

Government General Degree College, Mangalkote
[Affiliated to The University of Burdwan]

Green Audit



Environmental Awareness Committee
In Collaboration
With
IQAC, GGDC Mangalkote


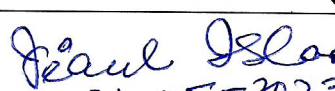
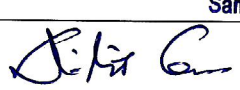
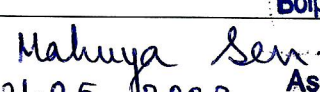
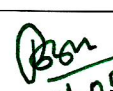
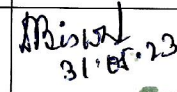
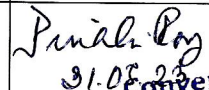
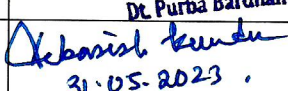
Dr. Pradipta Kumar Basu
OFFICER IN CHARGE, W.B.E.S.
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Dt. Purba Bardhaman, West Bengal- 713132



GOVERNMENT OF WEST BENGAL
GOVERNMENT GENERAL DEGREE COLLEGE, MANGALKOTE
GREEN AUDIT REPORT

Date of Audit: 31/05/2023

Audit Team:

Member of Audit Team	Signature with seal
Dr. Chowdhury Habibur Rahaman, Professor of Botany, Visva-Bharati University, Santiniketan, West Bengal (EXTERNAL MEMBER)	 31.05.2023 Chowdhury Habibur Rahaman প্রেসার/প্রফেসর বনরপতি বিহারি বিশ্ববিদ্যালয় Department of Botany ফার্মাকোলজি, শান্তিনিকেতন Visva-Bharati, Santiniketan PIN- 731235
Dr. Jiaul Islam, Associate Professor, Department of Environmental Science, Sambhu Nath College, Labpur, Birbhum, West Bengal (EXTERNAL MEMBER)	 31-05-2023 Associate Professor Department of Environmental Science Sambhu Nath College, Labpur, Birbhum
Dr. Dilip Gorai, Associate Professor of Chemistry, Bolpur College, Birbhum, West Bengal (EXTERNAL MEMBER)	 31/05/2023 Dr. Dilip Gorai Associate Professor Department of Chemistry Bolpur College, Birbhum - 731204
Dr. Mahuya Sen, Associate Professor of Geography, Birbhum Mahavidyalaya, Suri (EXTERNAL MEMBER)	 31.05.2023 Associate Professor Department of Geography Birbhum Mahavidyalaya Suri, Birbhum
Dr. Pradipta Kumar Basu, Officer-in-Charge, Government General Degree College, Mangalkote (INTERNAL MEMBER)	 31.05.23 Dr. Pradipta Kumar Basu OFFICER IN CHARGE, W.B.E.S. Government General Degree College, Mangalkote Dt. Purba Bardhaman, West Bengal- 713132
Dr. Debraj Biswal, Coordinator, IQAC, Government General Degree College, Mangalkote (INTERNAL MEMBER)	 31.05.23 Coordinator, IQAC Govt. General Degree College, Mangalkote
Mr. Pinaki Roy, Convener, NAAC Committee, Government General Degree College, Mangalkote (INTERNAL MEMBER)	 31.05.23 Convener, NAAC Committee Government General Degree College, Mangalkote Dt. Purba Bardhaman, West Bengal- 713132
Dr. Debasish Kundu, Green Audit Coordinator, Government General Degree College, Mangalkote (INTERNAL MEMBER)	 31.05.2023 DR. DEBASISH KUNDU Assistant Professor in Chemistry (WBES) Govt. General Degree College, Mangalkote Purba Bardhaman, WB, 713132

FORMAT OF GREEN AUDIT: QUESTIONNAIRE

1. Concept of Environmental Audit or Green Audit:

Environmental audit or Green audit is a general term that can reflect various types of evaluations intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. In this way they perform an analogous (similar) function to financial audits. The term “Green” means eco-friendly or not damaging the environment. This can acronymically is called as “Global Readiness in Ensuring Ecological Neutrality” (GREEN). “Green Auditing”, an umbrella term, is known by another name “Environmental Auditing”.

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The ‘Green Audit’ aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It is based on exercises that can help to measure the risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps to monitor the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

2. GOALS OF GREEN AUDIT:

- The objective of carrying out Green Audit is to secure the environment and cut down the threats posed to human health.
- To make sure that all rules and regulations concerning the environment are taken care of.
- To assess the quality of the water and soil in the GGDC Mangalkote campus.
- To monitor the energy consumption pattern of the college.
- To quantify the liquid and solid waste generation and management plans on the campus.
- Providing a database for corrective actions and future plans.
- To avoid the interruptions in the environment that are more difficult to handle and their correction requires high cost .
- To suggest the best protocols for adding to sustainable development
- To identify the gap areas and suggest recommendations to improve the Green Campus status of the GGDC Mangalkote.

3. Benefits of Green Audit:

- Would help to prepare a plan to protect the environment.
- Recognize the cost-saving methods through waste minimization and management.
- Point out the prevailing and fourth-coming impacts on the environment.
- Ensures conformity with the applicable laws.
- Empower the organizations to frame a better environmental performance.
- It portrays a good image of an institution which helps building better relationships with the group of interested parties.
- Promotes the alertness for environmental guidelines and duties.

4. Purpose of Green Audit:

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology include: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

'Green Audit' aims to analyze the environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. Green audit is assigned to the criteria 7 of NAAC.

There are main three pillars i.e., zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO₂ emission, energy and water use, while creating an atmosphere where students can learn and be healthy. The college has to work on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

5. Methodology

In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

- ❖ Water management
- ❖ Energy Conservation
- ❖ Waste management
- ❖ E-waste management
- ❖ Green area management

A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use and method(s) of conservation. Water is used for drinking purpose, canteen, toilets, laboratory and gardening. Loss of water must be checked, neither by any leakages, nor by over flow of water from overhead tanks. The green audit practically involves use of renewable sources, conservation of the energy, rain water harvesting program, and efforts of carbon neutrality, plantation of trees, E-waste management and hazardous waste management.

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Audit Report

1. GENERAL INFORMATION

1.1 Year of Establishment of college: 2015

1.2 History behind the establishment of the college:

Government General Degree College, Mangalkote, was established in 2015, under the auspices of the Higher Education Department, Government of West Bengal, affiliated to The University of Burdwan, to provide subsidized higher education to the aspirants in the rural countryside. The faculty members of the college belong to the prestigious West Bengal Educational Service. The first batch of students was admitted in the academic session 2015-16. They were admitted in B. A. Honours Programmes in five humanities and social science disciplines, namely, Bengali, English, History, Political Science and Sociology, and in the B. A. General programme. In academic session 2016-17, Science departments were introduced and students were admitted in B. Sc. Honours Programme in Zoology with Botany and Chemistry as general subjects. Over time, the faculty members posted in the college has gradually increased through new appointment and transfer from other government colleges.

The objective of the college is to ensure realization of the visionary goals of the Chief Minister of West Bengal through efficient and empathetic curriculum delivery, steadfast monitoring of learning outcome and mentoring of students. Although the college is barely eight years old, through the concerted effort of all stakeholders – teachers, students, office and non-office personnel, under the leadership of the Principal or Officer-In-Charge, it has made its presence felt in the intellectual landscape of Purba Bardhaman district with higher education aspirants from adjoining villages and towns showing interest to pursue a bachelor's degree at the college. At this point, the institution is in a nascent phase of development, and hence there is not much to narrate about its history. History is nevertheless being made within the august premises of this college through the will and expertise of the head of the institution, teachers and non-teaching staff and the diligence and inquisitiveness of the students, and most importantly, the inspiration and generous funding from the Government of West Bengal.

1.3 Location of the College:



[<https://earth.google.com/web/@23.56548648,87.96983072,46.45922413a,1634.34783715d,35y,178.64139911h,0t,0r/data=OgMKATA>]

1.4	Total campus area	12141 SQM
1.5	Total built up area	914.352 SQM
1.6	Total open space area	10626 SQM
1.7	Total green area	6065 SQM

1.8.1 Whether the college is implementing the Green Policy for the first time: "yes", "no" and "not applicable"(mention date/month/year):

Response: Yes, the college has conducted internal green audit under the Environmental Awareness Committee of GGDCM and the annual report is based on the records reviewed during the audit. Now the external audit for environment is awarded on 31st May, 2023 for a systematic way of monitoring the environmental initiative, taken by college for environment protection.

1.8.2 Whether green audit is followed annually, if so, please produce the year-wise recommendations of the auditor along with report (as Annexure): "yes", "no" and "not applicable"

Response: Not applicable

1.9 Whether college has constituted the "College Environmental Committee", "yes", "no" and "not applicable" (if so, give the details of it)

Response: College has constituted "Environmental Awareness Committee" involving faculty members and students of different departments along with non-teaching staffs of this college.

1.9.1 Name of the Committee members

Name of the Committee Members	Designation	Signature
Dr. Debasish Kundu (Assistant Professor, Chemistry)	Coordinator	<i>Debasish Kundu</i>
Dr. Akash Kedia (Assistant Professor & HOD, Botany)	Jt. Coordinator	<i>Akash Kedia</i>
Dr. Raj K. Singh (Assistant professor, Botany)	Member	<i>Raj K. Singh</i>
Dr. Debraj Biswal (Assistant Professor, Zoology)	Member	<i>Debraj Biswal</i>
Dr. Dinesh Maity (Assistant Professor, Chemistry)	Member	<i>Dinesh Maity</i>
Mr. Pinaki Ray (Assistant Professor, Sociology)	Member	<i>Pinaki Ray</i>
Mr. Sumit Shankar (Lower Division Clerk)	Member	<i>Sumit Shankar</i>
Mr. Rana Dutta, (Data Entry Operator)	Member	<i>Rana Dutta</i>
Sayan Ghosh (Student)	Members	<i>Sayan Ghosh</i>
Afroja Sultana (Student)		<i>Afroja Sultana</i>
Sampad Singha (Student)		<i>Sampad Singha</i>
Arpita Ghosh (Student)		<i>Arpita Ghosh .</i>

1.9.2 Number of meetings conducted so far:

Response: The committee conducted two meetings in the session of 2021-22 on 02.12.2021 and 08.03.2022.

1.9.3 Resolution of the meetings:

Response:

- 1) Environmental Awareness Committee will work on the “Water and Energy Conservation” practices in the College.
- 2) Committee will organize different environmental activities like environmental awareness programmes, rational utilization of water, energy, sanitation etc.
- 3) Committee has decided to make artificial nests for birds that visit our green campus for biodiversity conservation.
- 4) Committee members will monitor tending, thinning and weeding programmes for proper health of different tree species.
- 5) Committee has decided to establish MoU with different NGOs at national and International level for collaborative works on conservation as well as environmental protection.
- 6) Committee has decided to arrange awareness campaign among students and staff members about solid waste minimization, reduction of carbon footprint and water footprint.
- 7) Faculty members of Botany and Zoology will guide students for conservation of insects, birds and plant diversity in our college campus.
- 8) NSS committee will organize Tree Plantation Programme in every year along with faculties and students of this college.
- 9) Separate Dustbins for solid and liquid waste should be placed in every floor and campus area of this college.
- 10) Committee will take initiative to control the energy consumption in this institute by proper planning and also aware students and staffs about the importance of renewable resources of energy in place of non-renewable resources of energy.
- 11) Committee will work on building a rain water harvesting set up in this college.
- 12) The faculties of Botany and Zoology will take initiative to build a Vermi-compost pit in this college with the help of students and staffs.
- 13) The committee has decided to involve vendors for managing the E-Waste and repair and reuse of different electronic gadgets and computers including different lab instruments to reduce E-waste.
- 14) Committee has decided to make task force for proper collection, disposal of solid and liquid waste that comes from different sides of the college.
- 15) Committee will start different certificate courses for students on environmental awareness.

1.9.4 Action taken by the Committee

Response:

- 1) Involved stakeholders to make the Go Green Campus initiative function all throughout the year.
- 2) Established a Green Campus Environmental Ethics Awareness campaign.
- 3) Identified the environmental impacts to target specific area for improvements.
- 4) Organized awareness programs for the students, faculties and staffs.
- 5) Set up a Green campus mission based on the statement of principle.
- 6) Established garden with plants of medical importance.
- 7) Established a vermicomposting unit in college.
- 8) Awarded student for proper use of waste management system.
- 9) Established a rain water harvesting plant.
- 10) Purchased only energy efficient computers and other electronic systems.

1.9.5 Future programmes of the Committee

Response:

- 1) Environmental Awareness Committee and Eco-club including NSS units work on water and energy conservation practices in college premises as early as possible.
- 2) Committee has decided to establish a bio-floc in the near future.
- 3) Establishing more MoUs with different NGOs at national and International level for collaborative works on environmental protection.
- 4) Committee has decided to implement add on courses for students on Environmental Advocacy, Green Technology, Nursury Technology, Gardening, Ecotourism and Sustainable Development.
- 5) Committee will monitor different environmental activities like awareness programmes, rational utilization of water, energy, sanitation , hygiene and use of bio-fertilizers and bio-stimulating pest control systems.

1.9.6 Policy enforcement strategies

Vision:

The college recognises that in pursuing its strategic objectives, not least in relation to research and teaching, it has a responsibility towards, and should aim to protect and nurture the environment. The college aim to ensure sustainable use of resources and prevent the damage of the natural attributes in college by prper controlling the overall activities. The aims and objective of the college has always been for safeguarding the environment and it applies to all land, premises and activities within the control of the college.

Aims and Objectives:

Environmental management:

- To implement a carbon management strategy, including the efficient use of energy.
- To ensure the uptake of low carbon technologies in buildings and equipment.
- To promote sound environmental management policies and practices throughout the College.
- To reduce and, where practicable, prevent pollution of all kinds.
- To adopt targets for improving environmental performance.
- To reduce greenhouse gas emissions.

Water:

- ❖ To make efficient and environmentally responsible use of water, including identifying opportunities for water reuse.

Procurement:


- ❖ To work with suppliers to promote sustainable resource management practices.
- ❖ To promote life cycle thinking in the procurement of goods and services.

Waste Reduction and Recycling:

- 🗑️ To set and achieve targets for reducing resource use.
- 🗑️ To minimize the adverse environmental impacts of the decommissioning and disposal of college assets.
- 🗑️ To increase the rate of recycling of all appropriate materials based on life-cycle principles.
- 🗑️ To implement sustainable resource management practices, based on reduce, reuse and recycle principles.

Transport:

- 🚗 To develop and implement a college strategy based on sound environmental and sustainability principles.
- 🚗 To implement sustainable transport practices with the aim of achieving the carbon reduction targets of the College.


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College Estate:

- ✚ To raise awareness of staff and students of the College regarding environmental impact, activities and performance and good practice.
- ✚ To require a sustainable construction plan for any new College development and refurbishment project.
- ✚ To manage the College estate with a view to enhancement of biodiversity wherever possible.

Awareness and Training:

- ✚ To communicate internally and externally the College environmental objectives and performance.
- ✚ To provide appropriate environmental educational programmes for staff and students.
- ✚ To encourage and facilitate feedback and suggestions on ensuring good practice.

Evaluation of Environmental Policy:

- ✚ To undertake a regular review of environmental management procedures and activities to ensure suitability, adequacy and effectiveness.

Responsibilities:

The Environmental Awareness Committee and the NSS services are responsible for ensuring compliance with College Environment Policy within their area of control. The Environmental Committee will actively monitor the performance of college and departments in the implementation of the aims and objectives of this Policy in the activities under their control. Individuals are required to abide by rules and requirements made under the authority of this policy.

Question	Answers
1.10 Whether college has conducted any awareness/responsibility programme among the staff members:	Yes
1.11 Whether all the departments/teachers/non-teaching members/students are aware about the need of the environmental protection and audit: "yes", "no" and "not applicable"	Yes
1.12 Whether college has involved the students as volunteers in greening programmes: "yes", "no" and "not applicable"	Yes
1.13 Whether construction/demolition/repairing are in compliances with green standard: "yes", "no" and "not applicable"	Yes
1.14 Whether college has conducted any workshop/seminar/lecture on environmental awareness programme inside and/or outside the campus: "yes", "no" and "not applicable"	Yes
1.15 Whether the institute has department of Law/Environmental Science/3-Year degree Course/Course curriculum	Yes
1.16 Whether college provides any community services, if so, give details (as Annexure): "yes", "no" and "not applicable"	Yes, College provides different community services in the local area of our college.

1.17 Whether the students are aware about the use of medicinal plants (any lecture/seminar/conference organized on it): "yes", "no" and "not applicable"

Response: Yes, Students are aware about the importance of medicinal plants. Student seminar and lecture was organized by the department of Botany and Chemistry to develop the knowledge of ideas related to the usage of medicinal plants as well as the evolution of awareness that have increased the ability of pharmacists and physicians to respond to the challenges and services for the protection of mankind.

a) Vector borne disease awareness:

The NSS unit of the college has organized the Vector borne disease awareness program on 8th February, 2022 at Katwa Municipality (Katwa, West Bengal) surrounding area. Vector borne diseases specially Dengue takes many lives each year and the aim of the program was to aware people about the vector borne diseases and the measures for controlling such diseases through demonstrations.



b) Campus cleaning program:

The college has organized campus cleaning program by NSS on 21st September, 2022 at Singot Rural Hospital campus (Singot, Purba Bardhaman; 1 km from College). Several volunteers took active part in the cleaning program of the Hospital campus and explained the people about the value of hygiene in the public places like Hospital.



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c) Anti plastic campaign:

The college has organized Anti plastic campaign by NSS on 11th November, 2022 along the riversides of Ganga river at Katwa, West Bengal (National Waterways No. 1). The aim of the program was to minimize the plastic pollution in water bodies and to aware people the ill effects of plastics to the aquatic lives and aquatic ecosystem.



d) Sound pollution awareness programme:

Sound pollution adversely affects the lives of millions of people. Problems related to noise include stress related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity. Sound pollution is a major concern near the public places like School, Colleges, Hospitals etc. For this, NSS unit of the college has organized sound pollution awareness programme on 4th March, 2023 at Singot Rural Hospital of the locality. The aim of the program was to aware the vehicle drivers about the effects of high sound frequency near the hospital area.



1.18 Comments on the following:

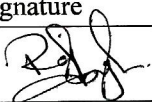


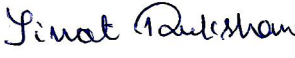

1.18.1 Plantation program: Y / N

Response: Yes, Plantation program is organized every Year, by Eco club, environmental awareness committee and NSS.



1.18.2 Formation of Natural club/Eco club: Y / N

Response: Yes, Eco Club has been formed in GGDC Mangalkote, under the supervision of Dr. Raj Kumar Singh, Convener (Assistant Professor in Botany) on 8th June, 2022. The main aim of establishing the Eco club is conserved to create eco-friendly environment and awareness of bio-diversity Conservation and local environmental issues among the students to create cleaned and green. Name of members of Eco club are giving in the following table.

Sl. No.	Name and Designation of Committee members	Signature
1	Dr. Raj Kumar Singh (Convener), Assistant Professor in Botany	
2	Dr. Animesh Mondal (Joint Convener), Assistant Professor in Zoology	 31.05.23
3	Mr. Debabditya Dutta (Member), Assistant Professor in Sociology	 31.05.23
4	Ms. Tinat Rukshana (Member), Assistant Professor in Political Science	 31.05.23
5	Ms. Moumita Mazumder (Member), Assistant Professor in Sociology	 31.05.23

1.18.3 Management of natural resources, wildlife, conservation of species: Y / N

Response: Yes, Natural Resources include the entire natural environment that is essential and useful to human beings. Management of natural resources are actually stocks of nature like soil, minerals, water, coal, forest and more but because of the increasing population and technological development, our natural resources are getting polluted and depleted. In these circumstances Environmental committee, Eco Club and NSS jointly entities the following steps:

- Plantation.
- Conservation of medicinal plants.
- Vermi-compost.
- Management of plastics containing garbage.

1.18.4 Any project sponsored by national funding agency/NGO, independent project related to environmental issues: Y / N

Response: No

1.18.5 Is there any incidence of burning of plastics containing garbage within the campus for necessary reduction: Y / N

Response: NO, for the reduction of plastic containing garbage college authority especially environmental committee and NSS collected plastic containing garbage from different sites of college campus and delivered to Kandi Municipality for recycling.

1.18.6 Celebration of 5th June, Ozone day, Earth Day etc.: Y / N

Response: Yes, World Environmental day is organized every year on 5 June in our college campus with different programmes like plantation, cleaning college campus and collection of non biodegradable waste material awareness programme about environmental pollution.

1.18.7 Number of field visits/survey records: Y / N (if Y number)

Response: No


1.18.8 Campus biodiversity register

Response: No

1.19 General aspects (express in statements)

Response: The College caters to a biodiversity register in order to assess the existing status of the biodiversity and to monitor the existing status of the different flora and fauna of the campus. The register also tries to maintain the other issues related to biodiversity of the campus in the related issues.

Aspects	Discuss About
1.19.1 Campus cleanliness	The campus cleaning is the most cultivated process as we believe. "Cleanliness is the next to godliness". The entire process is executed with the mutual collaboration of NSS, Eco Club and other wings for having the pleasure of clean, green and plastic-free eco-friendly campus.
1.19.2 Rainwater harvesting	Rain water harvesting plant was set-up in the month year 2022. The plant has been maintained by the Dept. of Chemistry , Zoology and Botany
1.19.3 Solar street lamps	No,Solar Street lamps are yet to be executed but future planning prospects to be exercised in the near future.
1.19.4 Carbon dioxide neutrality on the campus by developing greenery	The Carbon neutrality is being exercised by the mass afforestation & fruition programmes as a part of the celebration of the different days related to the issues of carbon neutrality.
1.19.5 Man-made nest to attract some birds to maintain ecological balance	Yes, we have installed amber of man-made nests along with the provision of water facilities of the birds visit our campus during the different seasons
1.19.6 Training on vermicomposting	Yes, Vermi-compost pit is present, and Vermicompost training is also conducted.
1.19.7 Restriction in use of plastic and plastic products	Yes, our campus is a plastic free zone and use of plastic bags are strictly prohibited. Jut bags are rather used in side of campus. Garbages made of plastic is collected in separate dustbin or storage .
1.19.8 Culture of some ducks, swans etc., for scenic beauty in pond or any water body resources (if available)	No, ducks, swans etc., for scenic beauty in pond are not yet to be executed but future planning prospects to be exercised in the near future.
1.19.9 Green monitoring by green committee/volunteers/team	The Green committee along with the green volunteers also gives attention for monitoring the green ambience around the college campus by exercising the different parameters in order to maintain a sustainable ecosystem.
1.19.10 Celebration of 'No vehicle Day' on a particular day	Yes
1.19.11 Dams inside the campus to meet the demand for water	No
1.19.12 Installation of fire safety instruments in all the buildings/departments	Yes
1.19.13 Toilets/separate toilets for differently abled students	One separate toilet has been designed and developed in order to cater the need of the differently able students along with the designed ramps for their smooth running around the campus as far as possible.


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1.20 Over all noise level

Sl no.	Inside campus area	Outside campus	Class room	Lawn	Office	Laboratory	Canteen
12.07.2022	70.5	55.0	58.2	70.1	54.2	49.8	53.4
13.09.2022	68.1	55.3	56.9	68.4	56.1	50.2	54.0
10.01.2023	68.8	55.6	58.7	70.2	56.8	52.2	52.8

1.20 Is there any device (preferably HVS: High Volume Sampler) for measuring ambient air quality in the campus (if so, pl mention the data month wise): **"yes", "no" and "not applicable"**


Response: No

2. WATER MANAGEMENT

‘Water management is the control and movement of water resources to minimize damage to life and property and to maximize efficient beneficial use.

Questionnaires and Response:

Question	Response
2.1 Whether college has an efficient and hygiene water storage mechanism to minimize the loss of water during storage "yes", "no" and "not applicable"	Yes, College takes necessary steps to maintain efficient and hygiene water storage mechanism to minimize the loss of water during storage.
2.2 Whether college is using water filter with RO, Aqua Guard and/or large water filter with cooler at the strategic locations in the college. If so, are they under AMC: "yes", "no" and "not applicable"	Yes, College use water filter with RO, One large water filter for consumption iron for drinking purpose.
2.3 Whether college has its own mechanism in repairing of water leakage: "yes", "no" and "not applicable"	No, Still now college does not arrange own mechanism in repairing of water leakage
2.4 Is there any rainwater harvesting unit in college: "yes", "no" and "not applicable" (if so, what are the uses of this water:)	Rain water harvesting plant was set-up in the month of October- November 2016. It was further modified on December 2022. The plant has been maintained by the Dept. of Chemistry. The rain water used for following purpose: a) It is used as distilled water for chemistry, Botany and Zoology practical purpose. b) It is used for general toilet users.
2.5 Whether college has developed any reuse and recyclable of water system: "yes", "no" and "not applicable"	No
2.6 Is there any scope of measurement of water quality parameters used in hostel, lab, office, canteen, tap water (if so, parameters: pH, EC, TDS etc.)	Chemistry and Botany jointly analyses water and measurement the following parameter like pH, EC, OD, total dissolve iron and total hardness of water which are given in following Table. 1
2.7 Lab-wise water consumption (lt/d) Chemistry, Zoology, Botany	Chemistry 20 liter distilled water for practical purpose and 40 liter tap for cleaning


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		purpose
	Botany	15 liter distilled water for practical purpose and 35 liter tap for cleaning purpose
	Zoology	20 liter distilled water for practical purpose and 40 liter tap for cleaning purpose
2.8 Whether college has sufficient/adequate drainage system: "yes", "no" and "not applicable"	College made sufficient draining system for passing excess or overflow water.	

Sl no.	Parameters	Sample-1	Acceptable Limit	Permissible Limit
	pH	7.56	6.5-8.5	6.5-8.5
	Total Hardness in ppm	230	200	600
	Calcium(mg/L)	40	75	200
	Magnesium (mg/L)	22	30	100
	Iron (mg/L)	0.8	0.3	0.3
	Arsenic (mg/L)	BDL	0.01	0.05

3. ENERGY CONSERVATION

3.1 Reduction of energy consumptions, especially fossil fuel energy

3.1.1 Total electric consumption amount : 16872 KWH/Yr

3.1.2 Average electrical consumption in a month: 1406 KWH/month

3.1.3 Total No. of

i)LED : 0


ii) CFL : 12

iii) Tube lights: 403

iv) Incandescent lamps:0

v) Fans : 202



vi) Air conditioners: 29


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Questionnaires and Response

Question	Response
3.1.4 Whether college has any provision/choice of renewable and carbon-neutral electricity options: "yes", "no" and "not applicable"	No.
3.1.5 Whether college has planned to install solar panels: "yes", "no" and "not applicable" (if so, Project installed/working: Date/Month/Year)	Yes, College has planned to install solar panels. Application for installing Solar panels has been forwarded to the PWD .
3.1.6 Whether college has efficient water heating system: "yes", "no" and "not applicable"	Water heating system is present in each laboratory for practical purposes.
3.1.7 Whether the staff members of all sectors are concerned in turning off electrical appliances when not in use in both commercial and residential area: "yes", "no" and "not applicable"	Yes

3.1.7 Is there any monitoring system – like put off the main switch where there is no need of electricity? "yes", "no" and "not applicable"	Yes		
3.1.8 Whether the users follow the appropriate and measurable targets for a reduction of energy, such as, computer, printers, electrical equipment when not in use: "yes", "no" and "not applicable"	Yes		
3.1.9 Is there any options for equipment’s running on standby mode: "yes", "no" and "not applicable"	Yes, Computer and other instrument in practices.		
3.1.10 Whether college has taken initiative to purchase efficient and environmentally sound appliances in order to fulfill the green budget: "yes", "no" and "not applicable"	Yes		
3.1.11 Whether college has its own mechanism in repairing of electrical fault: "yes", "no" and "not applicable"	No		
3.1.12 Whether the class rooms are with sufficient illumination in day time and ventilation: "yes", "no" and "not applicable"   Dr. Pradipta Kumar Basu OFFICER IN CHARGE, W.B.E.S. Government General Degree College, Mangalkote Dt. Purba Bardhaman, West Bengal- 713132	Number of lights & fans in class room (average):	Small rooms	Light: 5 Fan: 2
		Large rooms	Light: 6 Fan: 4
	Use of light & fans in the day time (average hours):	Light: 2 hrs Fan : 6 hrs	
	Number of windows per class:	Small rooms	2
		Large rooms	4
	Natural light source in day time (in hours) (average per class):	6 hrs	
3.1.13 How many (%) e-notice generated by the college for academic/administrative purposes in a month.	90%		
3.1.14 How many (%) paper-notice generated by the college for academic/administrative purposes in a month	10%		
3.1.15 Total number of computer, printer, Laptop, Xerox machine	Computer	25	
	Printer	22	
	Laptop	1	
	Xerox machine	2	
3.1.16 Whether college has organized lectures on energy conservation in order to give awareness to the students: "yes", "no" and "not applicable"	Yes		

3.2 Energy conservation strategies

Question	Response
3.2.1 Whether the architectural design for college is based upon use of natural lighting & ventilation, to save extra power for bulbs and fans: "yes", "no" and "not applicable"	No
3.2.2 Whether florescent bulbs are replaced with CFL bulbs/LEDs: "yes", "no" and "not applicable"	Not yet done

3.3 Minimize the use of unsustainable transport


Question	Response
3.3.1 What are the available/maximum transport facilities used by the staff members/students etc., - mention the number (in average per day):	Maximum student used Bicycle for their transport to arrive College; Staff members use motorcycle and e-rickshaw.
3.3.2 Whether college has any common car sharing/car pool among the students and faculty: "yes", "no" and "not applicable"	No

4.WASTE MANAGEMENT

Waste management is the process and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process and waste related laws, technologies, economic mechanisms. Waste can be solid, liquid, or gases and each type have different methods of disposal and management. In our campus, College mainly manages solid (degradable and non degradable), liquid, chemical and biological waste.

4.1 Maximization of the process of wastes & minimization of non-renewable refuse

Question	Response
4.1.1 Is there any method of segregation of waste materials?"yes", "no" and "not applicable"	<p>Yes, on the basis of waste segregation, waste is identified and applicable" classified of the following categories:</p> <p>Dry waste: Refers to all items that are not considered wet/soiled items. This includes both recyclable and non-recyclable materials. Dry waste includes items such as bottles, cans, clothing, plastic, wood, glass, metals and paper.</p> <p>Wet waste: Refers to all items that are organic like food items, soiled food, hygiene products, yard waste, tissues and paper towels, as well as any other soiled item that would contaminate the recyclables.</p> <p>Sanitary waste: Refers to all liquid or solid waste originating solely from humans and human activities. (Can also include items from medical waste).</p> <p>E-waste: Refers to all kinds of electronic waste.</p> <p>Inert waste: Refers to waste items that are neither chemically or biologically reactive nor decompose</p>


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	easily.
4.1.2 Total amount of solid waste generated in the campus (including tree droppings & Lawn wastes) Total number of staff per capita production per day	5 kg
4.1.3 Whether college arrange any workshop/seminar/conference for awaring the students/staff for specific arrangements for recyclable wastes: "yes", "no" and "not applicable"	Yes
4.1.4 Whether college follow specific disposal method for solid or liquid waste in specific manner: "yes", "no" and "not applicable"	Yes
4.1.5 Whether the recycling/collection facilities are provided by the city Municipality and/or private suppliers (including glass, white plastic bottle, printer cartridges, cardboard, furniture, plastics, thermocol, waste papers, electrical goods & alliances, electronic gadgets, instruments, equipment, packing materials): "yes", "no" and "not applicable"	Yes
4.1.6 Whether college has any composting ground/vat or any collection unit etc.: "yes", "no" and "not applicable"(if yes, what is the percentage of waste undergone composting and the final use of the products)	No
4.1.7 Is there any mechanism of treatment/uses of domestic influent in the college campus (if so, what is the capacity of treatment plant/composting etc.): "yes", "no" and "not applicable"	No
4.1.8 Whether the cleaning products used by the college staff are ecofriendly and under the COSHH (Control of Substances Hazard to Health) regulations: "yes", "no" and "not applicable"	No
4.1.9 Whether the college is using fertilizers, pesticides for any purposes, if so, amount used per month and places of uses	No

4.1.10 Minimize use of chemical pollutants

Sl No.	Department	Name of the waste			Total (a+b+c)	Characteriza tion(if any)	Method of disposal	Agency if any
		Chemical (a)	Biological waste (b)	Microbial waste (c)				
1	Chemistry	Toxic metal compounds and solvents	NIL	NIL	70-80 gm/month and 5 litre	Heavy metals	Septic Tank	No



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2	Zoology	Toxic metals, Solvent and Acids	Dead Specimen	Bacteria, Fungus	30 gm + 3 litre + 500 gm		Septic Tank	No
3	Botany	Toxic metals, Solvent and Acids	Dead Specimen	Nil	10 gm + 3 litre +		Septic Tank	No

4.1.11 Records of dustbins/collection bins inside the campus

Sl no.	Location of dustbin	No. of dustbins			Quantity of collection (per day)	Disposal time	Cleaning by ecofriendly product Y/N
		Biodegradable	Non-biodegradable	Plastic waste			
1	Each Department	1	1	1	1 kg	10.45 am	Y
2	Office	1	1	1	300 gm	10.30 am	Y
3	Library	0	0	1	500 gm	11.00 am	Y
4	Open Space	2	2	4	2 kg	9.30 am	Y

5. E-WASTE MANAGEMENT

Comments	Response
5.1 Quantity of e-waste generated:	10
5.2 Number of cartridge used month-wise:	8
5.3 Number of cartridge disposed in a year (average):	35
5.4 Number of times refilling & reusing method of disposal of e-waste (if any)	40
5.5 Whether college has conducted any awareness programme on e-waste management: "yes", "no" and "not applicable"	Yes
5.6 Is there any means of disposal of unused computers, printers and electronic wastes through authorized agents: "yes", "no" and "not applicable"	No

5.7 Disposal methods

Sl No.	Location	Amount of generation/year	Method of disposal	Name of the Agency (if any) for disposal
1	Each Department	2 kg	Stored separately in a store room.	
2	Office	6 kg		
3	Library	1 kg		
4	Open Space	nil		

6. GREEN AREA MANAGEMENT

Comments	Response
6.1 Is there any garden in the college campus/outside the campus under college custody: "yes", "no" and "not applicable"	No
6.2 Whether the garden is watered by using drip/sprinkler irrigation system: "yes", "no" and "not applicable"	No
6.3 Is there any mechanism of review of periodical monitoring of tree species: "yes", "no" and "not applicable"	Yes
6.4 Whether the college has taken any programme for plantation of some fruit trees which can attract birds, bees <i>etc.</i> "yes", "no" and "not applicable"	Yes

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6.5 Biodiversity Mapping:

Birds in GGDC Mangalkote:



Plant Diversity

A survey was carried out to find plant diversity in the college campus of Government General Degree College, Mangalkote. The survey was focused on the diversity of plants on the basis of their habit and economic importance.

The campus is rich in plant diversity with many tree species, ornamental plants, medicinal plants and some other economically important plants.

List of some important tree species in the campus:

1. *Polyalthia longifolia* (Deodar)
2. *Mangifera indica* (Mango)
3. *Ficus racemosa* (The clustered fig or Guler)
4. *Neolamarckia cadamba* (Kadam)
5. *Tamarindus indica* (Tamarind)
6. *Psidium guajava* (Guava)
7. *Terminalia arjuna* (Arjun)
8. *Swietenia mahagoni* (Mahogani)
9. *Dalbergia sissoo* (Shisham or Shisu)
10. *Tectona grandis* (Shegun or Teak)
11. *Azadirachta indica* (Neem)
12. *Butea monosperma* (Palash)
13. *Carica papaya* (Papaya)
14. *Syzygium cumini* (Indian blackberry or Jamun)
15. *Artocarpus heterophyllus* (Jack fruit or Kathal)
16. *Delonix regia* (Gulmohar or Krishnachura)
17. *Acacia auriculiformis* (Sonajhuri)
18. *Phoenix dactylifera* (Date Palm or Khajur)
19. *Moringa oleifera* (Drumstick)
20. *Eucalyptus* sp. (Gum tree)
21. *Borassus flabellifer* (Tal Palm)
22. *Mimusops elengi* (Bakul)
23. *Bombax ceiba* (Cotton tree or Shimul)
24. *Spondias mombin* (Amra)



Eucalyptus sp.



Moringa oleifera



Phoenix dactylifera



Mimusops elengi



Acacia auriculiformis



Delonix regia



Borassus flabellifer



Terminalia arjuna



Artocarpus heterophyllus



Mangifera indica



Syzygium cumini



Carica papaya



Butea monosperma



Azadirachta indica



Tectona grandis



Polyalthia longifolia



Dalbergia sissoo



Ficus racemosa



Bombax ceiba



Tamarindus indica

List of some important medicinal plants in the campus:

1. *Ziziphus mauritiana* (Ber or Kul)
2. *Tinospora cordifolia* (Giloe or Gulancha)
3. *Eclipta alba* (Bhringraj)
4. *Calotropis procera* (Aakand)
5. *Boerhavia diffusa* (Punarnava)
6. *Tridax procumbens* (Bisalyakarani)
7. *Sida cordifolia* (Flannel weed)
8. *Euphorbia hirta* (Asthma plant)

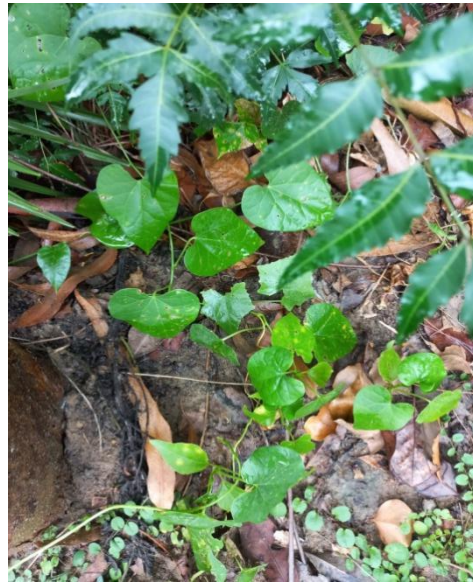


9. *Croton bonplandianum* (Bon tulusi) 10. *Scoparia dulcis* (Misridana)

11. *Achyranthes aspera* (Devil's Horsewhip or Chorkata) 12. *Clerodendrum infortunatum* (Ghetu)



Ziziphus mauritiana



Tinospora cordifolia



Eclipta alba



Calotropis procera



Tridax procumbens



Euphorbia hirta

List of some important ornamental plants in the campus:

1. *Nyctanthes arbor-tristis* (Shiuli)
2. *Hibiscus mutabilis* (Sthal padma)
3. *Rosa indica* (Golap)
4. *Dracaena draco* (Dragon tree)
5. *Croton* spp.
6. *Tabernaemontana coronaria* (Tagar)



Nyctanthes arbor-tristis



Hibiscus mutabilis



Dracaena draco



Croton sp.

List of some important kitchen plants in the campus:

1. *Solanum melongena* (Begun)
2. *Lycopersicum esculentum* (Tomato)
3. *Capsicum frutescens* (Chilli)
4. *Brassica nigra* (Mustard)
5. *Citrus limon* (Lime)
6. *Coccinia cordifolia* (Telakachu)
7. *Amorphophallus paeoniifolius* (Elephant foot yam)
8. *Basella alba* (Pui sak)

List of some other important plants in the campus:

1. *Solanum xanthocarpum*
2. *Oldenlandia corymbosa*
3. *Acalypha indica*
4. *Ageratum conyzoides*
5. *Parthenium hysterophorus*
6. *Oxalis corniculata*
7. *Vernonia cinerea*
8. *Mikania micrantha*

6.6 Records of Plantation programmes

Sl No.	Programme conducted	Date of functioning	No. of tree planted	Present status of the species	Documentation (if any)	No. of beneficiaries
1	5 th June	World Environment Day	10	present	Yes	Entire college
2	15 th August	Independence Day	10	present	Yes	Entire College

**Brief Perception-based Schedule
On
College Campus Environment
(A random survey conducted upon 100 students)**

1. 'What do you think your college campus is noise pollution free?

Yes
NO

2. Is the plastic free zone a good idea for being eco-friendly?

Very apt —
Good decision —
Very good idea —

3. Do you need any improvement for your eco-friendly campus?

Yes —
No—

4. Do you think your college campus has popper waste management system?

Very Good
Good
Average

5. Do you think your college campus has sufficient drinking water facilities?

Very good
Good
Average

6. 'What do you think your college has green campus?

Very Good —
Good —
Average
Below Average —

7. Do you think the campus is eco-friendly?

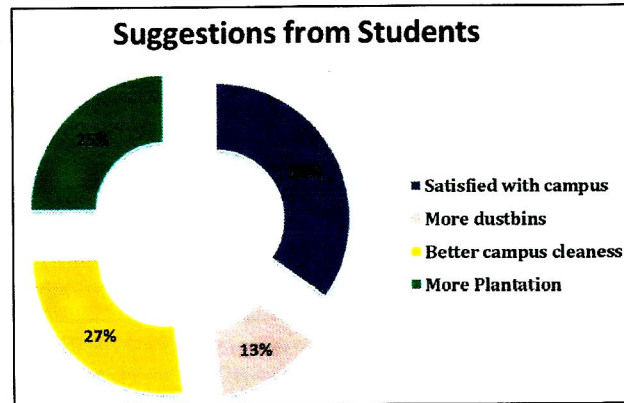
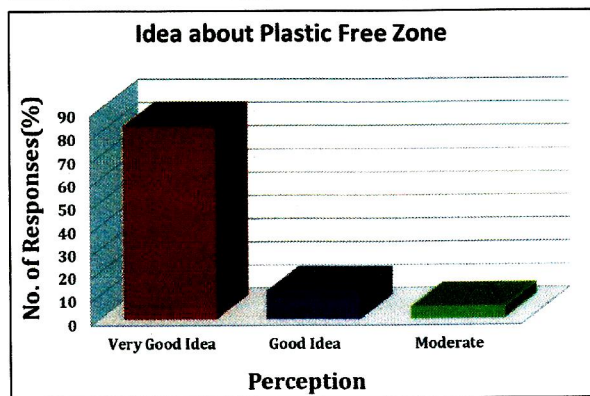
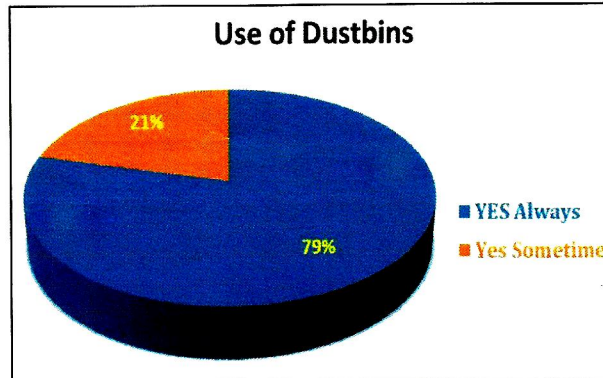
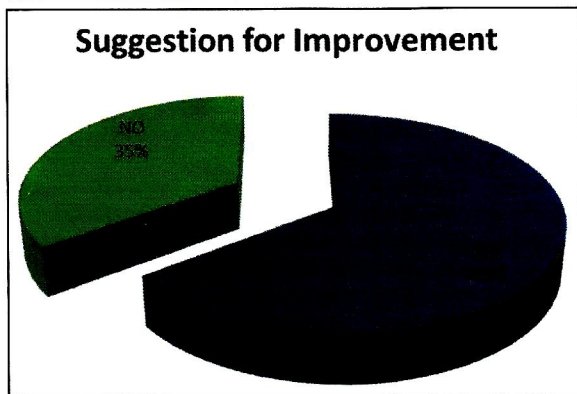
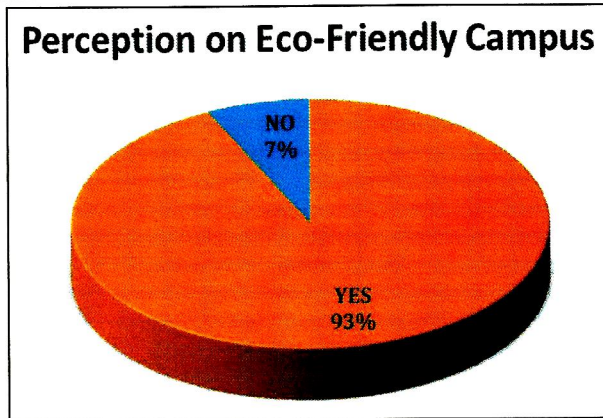
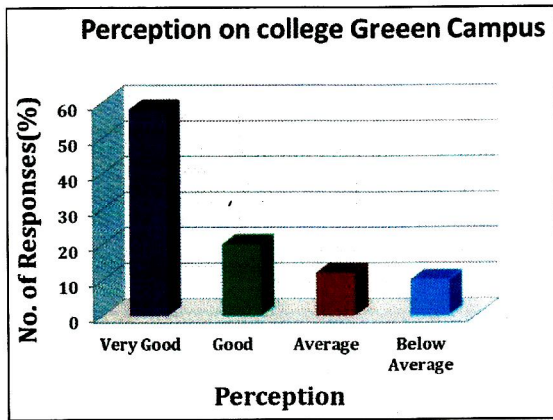
Yes —
No—

8. Do you use dustbin for disposing solid waste/paper etc.?

Yes always —
Yes sometimes —

Provide suggestions (from students' perspectives)

Graphical representation of students' perception



Sign with Stamp: 31.05.2023 Chowdhury Habibur Rahaman Professor Department of Botany Visva-Bharati University, Santiniketan, West Bengal.	Sign with Stamp: 31-05-2023 Dr. Jiaul Islam, Associate Professor, Dept. of ENVS, Sambhunath College, Labpur, Birbhum, West Bengal Associate Professor Department of Environmental Science Sambhu Nath College, Labpur, Birbhum	Sign with Stamp: 31-05-23 Dr. Dilip Gorai, Associate Professor, Department of Chemistry Bolpur College, Birbhum, West Bengal.	Sign with Stamp: 31.05.2023 Dr. Mahuya Sen, Associate Professor, Dept. Of Geography, Birbhum Mahavidyalaya, Suri, Birbhum, West Bengal Associate Professor Department of Geography Birbhum Mahavidyalaya Suri, Birbhum
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