020-21)

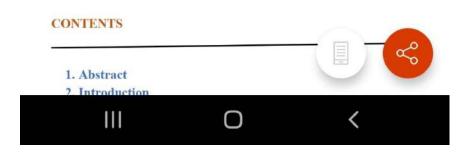
ROLL NO:-1022004332032013

UNDER THE GUIDANCE OF

Dr. SHILPI SHOW MANDAL

DEPARTMENT OF PHYSICS

BANWARILAL BHALOTIA COLLEGE



¥ (Vo)) 4G ■ 17:14





NAME - Sunanda Ray GUIDE NAME-Dr shilpi show mandal CAMPUS -BBC REGISTRATION NUMBER-KNU19003624 ROLL NO-1021904332032003 DATE-25/08/21

CONTENTS

- ABSTRACT
- INTRODUCTION
- NANOPARTICLES
- TYPES OF NANOPARTICLES

- SYNTHESIS OF NANOPARTICLES
 STRATEGIES TO SYNTHESIS NANOPARTICLES
- CHARACTERIZATION OF NANOPARTICLES
- APPLICATION OF NANOTECHNOLOGY
- CONCLUSION
- REFERENCES

III

ACKNOWLEDGEMENT

I would like to express my deep and sincere gratitude to my guide, Mrs Shilpi show mandal of the Physics department,BB college for her unflagging support and continuous encouragement throughout the project work without her guidance and persistent help this project would not have been possible. I would also like to thank all the facilities of the physics department of BB college.







BANWARILALA BHALOTIA COLLEGE (HINDI-SHIFT) Routine for On line Hons classes: B. B. College: For Hindi shifts, 2021

Day	Time									
	Semester	8AM- 9AM	9AM- 10AM	10AM- 11AM	1PM- 2PM	2PM- 3PM	3PM- 4PM	7PM- 8PM	8PM- 9PM	
		Hons Classes Only		GE Classes Only for I &III Sem		Hons Classes Only				
Mon	11		5	QS	РВ	ENVS(A)		3 D		
				C-3	GE-2					
	IV		PB	SB						
			C-10	C-9						
	VI		QS				PG/SB		1	
			C-13				C-14			
							Project			
Tue	11		SB	QS	РВ				1	
			C-4	C-3	GE-2					
	IV	NB	PB		PG			QS	1	
		SEC-2	C-10		GE-4			C-8		
	VI	5):	QS	PG			PG/SB	SB		
			C-13	DSE-4			C-14	DSE-3		
							Project			
Wed	11.		SB	QS		РВ				
			C-4	C-3		GE-2				
	IV			SB	PG			QS		
				(C-9)	GE-4			C-8		
	VI	5.5	QS	PG			PG/SB	SB		
			C-13	DSE-4			C-14	DSE-3		
							Project			
Thurs	11		SB	QS		РВ				
			C-4	C-3		GE-2				

	IV	NB		SB	PG		QS
		SEC-2		C-9	GE-4		C-8
	VI					PG/SB	SB
						C-14	DSE-3
						Project	
Fri	Ш	ě.	SB				
			C-4				
	IV		PB	11	PG		QS
			C-10		GE-4		C-8
	VI			PG			SB
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		C-10	C-9				
	VI	8	D.	QS			PG
				C-13			DSE-4
Sun	1L						
	IV			,			
	VI		3				

NB: Please consider the following information at the time of preparation of departmental online Routine.

- (i) Allocate at most two classes for core papers and one class for GE paper of first semester per day
- (ii) Allocate at most three classes for core papers and one class for GE paper of third semester per day
- (iii) Allocate at most three/four classes for core papers of Fifth semester per day
- (iv) Allocate at least four to five classes per paper per week for each sem

PG - Pawan Gurung

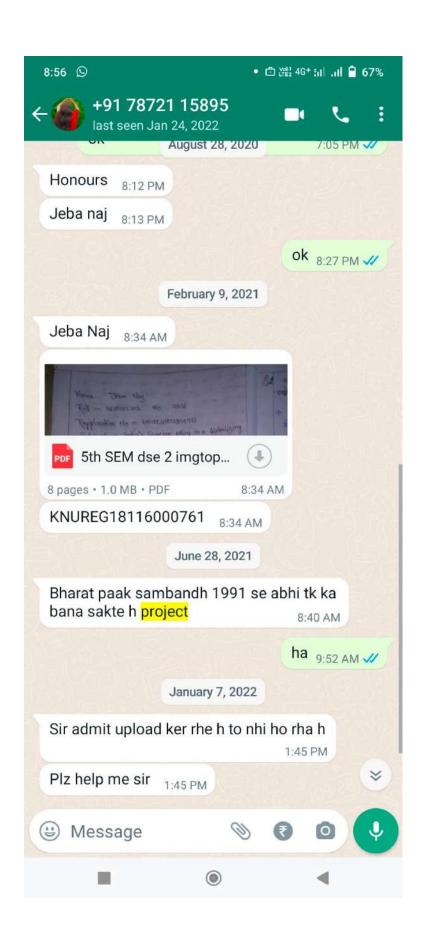
PB – Piyali Banerjee

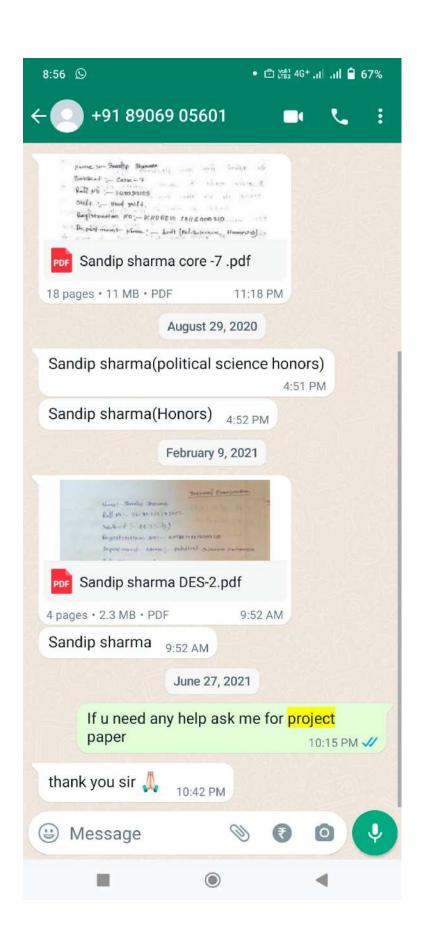
SB - Santosh Bhagat

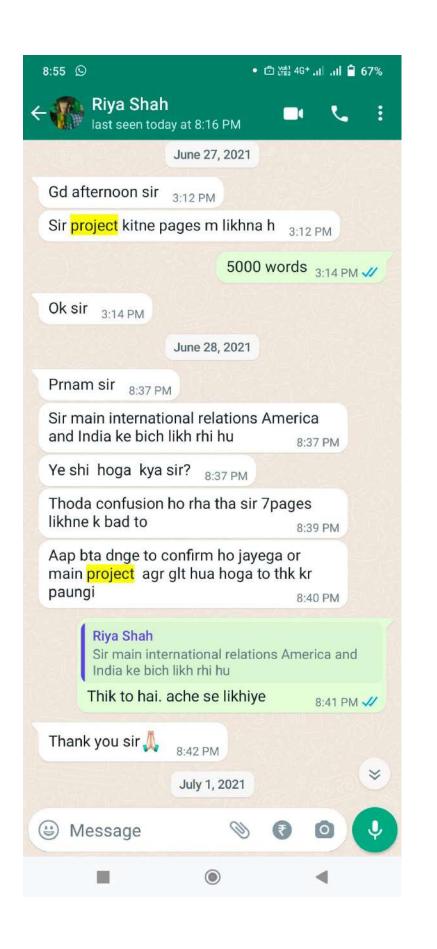
NB – Nabanita Banerjee

General Guide Lines for Project Writing

- 1. Students must write their papers from within the discipline of Political Science and its allied subject.
- 2. Total Marks 50. Internal-30 marks and External marks-20.
- 3. External Evaluation will be made through viva-voce.
- 4. External Evaluation will be made through the continuous evaluation process by the respective Supervisor.
- 5. Name of the external examiner will be send by the course coordinator of the university PG department of Political Science to the Controller/Dy. Controller of Examinations of the University and then University will send all the colleges.
- 6. In respect of the preparation of the project special emphasis will be given on Research Methodology.
- 7. Each student will select separate Topic
- 8. Institution will give the priority of the choice of the students regarding the selection of the topic of their choice.

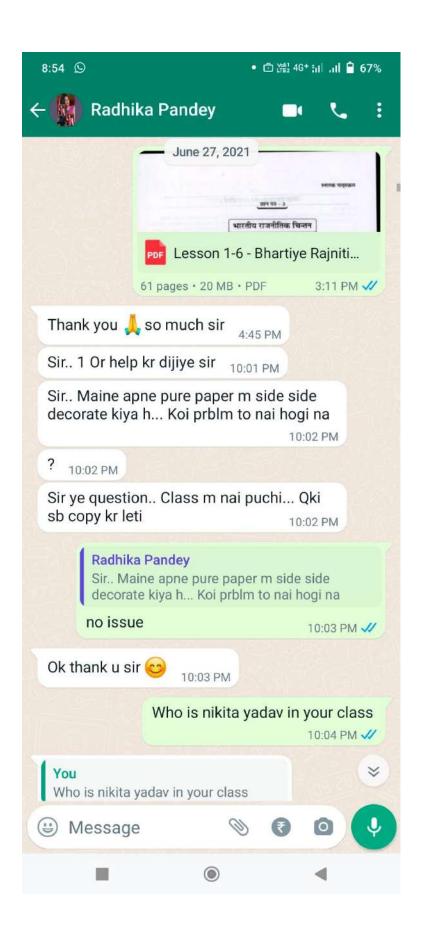


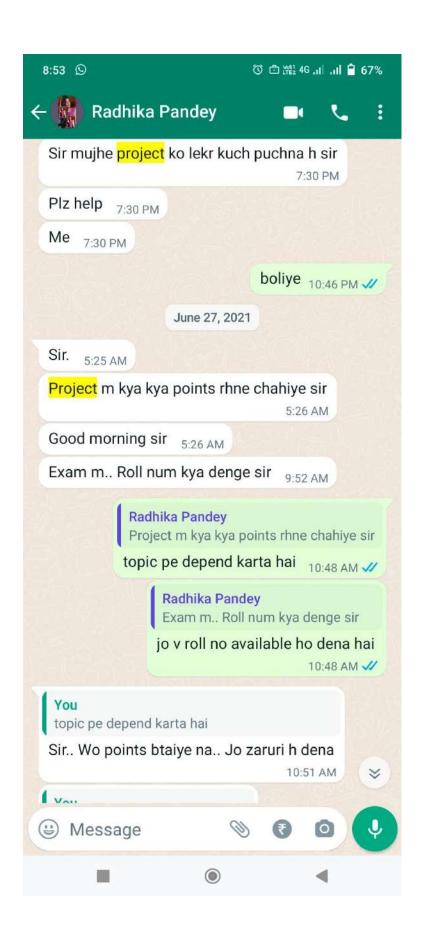








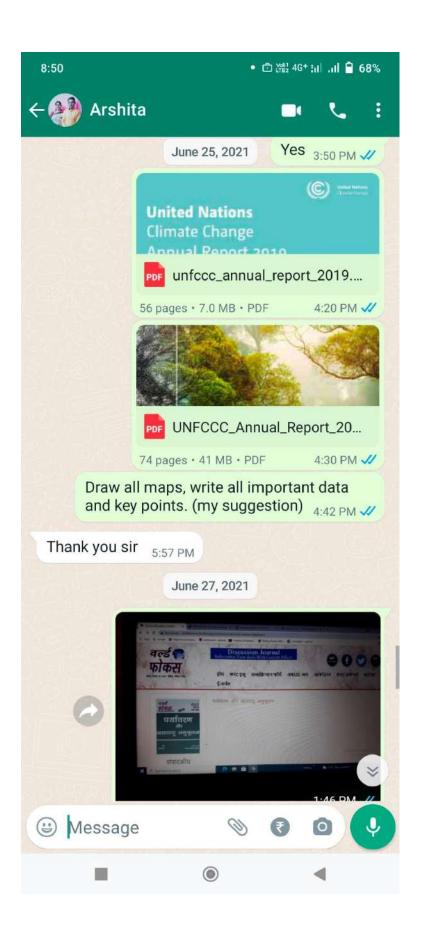






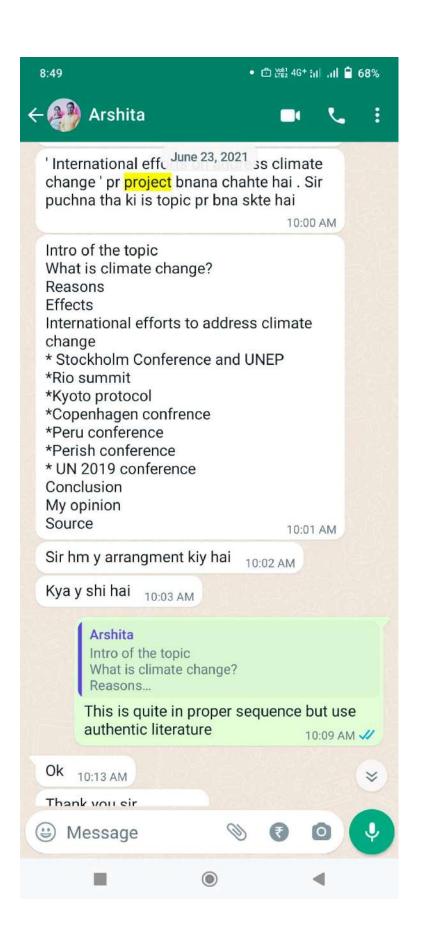






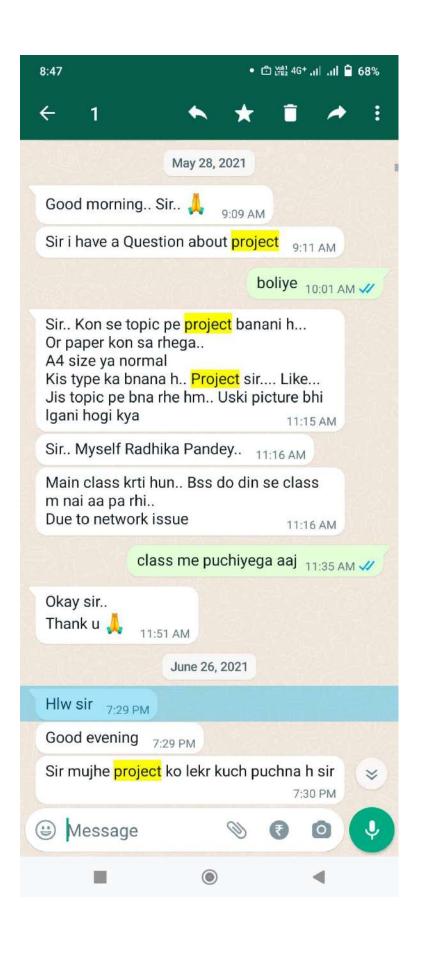


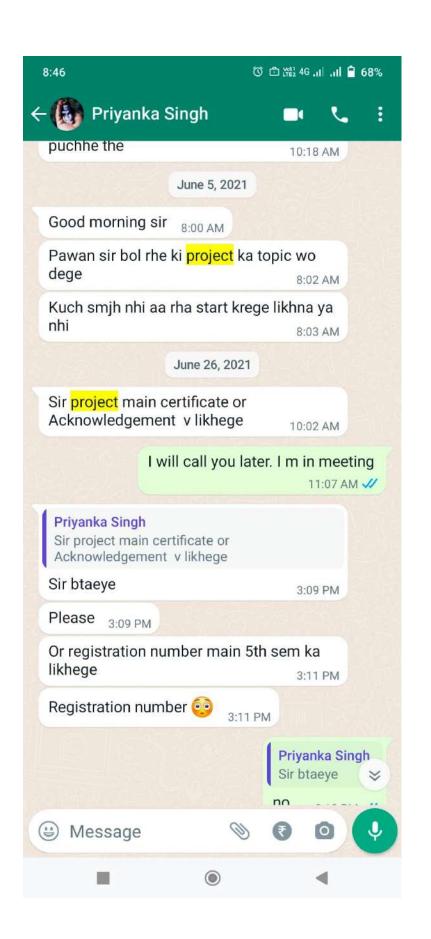














July 4, 2021

Forwarded

NOTICE FOR 6TH SEMESTER

- 1.6th semester (Regular)online exam form college me jama dena parega, 6th July Honours and 7th July Program students.
- 2. 5th and 6th semester ka ADMISSION slip form ke saath dena parega .
- 3. Jiske pass LIBRARY BOOK hey woh 6th
- July college me book jama karega.





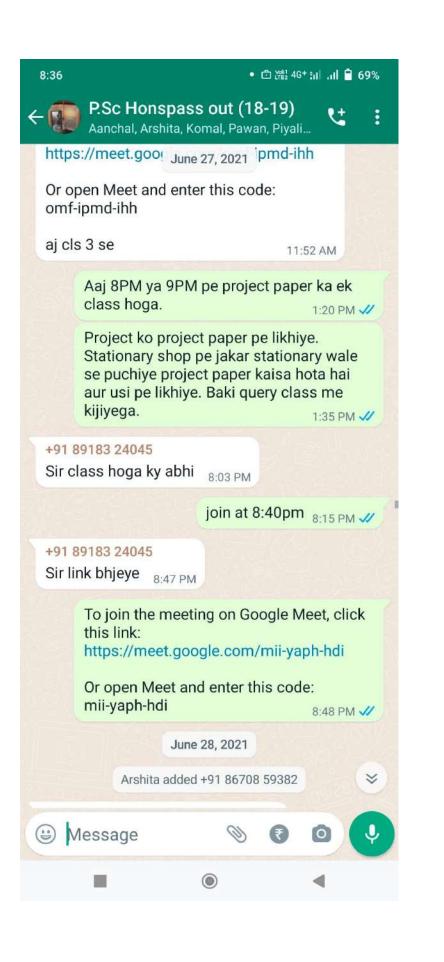




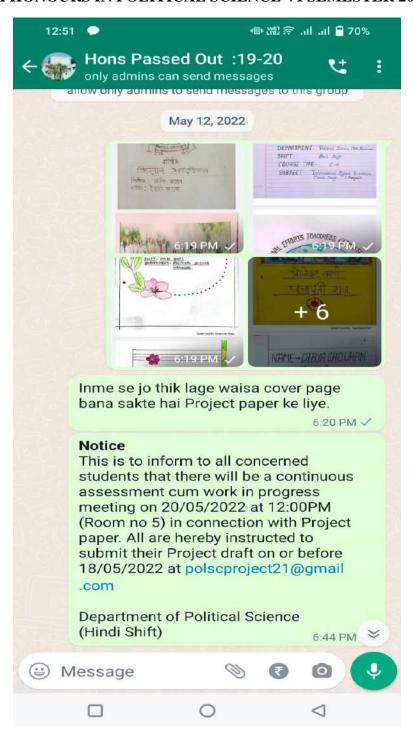


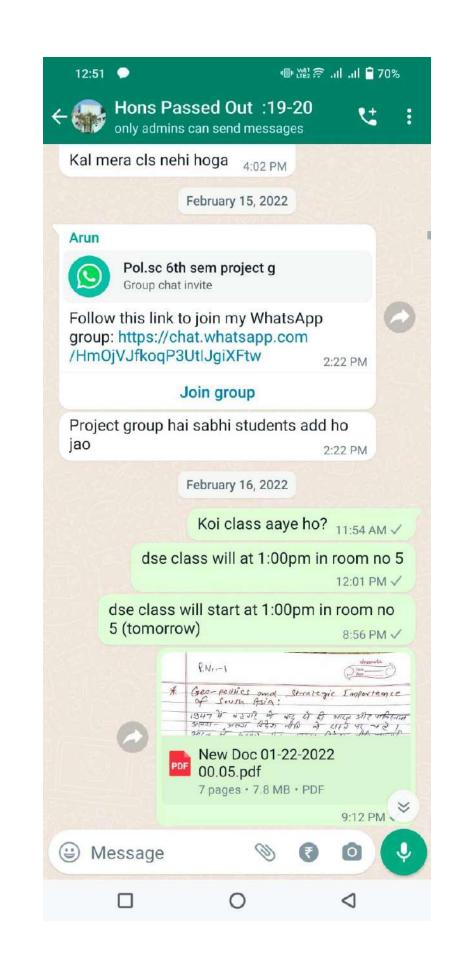


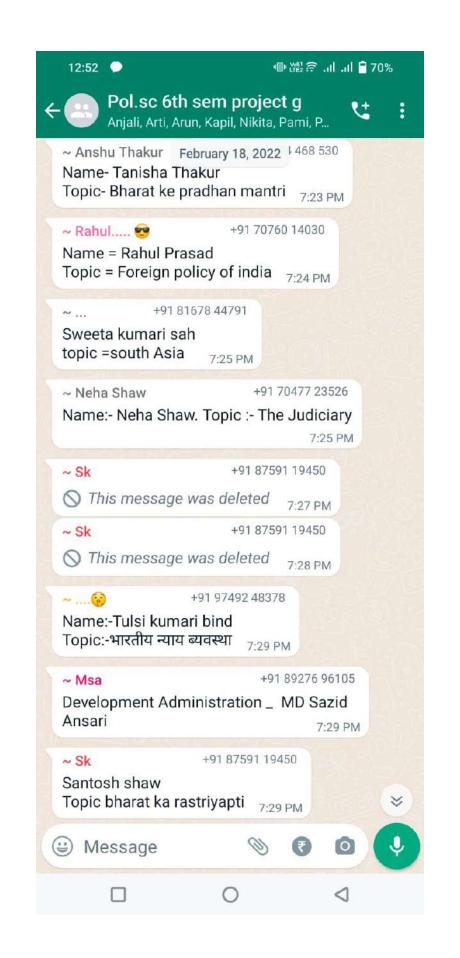


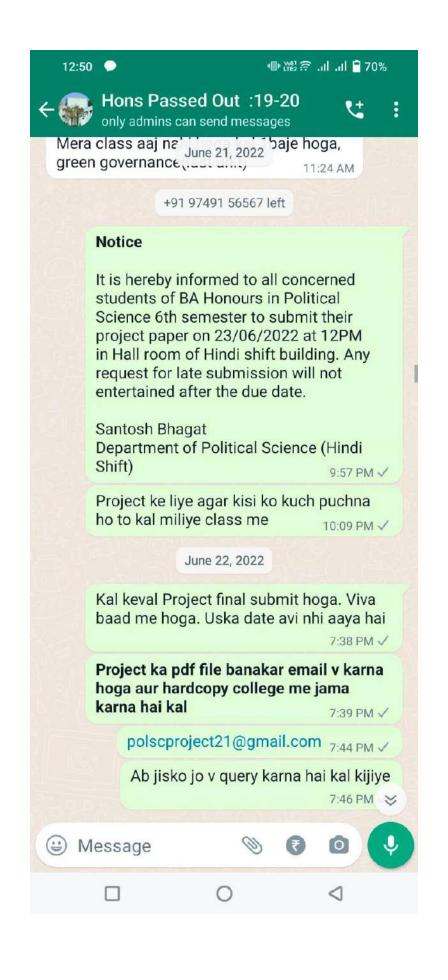


BA HONOURS IN POLITICAL SCIENCE VI SEMESTER 2022

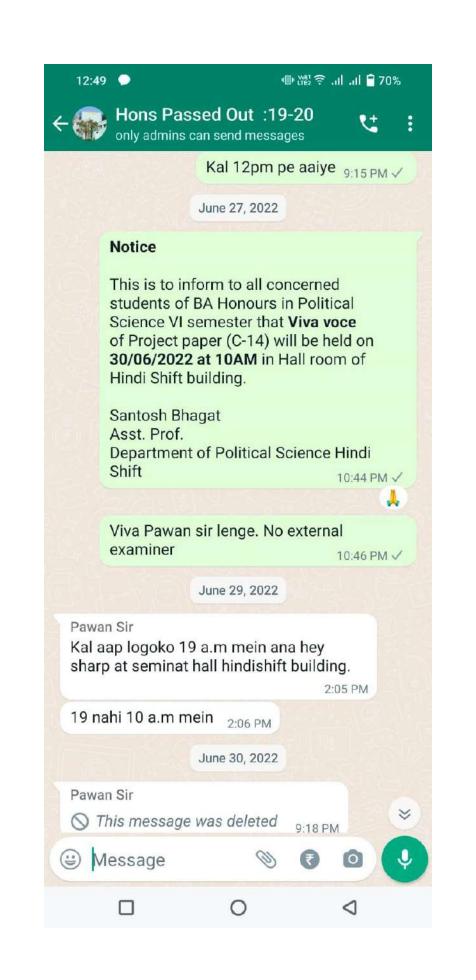




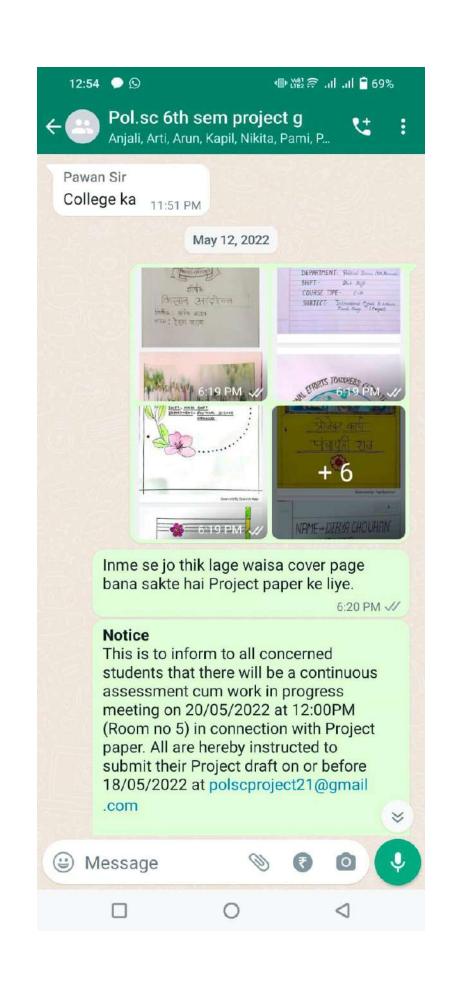












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REG NO	ROLL NO	NAME	SUBJECT(CORE-2)	Name of the Supervisor
KNUREG18116000395	1161806121034001	AANCHAL MAHATO	Project	SANTOSH BHAGAT
KNUREG18116000614	1161806121034003	ANITA GUPTA	Project	SANTOSH BHAGAT
KNUREG18116000201	1161806121034004	ANJALI SHARMA	Project	SANTOSH BHAGAT
KNUREG18116000489	1161806121034005	ANU KUMARI	Project	SANTOSH BHAGAT
KNUREG18116000760	1161806121034006	ARSHITA SINGH	Project	SANTOSH BHAGAT
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KNUREG18116000842	1161806121034008	BANDANA SINGH	Project	SANTOSH BHAGAT
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BA HONS IN POLITICAL SC 6TH SEM, 2021 (HINDI SHIFT) B .B COLLEGE (ASANSOL)

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REG . NO	NAME	MOBILE NO	SUBJECT-2
KNU19116000898	SILOCHANA KUMARI RABIDAS	7679895452	Project
KNU19116000902	TANISHA THAKUR	6294468530	Project
KNU19116000919	NEHA SHAW	6296960297	Project
KNU19116000925	MD SAZID ANSARI	9093100546	Project
KNU19116000941	PREETI SHARMA	9609620125	Project
KNU19116000942	ARUN KUMAR RAM	8597153461	Project
KNU19116000943	VANDANA JAISWAL	8617558522	Project
KNU19116000945	SUMINTRI SHAW	6296871776	Project
KNU19116000967	CHANDA KUMARI	7908505093	Project
KNU19116000981	ASHA KUMARI SHARMA	8900105212	Project
KNU19116000986	SANDHYA RAJAK	8972114200	Project
KNU19116000992	SABA FIRDOSH	8348649038	Project
KNU19116000993	KHUSHBOO MALAKAR	9775218555	Project
KNU19116000995	MONIKA RAJAK	7908739059	Project
KNU19116000998	SALEHA EKRAM	9679116811	Project
KNU19116001000	SHADIYA PARWEEN	9643098630	Project
KNU19116001003	AYUSH PANDEY	8670835216	Project
KNU19116001009	SWEETA KUMARI SAH	8293199954	Project
KNU19116001010	PRIYANKA RAWANI	9749156567	Project
KNU19116001017	AMIT HARIJAN	8617338056	Project
KNU19116001022	PAMMI KUMARI	9474485335	Project
KNU19116001043	SRIDHAR BHAGAT	7001327095	Project
KNU19116001052	PRIYA KUMARI	6294545419	Project
KNU19116001053	PRIYANKA KUMARI	8436220873	Project
KNU19116001063	RUPESH KUMAR YADAV	8927278446	Project
KNU19116001067	SHEWANI THAKUR	8509299623	Project
KNU19116001070	PAMI KUMARI	7478147776	Project
KNU19116001072	ARTI KUMARI	8918478170	Project
KNU19116001073	SUMEDHA PRASAD	8250887763	Project
KNU19116001074	NAZMA KHATOON	7029498032	Project
KNU19116001075	KARISHMA KUMARI NONIA	7602085085	Project
KNU19116001076	SIWANI KUMARI NONIA	9932474033	Project
KNU19116001079	PUJA LOHAR	8436622254	Project
KNU19116001079	USHA YADAV	7602979985	Project
KNU19116001088	SACHIN TURI	8509080661	Project
KNU19116001108	NAAZ PARWEEN	8637022938	
KNU19116001108	PRITY KUMARI NAG	6296829054	Project Project
KNU19116001110	KAPIL SHARMA	8637876038	-
			Project
KNU19116001114	ARTI KUMARI SINGH	7407959850	Project
KNU19116001116	REETIKA VERMA	6296715450	Project
KNU19116001124	RAHUL PRASAD	7076014030	Project
KNU19116001130	RESHAV PASWAN	9775422438	Project
KNU19116001133 KNU19116001136	RESHMA PANDEY	8670636240	Project
	SANDHYA PASWAN	7001503667	Project
KNU19116001138	PRITI SINGH	7047760017	Project
KNU19116001139	NIKETA PARAMANIK	8927032274	Project
KNU19116001140	ANJALI KUMARI SINGH	8927450299	Project
KNU19116001142	PRIYANGSHU SHAW	9635895799	Project
KNU19116001145	PRITI NONIA	8927894845	Project
KNU19116001146	SHIKHA KUMARI	7718751924	Project
KNU19116001147	TULSI KUMARI BIND	9749248378	Project
KNU19116001148	GANGA UPADHYAY	9749972771	Project
KNU19116001149	NANDINI KUMARI	9083173584	Project
KNU19116001151	KRITI BURMAN	9832542001	Project
KNU19116001152	TANNU PRIYA BURNWAL	8509005536	Project
KNU19116001153	NISHA KUMARI	9382176343	Project
KNU19116001154	MUSKAN KUMARI MONDAL	8961860838	Project
KNU19116001155	ANITA KUMARI SAW	9641505887	Project
KNU19116001156	VISHAL KUMAR RABIDAS	8172009686	Project
KNU19116001163	KOMAL KUMARI RAJAK	6297476431	Project
KNU19116001168	PUJA KUMARI	7479263055	Project
KNU19116001174	PRITI KUMARI HELA	7908327556	Project
KNU19116001176	PUNAM JAISWAL	7029024011	Project
KNU19116001191	PRABHAT GOSWAMI	7679929672	Project
KNU19116001203	RUKHSHAR KHATOON	7432089985	Project
KNU19116001285	ANJALI PASWAN	7908566799	Project
KNU19116001362	SANTOSH SHAW	6296943418	Project
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Name of the Supervisor Pawan Gurung



Banwarilal Bhalotia College

Constituent College of the KAZI NAZRUL UNIVERSITY, Asansol (GOVT. SPONSORED U. G. & P. G. College)

ASANSOL – 713303, WEST BENGAL (INDIA)
Department of Political Science (Hindi Shift)

Report of Project Work of Departmental Student, Session 2018-2021 and 2019-2022

Department of Political Science (Hindi Shift) successfully supervise 72 project work done by BA Honours in Political Science VI Semester students of 2018-21 session during April 2021 – June 2021 under the supervision of Pawan Gurung and Santosh Kumar Bhagat. These project work were done on the various topic, for instance World Bank, Contemporary Farmers Agitation, Discourse on Indian Secularism, Global Initiative to Address Climate Change, Local Self Governance in West Bengal, Women Empowerment among others of discipline of Political Science and its allied subject.

Report on CSIR-CMERI Training

In continuation of the MoU between Banwarilal Bhalotia College, Asansol and The Central Mechanical Engineering Institute (CMERI), Durgapur, 50 students from our college have taken training on "Analytical Techniques and Instrumentation for Water Quality Assessment" at the laboratory of the Environmental Engineering Group" at CMERI, Durgapur between June, 2021 and August, 2022.

Students were sent in two sessions – one during the winter of 2021(November 25th and 26th) and the other in the summer of 2022 (27th to 29th April). 23 students of our college had taken the training in November, 2021 and the remaining 27 students had acquired their training in April, 2022. The aforementioned training programme in association with CMERI, Durgapur is very much a part of our institution's skill development initiative. Such trainings will definitely help to augment the wet laboratory related skills of our students thereby increasing their acceptability in the job market.

The training programme was initially designed for a couple of days but on analysing the feedback from the learner's community the programme was extended to a three day schedule instead of two which gives the learners a greater acquaintance time in the laboratory. At the onset the students are taken to the MM Suri Hall at CMERI, Durgapur for their registration and refreshments post which an inaugural session is held which is often chaired by the Director of CSIR-CMERI, Durgapur (subject to his/her availability), Dr. Biswajit Ruj, Head of the EEG of CMERI, Durgapur, Dr. RR Sahoo, Principal Scientist, EEG of CMERI, Durgapur and other dignitaries. Teachers of our college who accompany the students are also invited to the inaugural programme. Henceforth the theoretical lecture sessions begin. After the lunch break the students are taken to the laboratories for practical sessions. On successful completion of the tenured training, the students are requested for their feedback and subsequently participation certificates are distributed.

In conclusion it can be aptly said that skill development will definitely help our students to gain an edge over other competitors in the job arena and hence such programmes will definitely find further incorporations in our institution's future academic policies.













BANWARILAL BHALOTIA COLLEGE

Asansol, West Bengal-713304

Session-2021-22 Zoology Field Work

Topic- Measurement of Turbidity by Secchi Disc



INSTRUCTOR- Pankaj Dutta

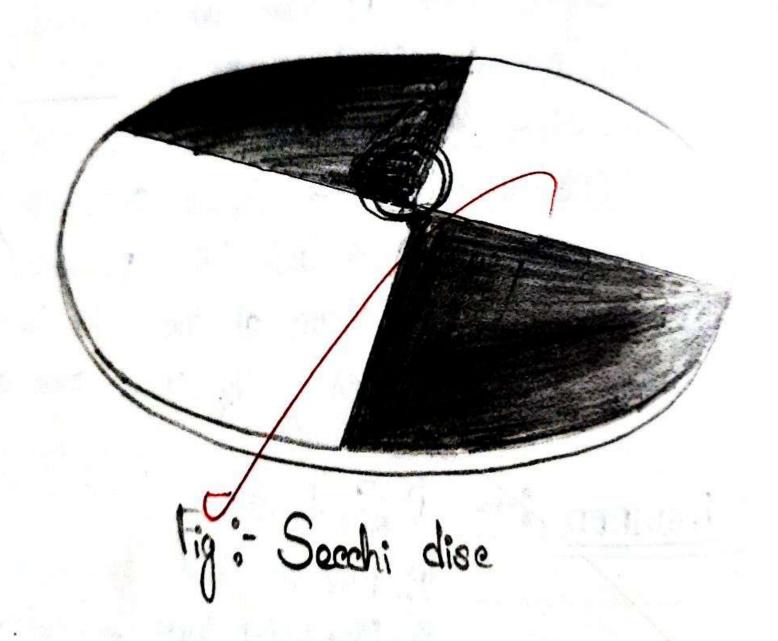
DONE BY – Jiya Sen, Ishani Roy ,Tania
Bharttacharjee, Shreejita Mukherjee, Monalisa Das,
Rima Mondal, Riya Banerjee, Srimonty Ghosh ,Ankan
Bhowmick , Shreyasi Adhikary,Manav Chatterjee
,Aniket Dawn , Debraj Mondal , Sana Parween ,
Jyotirmoy Banerjee ,Soma Ghosh , Sourakar Biswas,
Kazi Naser Rahman, Rubab Fatima , Noor Fatima
,Bushra Rahman, Rooqaiya Khatun, Anjishnu
Mukherjee , Atul kumar Lal ,Mantu Singha Babu , Dev
Khan



Page No.	
Date.	

MEASUREMENT OF TURBIDITY BY SECCHI DISC :-
INTRODUCTION: The Seeds die, as created in 1865 by the Hallan
Astronomes, Father Pietos Angelo Suchi, Ba plate white Crular
dec, 30 cm in diameter and used to measure weater transparency
as turbidity in bodies of water. The die is mounted on a pole
or line and lowered slowly down in the water. The
depth at which the dice is no longer visible is taken as a
measure of the transparency of the water. This measure is known as
the Seccle depth, and is related to wester turbidity. Since, A.
Envention, the die has also be used in a modified, maller (20cm in
damiter. Black and welite provides The manimum contract
regardless of the Colour of the light transmitted by the water
body. The diec's most easily used from a boat or a bridge.
Materials Required: -) Secolo Diec 2) Pole or Good 3) Measuring tage.
3) Measuring tape.
,
Provedure:-
i) A Good is attached to the side leach disc with black and
white quadrants.
91) Die is lowered Mouly in water until it disappears. The
depth on the Good is noted.
11) Dhe is lowered cloudy in water until it disappears. The depth on the Good is noted. 111) Sufficient time (appron · 2 min) is allowed when looking at the dise man its entiretion point for the eyes to adapt completely to the prevalling luminance level.
de mas to entinction point for the eyes to adapt completely
to the prevalling luminance level.
Teacher's Signature





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Date.	

iv) The	de E	Louised	a que	more	cent	imiter	and	then &	Moul	buston,
agash	until	et reapp	lans .	The	sund	n Larling	21	dooth i	alen	noted.
0	- Section (CALACTER)	77	N. Serbilli against ann		and the same of th	The state of the s	THE REAL PROPERTY.	Jan.	1_135-12_1	

V) Calculate the average of the depths at two points (1	
diappeasance and reappearance). This measure is know	1 2
clouth.	

RESULTS (SEICHT DISC READENES):-

Reading number	Dorth at which	Doth at while	Average Value (Suche Depth)
· · · · · · · · · · · · · · · · · · ·	28	22_	25 cm_
2	31_	25.5	28.25 cm
3	36	92	29 cm

Common depth =	25+28-25+29	= 82.25	- 27-41
	3	3	

COMMENTS:-

Hence, the turbidity of the weater is 27.41 em

P. 2013/2/21

Relevant Document for
Students Undertaking
Fieldwork in the Year
2021(UG Sem I Hons, PG
Dept. Of Zoology)

SEMESTER - I

Course Name		ECOLOGY			
Course Code		BSCH	ZOOC102		
Course Type	Core				
			Theory: 10 marks		
C D.1.'I-	66.1	CA (Continuous Assessment)	Practical: 30 marks		
Course Details	CC-1		Theory: 40 marks		
	ESE (End Semester Examination)		Practical: 20 marks		
Credits	Theory	4 + Practical 2 = Total 6 credits			

About the course :

This course will take students on a journey through the physical workings of the Earth, the interactions between species and their environments. The course highlights on some of the important aspects *viz*. growth and survival of populations and communities in different habitats, energy flow in the ecosystems, interactions between the communities, exclusion of niches and consequences of changing environment on the biodiversity.

Learning outcomes:

After successfully completing this course, the students will be able to:

- > Know the evolutionary and functional basis of animal ecology.
- > Understand what makes the scientific study of animal ecology a crucial and exciting endeavour.
- > Engage in field-based research activities to understand well the theoretical aspects taught besides learning techniques for gathering data in the field.
- > Analyse a biological problem, derive testable hypotheses and then design experiments and put the tests into practice.
- > Solve the environmental problems involving interaction of humans and natural systems at local or global level.

THEORY (CC-2)

UNIT I: An overview of Ecology, Ecosystems and Biomes (13 Lectures)

- 1. Introduction and scope of Ecology. Multidisciplinary relevance in current perspective.
- 2. Structure and function of ecosystem;
- Abiotic factors affecting survival and sustenance of organisms e.g., water, temperature, light, pH and salinity.
- 4. Role of limiting factors in survival of biotic components.
- Major ecosystems of the world: Ecological features, limiting factors, zonation and classification of organisms of fresh water and marine ecosystems.
- Introduction to Biome: Ecological features of Tundra, Desert, Savannah and Tropical Rain Forest Biomes.
- 7. Energy flow in ecosystem, food chain and food web.
- 8. Productivity and ecological efficiencies.
- 9. Mineralization and recycling of nutrients: C, N, P & S.

UNIT II: Population ecology (13 Lectures)

- 1. Ecology of populations: Unitary and Modular populations.
- Unique and group attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves.
- 3. Unique and group attributes of population: mortality, age ratio, sex ratio, dispersal.

KNU-ZOOLOGY(HONS)

- Concept of carrying capacity, Factors regulating population dispersal and growth: Exponential and logistic growth.
- 5. Population regulation: density-dependent and independent factors; r and K strategies.

UNIT III: Biotic community, characteristics and attributes (13 Lectures)

- Community characteristics: stratification; Dominance, diversity, species richness, abundance, Evenness, Similarity.
- 2. Diversity and food-web indices.
- 3. Ecotone and edge effect;
- 4. Positive interactions: commensalism, proto-cooperation, and mutualism.
- 5. Negative interactions: parasitism and allelopathy; predation and predator-prey dynamics; herbivory.
- 6. Interspecific competition and coexistence, Inter and intra-specific; abundance.
- 7. Niche concept, types, Niche overlap and Resource partitioning.
- 8. Gause's Principle with laboratory and field examples.
- 9. Ecological succession: Definition, Process, types, theories of succession.

UNIT IV: Environmental degradation; Biodiversity, Environmental movement etc. (13 Lectures)

- Environmental degradation: Environmental ethics; Pollution: Air, water and noise pollution and their control; Solid Waste management and EIA; Natural resources: Mineral, water and forest, their significance and conservation.
- Biodiversity: Types and Hotspots of biodiversity. Threat and Major drivers of biodiversity.
 Conservation strategies; Biodiversity status in India, monitoring and documentation; Biodiversity mapping using GPS, GIS and remote sensing. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value. Application of ecology in management and Conservation programmes.
- Environmental movement: Role of gender and cultures in environmental conservation. Environmental
 movements: Bishnois. Chipko, Silent valley, Big dam movements. Environmental education and
 public awareness, Green bench.

PRACTICAL (CC2)

- 1. To measure microclimatic variables viz., temperature, humidity and light conditions in a microhabitat.
- 2. Making an ecosystem in a wide-mouthed bottle.
- 3. Constructing a food web by observing organisms from a given area.
- 4. Preparing an essay (write up) based on few ecology related publications.
- 5. Studying the impact of herbivore on plant species (planted in pots under specific conditions).
- Constructing distribution map of species of a genus through GPS by estimating the coordinates (virtual demonstration).
- 7. Estimation of the ratio of the producers and consumers.
- 8. Determination of pH, and Dissolved 02 (Winkler's Method) and Free CO2 in water.

KNU-ZOOLOGY(HONS)

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CBCS-LOCF-2020-21

- 9. Preparation of nested quadrate and estimation of effective quadrate size.
- 10. Study of an aquatic ecosystem: Major Phytoplankton (Up to Family) and zooplankton (Up to Genus).
- 11. Group discussion or Seminar presentation on one or two related topics (Given Below).
- 12. Field study in a biodiversity rich area like national park, biosphere reserve, sea shore or nearby places.