

INTERNAL QUALITY ASSURANCE CELL (IQAC)

Ganjam College, Ganjam



INTERNAL GREEN AUDIT REPORT

Academic session-2022-2023

Audit Conducted by:	Dr. Santosh Kumar Patra –	Reader in Zoology
	Sri Narottam Manna ---	Lecturer in Botany
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Report Submitted to IQAC -- 12.05.2023

Executive Summary

Green audit is defined as an official examination of the effects a college has on the environment. It helps to improve the existing practices with the aim of reducing the adverse effects of these on the environment concerned. Ganjam College has adopted various methods to preserve the environment within the campus such as the preservation of flora and fauna within and around the campus, promotion of energy savings, recycling of waste, judicious use of water, water harvesting etc. Green audit visualizes the documentation of all such activities taking stock of the infrastructure of the college, their academic and managerial policies and future plans.

Green audit provides an opportunity for the development of personal and social responsibility for the students and teachers. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more relevant. The audit process involved clarification of policies, activities, records and the co-operation of staff and students in the implementation of mitigation measures. Data was collected through the questionnaire based survey, review of records, observation of practices and observable outcomes and field work. In addition, the approach ensured that the staff and students are active participants in the green auditing process in the college.

The baseline data prepared for the college will be a useful tool for campus greening, resource management, identification of flora and fauna, planning of future projects and a document for implementation of sustainable development of the college. Existing data will allow the college to compare its programs and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects.

Dr. Santosh Kumar Patra

Convenor

Internal Green Audit Team

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GREEN AUDIT

I: PRE-AUDIT STAGE

- i) **Formation of Audit Team:** The Internal Green Audit Team was constituted by the Principal Dr. Prabina Kumar Nanda vide Office Order No. 008/GC/2023 dt. 29.3.2023. The Green Audit Team comprises of the following faculty members:

Dr. Santosh Kumar Patra –	Reader in Zoology
Sri Narottam Manna ---	Lecturer in Botany
Sri Surya Narayan Muduli --	Lecturer in Economics
Dr. Susanta Kumar Mahananda –	Lecturer in Odia

- ii) **A) Identification of the Objectives of Green Audit:**

The objective of organizing Internal Green Audit is to upgrade the environmental condition in and around the institution and find out the gaps in the institutional environmental policy and the effectiveness of its implementation. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

- To ensure effective implementation of institutional policy on environment.
- To identify, protect and preserve the flora and fauna in and around the campus.
- To make the environment secure and cut down the threats posed to human health.
- To avoid the disruptions in the environment those are difficult to handle and thus minimize the cost of environmental protection.
- To assess whether the measures implemented by the college have helped to reduce the Carbon Footprint.
- To monitor the energy consumption pattern of the institution.
- To quantify the liquid, solid and e-waste generation and management plans in the campus.
- To suggest the best protocols for adding to sustainable development.
- To assess the quality of the water and soil within the college campus.
- Providing a database for corrective actions and future plans.
- To identify the gap areas and suggest recommendations to improve the Green Campus status of Ganjam College.
- To assess whether co-curricular/extracurricular activities of the Institution support the collection, recovery, reuse and recycling of solid wastes and other green measures.
- To identify the coverage of environment and environment-related issues in the CBCS Model State Syllabus.

B) BENEFITS OF GREEN AUDIT

- Would help to prepare plan to project the environment.
- Recognize the cost saving methods through waste minimization and management.
- Point out the prevailing and forthcoming impacts on environment.
- Ensure conformity with the applicable laws.

- Empower the organizations to frame better environmental policy and performance.
- It portrays a good image of the institution by fostering conducive relationship with the stakeholders.
- Promotes the alertness for environmental guidelines and duties.

iii) Identification of the Target Areas of Green Audit:

- Waste Management System
- Energy Conservation Measures
- Water Conservation Measures
- Green Cover of the Campus
- Floral and Faunal Diversity
- Energy Consumption Pattern
- Geographical Location and Meteorological Parameters
- Programmes conducted by the institution on Environment
- Legislative Compliance and Institutional Policies
- Green Measures Adopted by the Institution
- Coverage of the Environment in CBCS State Model Syllabus
- Others

iv) Methodology Adopted

The methodology included different tools:

- i) Preparation of questionnaire
- ii) Physical inspection of the campus
- iii) Review of documents
- iv) Interviewing key persons
- v) Data analysis & measurements

II. AUDIT STAGE

The study covered the following areas to summarize the present status of environmental concerns of the institution and its stakeholders.

A. Water management

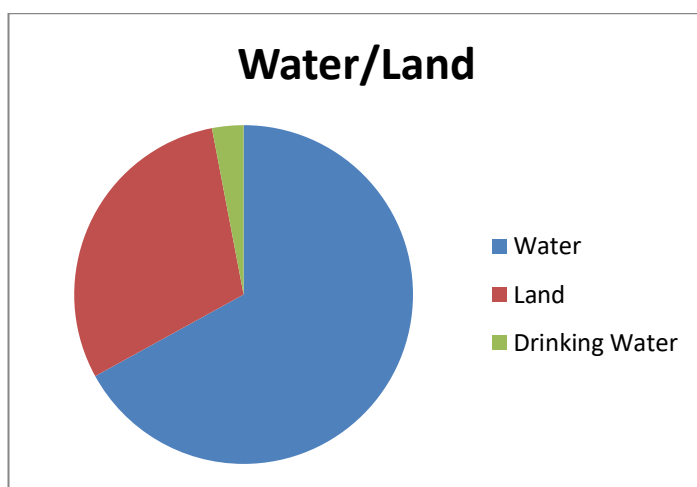
College campus has overhead tanks for storage and uniform distribution of water in the campus area. NAC, Ganjam and Grasim Industries Pvt. Ltd. supplies water to the college.

- i. Drinking Water
- ii. Laboratory Waste Water
- iii. Sewage Water
- iv. Rain Water

The following measures are adopted to prevent wastage of water:

- i) The college fixes leakages immediately and performs periodic maintenance required to prevent water loss.
- ii) It ensures the improvement of drinking water quality by installation of water purifiers in many places in the campus.
- iii) World Water Day is observed to raise awareness about depletion of ground water and adoption of several water conservation measures.
- iv) To create awareness of water conservation and water harvesting among students, several competitions have been organized.

Water Management



Water is a valuable natural resource for all living organisms. It is freely available depending on the climate and topographic features of a region. Although water is natural freely available but portable (drinkable) water is not available freely for human consumption. In our planet 70% area is covered by water but only 3% of it is fresh water. Around 1.1 billion people of the world face water crisis. Water pollution and wastage plays a vital role in water crisis. Water contaminations are taking place at an alarming rate. Drinking or using contaminated water leads to many diseases or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease. It is also important to conserve protect and manage the water resources availability and usage so that it is sustainably used. Our college examines the quality and usage of water in the college campus. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.

USES AND MANAGEMENT

SOURCE OF WATER

SL. No.	Resource	Quantity
1	CSR (water supply by GRASIM Chemicals)	Yes
2	No of Bore wells	2
3	No of Hand pump	NIL
4	Water reserve tank	3

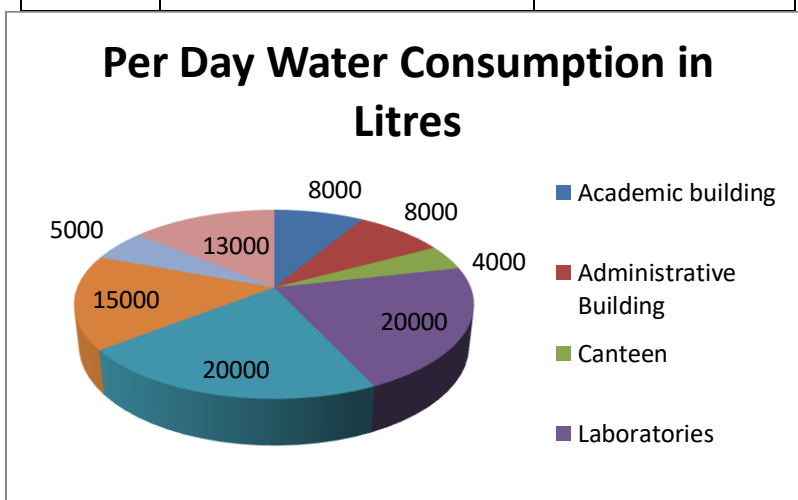
5	Pond	1
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WATER USERS IN CAMPUS

Sl No.	Person in different section	Strength (No. of person)
1	Staff	70
2	Students	1500
3	Visitors	100 approximately
4	Construction Labour	50

QUANTITY OF WATER USED IN DIFFERENT SECTIONS OF THE CAMPUS

Sl. No.	Sections	Water Use (Litre/day)
1	Academic Building	8000
2	Administrative Building	8000
3	Canteen	4000
4	Urinals and Toilets	20000
5	Laboratories	20000
6	Garden	5000
7	Drinking	15000
8	Construction Work	13000



MAJOR OBSERVATIONS IN REGARD OF WATER USAGES AND CONSERVATION PLAN

- At present waste water is not recycled or reused in any form in the college premises.
- Drip irrigation and sprinklers are used for watering the garden. The garden is also watered with water pipe once a day for 02 hours each time.

- c. The rain water is drained by storm water drain and released to Nallha inside the boundary of the college at low terrain.

RECOMMENDATIONS

College administration may consider theses on top priority:-

- a. To establish and implement the Water Conservation and Management Plan as per Environment Protection Act 1986.
- b. The Water Conservation Awareness Program to be conducted on World Water Day on 22nd March every year.
- c. Display boards for switching off the taps to be put on at appropriate places.
- d. To eliminate the spillage and over usage of water in washbasins, urinals and toilet push taps are highly recommended.
- e. Automatic Leak detection systems for conservation of water.
- f. Rain Water Harvesting as per the guidelines of Central Ground Water Board shall be done.
- g. 80 % of total quantum of ground water extracted shall be recharged to ground by Artificial Recharge Structures within the college premises
- h. Water meters to be installed on Dug Well as well as Bore Well water extraction systems.
- i. Special Internal Water Audit to be conducted quarterly and should be headed by HOD, Chemistry Department.

A) AIR POLLUTION MANAGEMENT :

PERIODIC AWARENESS PROGRAMME FOR STAFF, STUDENTS AND SOCIETY

The College has been continuously conducting awareness programs for staff, students and society for protecting and maintaining environment. The awareness is also done by arranging programs, rallies on various issues related to environment and health. The college students and faculty members are involved in the activities through NSS/NCC, but the audit team could not find any display board for conservation of Environment in the college premises.

Every day there are 50 two wheelers and 15 four wheelers are coming to college premises but there is no system observed to check for PUC certificate, Vehicle Exhaust Gas Analysis and Vehicular movement noise and vibration pollution. The air pollution at the time of ignition off and on is more than it is in riding mode.

RECOMMENDATIONS

The College may consider these on top priority:-

- a. World Environment Day to be celebrated in college premises every year on 5th June and whole college students and staff shall get involved and take OATH for ENVIRONMENT CONSERVATION not only in college but also in every span of life.

- b. Chemistry and Botany Department shall monitor the Ambient Air Quality as per the guidelines of “Air (Prevention and Control of Pollution) Act 1981.
- c. Exhausts gases shall be monitored analyzed and check regularly.
- d. Parking zone of college shall be neat and clean.
- e. Use of bicycle in campus to be promoted.

C. NOISE POLLUTION MANAGEMENT:

A) SILENCE ZONES IN THE COLLEGE

Various display boards have been placed in the library and other places for awareness to maintain silence in the college.

B) NOISE CONTROL IN THE COLLEGE

The College adopts no honking policy and prevents use of any honk and noise in campus. Certain areas like library, class room, laboratories are declared as Silence Zone and noise pollution is kept to minimum on college campus.

RECOMMENDATIONS

The College administration may consider these on top priority

- a. Noise Level Monitoring shall be done as per the guideline of “Noise Pollution (Regulation and Control) Rules 2000
- b. Vehicular exhausts shall be examined regularly in the collage as per Central Motor Vehicle Act 1988
- c. Vehicular movement shall be restricted by putting boundary limit and beyond that limit bicycles usage shall be promoted to all students and staff

D. ENERGY USE AND CONSERVATION

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

OBSERVATIONS

Following Energy Sources are used in the college

- Electrical
- Diesel
- Petrol
- LPG

RECOMMENDATIONS

The College administration may consider on top priority

- a. To use Common or Public vehicle instead individual vehicle to conserve fossil fuel
- b. Energy Consumption for each building should be estimated to design the energy conservation plan.

- c. Instead of out-sourcing the Annual Maintenance of Electrical Equipment college concern department staff shall take that responsibility
- d. Energy saving awareness shall be done by displaying the boards at appropriate place
- e. Encourage natural ventilation and illumination by alteration in the building structures whenever going for new constructions.

E. WASTE MANAGEMENT:

Types of Waste Generated:

- i. Solid Waste
- ii. Liquid Waste
- iii. E-Waste

Solid waste management:

- To reduce waste in institute, students and staff are educated on proper waste management practices through lectures, advertisement on notice boards, displaying slogan boards in the campus.
- Waste is collected on a daily basis from various sources and is separated as **Dry and Wet waste**.
- Color coded dustbins are used for different types of wastes. Green for wet and blue for solid waste.
- Daily garbage is collected by housekeeping personnel and handed over to authorized personnel of NAC Ganjam for further processing. All waste water lines from toilets; bathrooms etc. are connected with NAC drainage mains. Waste material like plastic, papers etc. are collected and sold out to scrap vendor from time to time.
- Efforts have been taken to produce compost manure from the canteen solid waste and waste from other sources and efficiently run by the students. Manure is used for the purpose of herbal garden as well or for planted tree.

Liquid waste management:

- The waste chemicals mixed water from laboratory passes through concealed pipe line into soak pit & recycled water is used for the watering trees or non-potable usage.
- Liquids are diluted by getting mixed with the washroom and toilet liquid wastes in to the common drainage.

E-waste management

- The E-waste collected is stored in store room and disposed every year accordingly.
- The buyback system is followed for pharmacology rotating drums beyond repairable conditions. Empty toners, cartridges, outdated computers and electronic items are sold as scrap to ensure their safe recycling.
- Old monitors and CPUs are repaired by our technician and reused.

F. GEOGRAPHICAL LOCATION AND METEOROLOGICAL PARAMETERS: Ganjam College is located in Ganjam town Odisha at 19.38°N 85.03°E. Maximum summer temperature is 37°C; minimum winter temperature is 16°C. The mean

daily temperature varies from 33°C to 38°C. May is the hottest month; December is the coldest. The average annual rainfall is 1250 mm and the region receives monsoon and torrential rainfall from July to October. The Rushikulya river flows by its side; Bay of Bengal and Chilika Lake are other water bodies near the college.

G. Floral Diversity of Campus

1. *Ficus benghalensis*
2. *Ficus religiosa*
3. *Alstonia scholaris*
4. *Calotropis indica*
5. *Azadirachta indica*
6. *Delonix regia*
7. *Caesalpine pulcherrima*
8. *Borassus flabellifer*
9. *Phoenix sylvestris*
10. *Callistemon sp.*
11. *Encalyptus globules*
12. *Mangifera indica*
13. *Nelumbium sp.*
14. *Solanum nigrum*
15. *Datura nigra/alba*
16. *Cassia fistula*
17. *Opuntia sp.*
18. *Albizia lebbek*
19. *Tridax procumbens*
20. *Streblus asper*
21. *Pongamia pinnata*
22. *Santalum album*
23. *Thevetia peruviana*
24. *Annona squamosa /Cynbopogon citratus*
25. *Psidium guajava*
26. *Nerium indicum*
27. *Terminalia bellirica*
28. *Musa paradisiaca*
29. *Prunus amygdalus*
30. *Clitoria ternatea*
31. *Tabernaemontana coronaries*
32. *Pandanus fascicularis*

H. Faunal Diversity of Campus

1. *Centropus sinensis*
2. *Streptopelia chinensis*
3. *Naja naja*

4. *Hemidactylus flaviridius*
5. *Varanus benghalensis*
6. *Hoplobatrachus tigerinus*
7. *Bufo melanostictus*
8. *Ardeola grayii*
9. *Felis domesticus*
10. *Bos indicus*
11. *Curvus splendens*
12. *Merops orientalis*
13. *Psittacula krameri*
14. *Coracias benghalensis*
15. *Alcedo atthis*
16. *Passer domesticus*
17. *Ahaetulla nasuta*
18. *Calotes versicular*
19. *Channa punctatus*
20. *Canis familiaris*
21. *Python molurus*
22. *Herpestes edwardsii*
23. *Natrix piscator*
24. *Bungarus fasciatus*
25. *Bungarus caeruleus*
26. *Chelone mydas*
27. *Ceryle rudis*
28. *Melanothorax niger*
29. *Nyctathorax nyctathorax*
30. *Columba livia*
31. *Dicrurus macrocerus*
32. *Capra hircus*
33. *Hystrix cristata*

ENVIRONMENTAL POLICY OF THE INSTITUTION: Environment Policy of the institution aims to create co-curricular and extracurricular initiatives that motivate learners to take the lead in bringing about great changes. These policies aim for a comprehensive examination of all infrastructure and administrative operations in terms of energy efficiency, sustainability, and environmental impact. Preservation of the flora and fauna in and around the campus and ensuring a pollution-free, plastic-free, green and clean campus is the motto of the institution. The college will continue to comply with environmental legislation in order to reduce its environmental effect by pursuing a number of goals, including plantation, water management, energy conservation, waste management, air quality management, and carbon footprint reduction. Updating the institution's profile in terms of its environmental goals, instilling in young people an environmental ethic and value system and conducting audits to identify areas for improvement and make recommendations are other principles of the institution. To rope in NSS, NCC, and YRC volunteers to undertake activities under the Swachh Bharat Abhiyan and to prepare an Annual Action Plan and achieve the goals thereon are some other initiatives. Environmental policy revision at regular intervals will be taken up by IQAC in consultation with the Departments of Zoology, Botany and Chemistry.

I. Coverage of Environmental Issues in CBCS Model Syllabus

Student communities have gained lot of knowledge from **Environmental Studies and Disaster Management** which is compulsory for all the 1st Semester students and is a part of Ability Enhancement Compulsory Course (AECC) implemented in the +3 CBCS pattern syllabus on solving issues relating to Environment like preparatory measure before onset of cyclone, drought, Earthquake etc. to minimize loss of life and property. As Ganjam is cyclone prone coastal area hence the students need to be trained and practiced on this problem of natural disaster.

J. Programmes Conducted by the Institution to Create Awareness on Environmental Issues:

1. Van Mahotsav --- Celebrated every year in the month of July
2. World Environment Day – Celebrate every year on the 5th June
3. Earth Day – 22nd April every year
4. Water Day – celebrated on 22 March every year
5. Puneet Sagar Abhiyan & Coastal Clean Up Day by NSS, NCC & YRC
6. Swachh Bharat Programme – on Gandhi Jayanti & NSS Day
7. No Tobacco Pledge
8. Drawing Competition on Rain Water Harvesting
9. Otrine Software Pvt. Ltd. conducted orientation programme on GC CMS app designed to carry out paperless transaction in admission, library use and others
10. National Seminar in English on “Ecocriticism and Environmental Ethics” – 26-27.10.23

III. POST AUDIT STAGE:

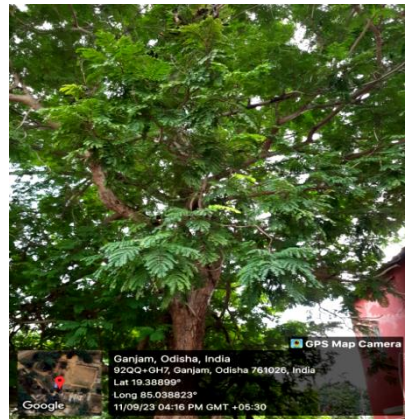
GREEN AUDIT KEY FINDINGS & RECOMMENDATIONS:

- Siphoning of Roof Top Rain Water to existing rechargeable soak pit.
- Drinking water facility to Boys Common Room.
- Preservation of plant communities like *Calotropis* (near Library), *Alstonia*, White *Calotropis*, *Pandanus fascicularis* etc.
- Renovation and restoration of dilapidated college hostel.
- Renovation, restoration and reclamation of Pisciculture tank situated at the northern side of college campus.
- Some of the building walls were engrossed by plant roots causing harm to the wall. Those are to be derooted and destroyed for the safety of the wall concerned.
- ✓ To manage solid waste disposal, a dustbin be kept at a suitable place of college where easy access to everyone is possible.
- ✓ Discourage students, staff and others to throw away solid wastes here and there.
- ✓ Similarly a reinforced concrete soak pit be constructed to put liquid waste and its proper disposal.
- ✓ Incinerators if possible be installed to burn out solid waste materials collected in the dustbin.

- ✓ Electronic waste materials be disposed off by taking into account the latest guidelines issued by Govt. of India to minimize the effect of hazardous materials in them.
- ✓ Conventional energy sources be replaced by non- conventional energy sources like solar energy, wind energy, green hydrogen fuels, bio fuels, etc to promote energy conservation measures in our institution.
- ✓ Use of public transport system, E-vehicles for long distance travelling students and staff to minimize air pollution produced by conventional mode of transport system i.e. vehicles run by petroleum and diesel engines.
- ✓ To encourage student communities of nearby areas to use bicycles for their journey to college and other places as well. Even through walking mode is preferable.
- ✓ As water is a precious and universal natural product, to minimize or zeroing water pollution, waste water be properly treated by using cacl₂ and disposed off to pond or puddles nearby. Water recharging units be constructed to siphon the rain water collected through roof top collector reservoirs artificially built up (Rain Water harvesting project).
- ❖ Massive Plantation drive be undertaken by employing N.S.S., Y.R.C, volunteers in due course of time (during Van Mahotsav i.e. in the month of July 1st onwards on institutional plantation program of Govt.) to make and promote greenery inside the campus.
- ❖ Recommended to enhance floral and faunal diversity of campus and to establish a botanical garden as well as near the Dept. of Botany that can promote plant diversity in practical manner by student & teacher communities as well.
- ❖ The conventional source of energy supplied by state Govt. be replaced by renewable energy sources like use of Photo-voltaic cell (solar energy) also subsidized by the ministry of renewable energy source, Govt. of India i.e. "Solar Roof Top Scheme".
- ❖ Use of five starred appliances as far as practicable having BEE(Bureau of Energy Efficiency) mark in our institution to conserve energy.
- ❖ As our institution located in a tropical climatic zone where maximum solar panels to be installed to generate renewable energy i.e. clean & Green energy having zero carbon foot print
19° 23' 22" - N Latitude 85° 2' 23" – E Longitude.
- Before implementing institutional environmental policies the rules and regulations of the ministry of climate change and environment, Govt. of India be followed to minimize litigations measures.
- The final year students of Zoology (Hons.) had attended 'The Wetland Mitra' camp held at Tampara (Now declared as Ramsar site by Govt. of India) on 09.09.2021 led by Smt. Manorama Panda, Demonstrator in Zoology under recommendation by DFO, Berhampur Zone.
- Days of environment importance to be celebrated by college on 22.03.2022, International water day was organized by IQAC under auspices of Dept. of Zoology to aware student communities about value of natural resource i.e. water at the present context.
- Our college had constructed Rain Water harvesting units (2 Nos) to collect and preserve rain water, it is recommended to Siphon root top water collection to these units. Also recommend to built up solar energy generating units to conserve energy source available through thermal or hydro-powered by Govt. of Odisha. Also surplus energy of solar roof to sell back to GRIDCO, Odisha to generate revenues.
- Pure drinking water units were installed in various locations within the college premises to minimize waterborne disease among student and staff as well.
- Through our college areas are so wide and spacious, but local domesticated animals like cows, bulls, goat and others have used to travel & grazing in the college ground causing harm to our students and staff. So, a cow-catcher unit to be installed immediately to minimize harmful effect of those animals to us.

- To built a compost pit for disposal of biodegradable wastes.

Sample of Floral Diversity within the Campus:





The two ponds within the campus.

Sample of Faunal Diversity within the Campus:



Concluding Remark: The only way to preserve the earth is by reducing consumption, reusing the materialistic goods and recycling the unwanted objects. Green Action Committee will continue to work on environmental awareness. We aim at creating a green, clean and plastic free campus.

--Thank You--

[Signature]
12/05/23

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12/5/23

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