ENERGY AUDIT REPORT
MAY 2021 – MAY 2023

BHAWANIPUR ANCHALIK COLLEGE
(AFFLIATED TO GAUHATI UNIVERSITY)
BHAWANIPUR, BARPETA, ASSAM

Estd.- 1982

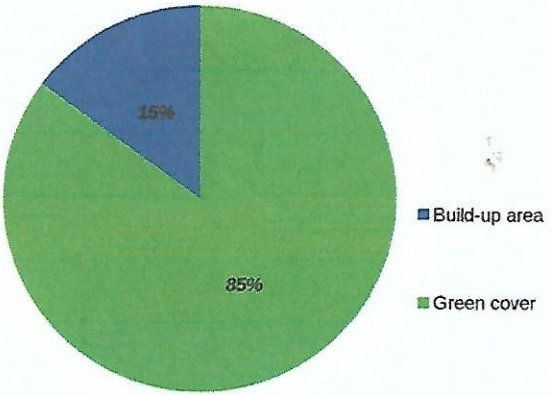
PREPARED BY
ENERGY AUDIT CELL,
BHAWANIPUR ANCHALIK COLLEGE

AUDITED BY

JUNIOR ENGINEER
PATHSALA ELECTRICAL SUB-DIVISION
BARPETA, ASSAM

Energy Audit Report, May 2022 – May 2023

- **Name of the College:** Bhawanipur Anchalik College, Bhawanipur, Barpeta, Assam – 781352
- **Campus Area:** 28655.7569 square meters
- **Build-up Area:** 4273.0753 square meters
- **Green cover:** 24382.6816 square meters
- **Date of Establishment:** 1982



- **Brief History of the College:**

Bhawanipur Anchalik College is an esteemed educational institution located in the Bhawanipur area of Barpeta, Assam, India. The college has a rich history spanning several decades, and it has played a significant role in shaping the academic landscape of the region. It was established in 1982 with the vision of providing quality higher education to the students in and around Bhawanipur. The college is affiliated with the Gauhati University and offer undergraduate courses in arts, science and commerce streams. Over the years, it has grown in stature and expanded its academic offerings to meet the changing needs of the students.

Today, this institute stands as a testament to the vision and hard work of its founders and the continuous efforts of its faculty, staff, and students. It continues to provide a nurturing and intellectually stimulating environment for students, empowering them with the knowledge and skills necessary to excel in their chosen fields and contribute meaningfully to society. This college has been re-accredited with "B" Grade by NAAC (second cycle) in 2015.

- **Energy Audit:**

In today's world, energy efficiency and sustainability have become crucial considerations for organizations across various sectors. Educational institutions, in particular, play a vital role in promoting environmental stewardship and setting an example for future generations. One effective approach for educational institutes to reduce their energy consumption and carbon footprint is through conducting energy audits. An energy audit in an educational institute involves assessing energy-consuming systems, such as lighting, HVAC (heating, ventilation, and air conditioning), appliances, and overall building envelope. The primary objective is to identify areas of energy waste, evaluate energy-saving opportunities, and provide recommendations for improvement. By understanding the current energy consumption patterns, an audit can uncover potential energy-saving opportunities that can lead to significant cost reductions over time. Moreover, energy audits contribute to environmental sustainability by reducing greenhouse gas emissions and conserving natural resources. Implementing the recommended energy-saving measures identified in the audit can result in significant benefits for an educational institute. Aside from reducing energy costs and environmental impact, energy-efficient upgrades can enhance the overall learning environment. Furthermore, the institute's commitment to sustainability and energy conservation can serve as a valuable educational tool, inspiring students and the wider community to adopt similar practices.

At Bhawanipur Anchalik College, we are committed to creating a sustainable and environmentally conscious learning environment. As part of our ongoing efforts to reduce energy consumption, lower operating costs, and minimize our carbon footprint,

we have undertaken an energy audit of our institute. This comprehensive examination of our energy usage patterns and systems will provide us with valuable insights and recommendations for optimizing energy efficiency. By undertaking an energy audit, we seek to achieve several key outcomes. First and foremost, we aim to reduce our energy costs. The audit will help us identify areas where energy is being wasted or used inefficiently, allowing us to make informed decisions about implementing energy-saving measures. By reducing our energy consumption, we can significantly lower our operational expenses and allocate those savings towards enhancing educational resources and programs.

- **Energy Conservation:**

  Due to the growing recognition of the importance of energy conservation, the college has implemented various strategies to save electricity. The institution is actively pursuing a gradual transition to solar energy.

1. *Increased Awareness*: The college has recognized the growing awareness among its students, faculty, and staff about the importance of saving energy. This awareness has been fostered through various campaigns, workshops, and educational programs focused on energy conservation.
2. *Energy Conservation Initiatives*: The college has implemented a range of initiatives to save electricity. These include the installation of energy-efficient lighting systems throughout the campus, such as LED bulbs. By using energy-efficient lighting, the college reduces its overall energy consumption and contributes to a sustainable environment.
3. *Solar Energy Adoption*: Recognizing the potential of solar energy as a clean and renewable source, the college has embarked on a phased approach to shift towards solar power. This transition involves the installation of solar streetlights in the open areas to generate electricity. By harnessing the power of the sun, the college reduces its dependence on traditional electricity sources and decreases its carbon footprint.
4. *Student Engagement*: The college actively involves students in energy conservation efforts. It encourages them to participate in energy-saving competitions, awareness campaigns, and student-led initiatives aimed at promoting responsible energy usage. By engaging students, the college fosters a culture of sustainability and empowers young minds to become advocates for energy conservation.
5. *Integration of Renewable Energy Studies*: The college has introduced courses and programs related to renewable energy and sustainability. These educational initiatives provide students with knowledge and skills in the field of renewable energy technologies, encouraging them to explore careers in this growing sector. By integrating renewable energy studies into the curriculum, the college reinforces its commitment to saving energy and promoting sustainable practices.
6. *Collaborations and Partnerships*: The college actively seeks collaborations and partnerships with organizations and institutions specializing in renewable energy and energy conservation. These partnerships help in accessing expertise, funding, and technical support to further enhance the college's energy-saving initiatives. By leveraging external resources and knowledge, the college can implement innovative solutions and stay at the forefront of energy conservation.

- **Efforts to Carbon Neutrality:**

  Embracing a verdant landscape, Bhawanipur Anchalik College has ceaselessly embraced every conceivable method to foster an ethereal, carbon-neutral campus.

1. The green environment of the college ensures a carbon-less atmosphere in the vicinity of the campus and it also helps in purifying the air in the locality.
2. In a harmonious alliance, the Green Earth Club, and the Students' Union have coalesced to maintain carbon-neutrality. Through a collective endeavour, they orchestrate enlightening seminars, captivating talks, and immersive workshops, forging an invaluable platform for cultivating awareness among the college's members, fostering an enduring commitment to an eco-friendly campus.
3. The college authority has implemented stringent measures to check carbon emissions within the campus by prohibiting the burning of wastepaper, dry leaves, and other similar waste materials. Moreover, all vehicles owned by college members undergo meticulous scrutiny, with their emission certificates meticulously validated by the esteemed Pollution Control Board of Assam, ensuring the college's unwavering dedication to environmental preservation.

- **Energy Consumption Data:**

  Bhawanipur Anchalik College relies on Assam Power Distribution Company Limited to provide its electricity supply. As for the energy consumption of the college, it falls into the HT IV Bulk Supply (Others) Category. This categorization is based on the specific requirements and regulations applicable to educational institutions like this college. To break it down further, the contracted demand for electricity at the college is 59 KVA (kilovolt-ampere), indicating the amount of power they have agreed to receive. On the other hand, the connected load refers to the actual power being utilized by the college, which amounts to 50 KW (kilowatts). To facilitate the energy consumption of the entire campus, a transformer with a rating of 100 KVA has been installed. This transformer plays a crucial role in ensuring that the energy requirements of the institute are met effectively and safely.

- **Consumer Details:**

Name of the consumer	Tariff Category	Consumer Account No.
Bhawanipur Anchalik College	HT IV Bulk Supply (Others)	063010060117

The college facility has 3 Diesel Generator sets having a total capacity of 35.85 KVA with 25 KVA (Make – Jackson & Co.), 10.0 KVA (Make – Kirloskar) and 0.85 KVA (Make – Honda).

The campus also has a total of 4 solar street-lights installed in various places. Each of the solar street-lights are having power of 20-30 Watt.

The energy efficiency assessment was conducted for the load connected to the mains supply.

Mainly energy is used for the following purposes:

1. Lightings' load
2. Air-conditioners
3. Fans
4. Operation of Water Pumps
5. To run Lab facilities
6. Computer Modules
7. Printing facilities

- **Monthly Energy Consumption:**

In the duration from May 2021 – May 2023:

Month	KWh	Power Factor (PF)	Maximum Demand (KVA)	Billed Demand (KVA)	Total current bill (Rs.)
May 2021	4239.5	97.7	5.16	59.0	20,407/-
June 2021	4295.97	97.4	6.36	59.0	19,529/-
July 2021	4379.5	98.5	12.04	59.0	23,983/-
August 2021	4473.209	99.0	12.2	59.0	24,387/-
September 2021	4628.25	99.6	17.0	59.0	26,597/-
October 2021	4814.91	99.6	23.0	59.0	39,562/-
November 2021	4926.77	99.0	8.64	59.0	27,895/-
December 2021	5030.29	99.2	7.96	59.0	27,004/-
January 2022	5117.729	99.2	6.52	59.0	24,572/-
February 2022	5287.34	99.2	6.35	59.0	23,965/-
March 2022	5344.94	99.5	11.84	59.0	32,357/-
April 2022	5444.919	99.4	11.57	59.0	28,443/-
May 2022	5603.47	99.4	11.44	59.0	28,858/-
June 2022	5755.629	99.7	17.24	59.0	38,064/-
July 2022	5970.12	99.7	16.12	59.0	38,416/-
August 2022	6238.5	99.6	25.48	59.0	45,299/-
September 2022	6507.39	99.7	24.36	59.0	57,611/-
October 2022	6664.159	99.7	24.28	59.0	49,805/-
November 2022	6777.959	99.4	18.12	59.0	38,429/-
December 2022	6882.279	99.3	10.48	59.0	31,859/-
January 2023	6969.37	99.1	6.28	59.0	30,106/-
February 2023	6895.22	99.3	5.24	59.0	27,997/-
March 2023	7202.609	99.5	14.76	59.0	36,467/-
April 2023	7361.37	99.5	21.84	59.0	40,353/-
May 2023	7537.529	99.5	17.04	59.0	46,276/-

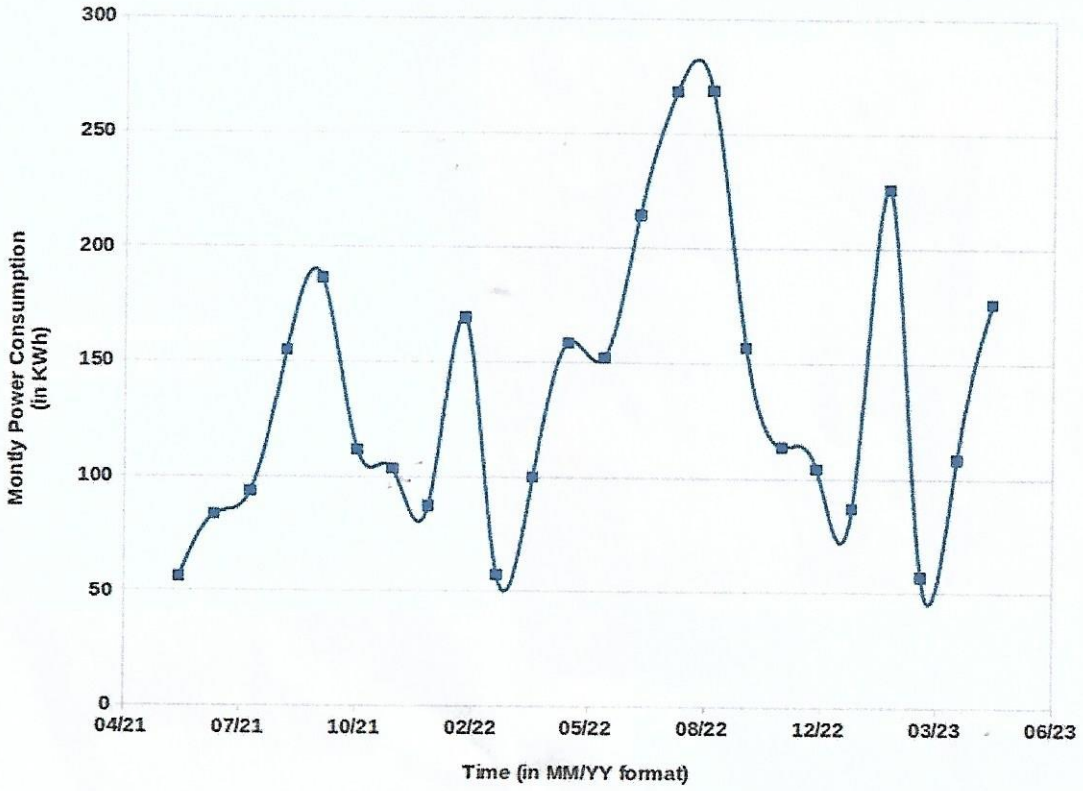
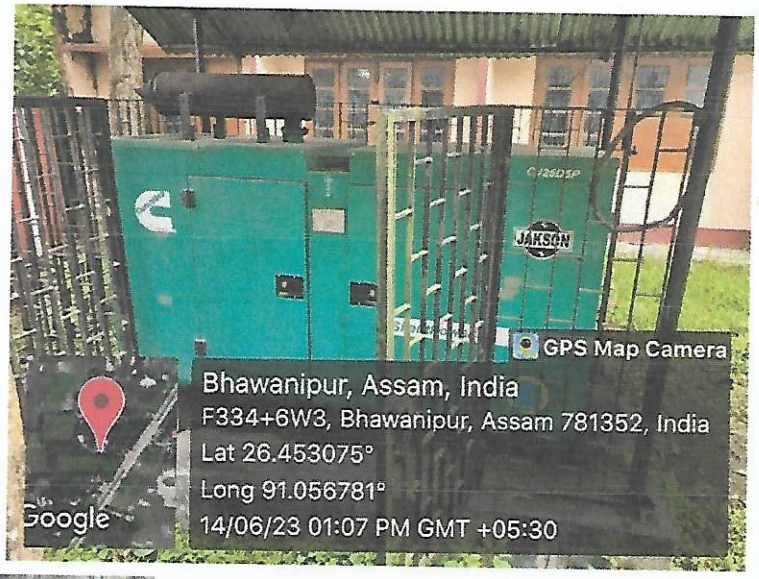


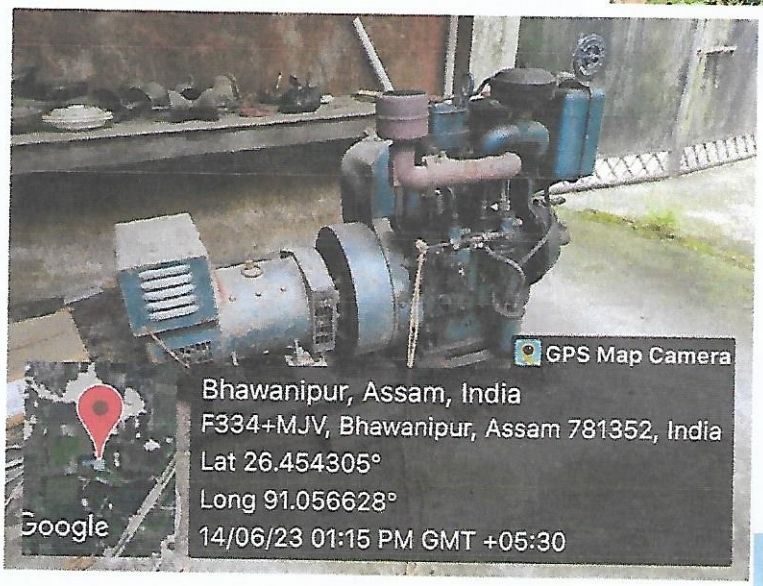
Figure 1: Statistics of monthly power consumption

Amar Jyoti Saikia
Junior Engineer
Pathsala Electrical Sub-Division
Pathsala, Barpeta, Assam

Junior Manager
Pathsala Electrical Sub-Division
APDCL, LAR

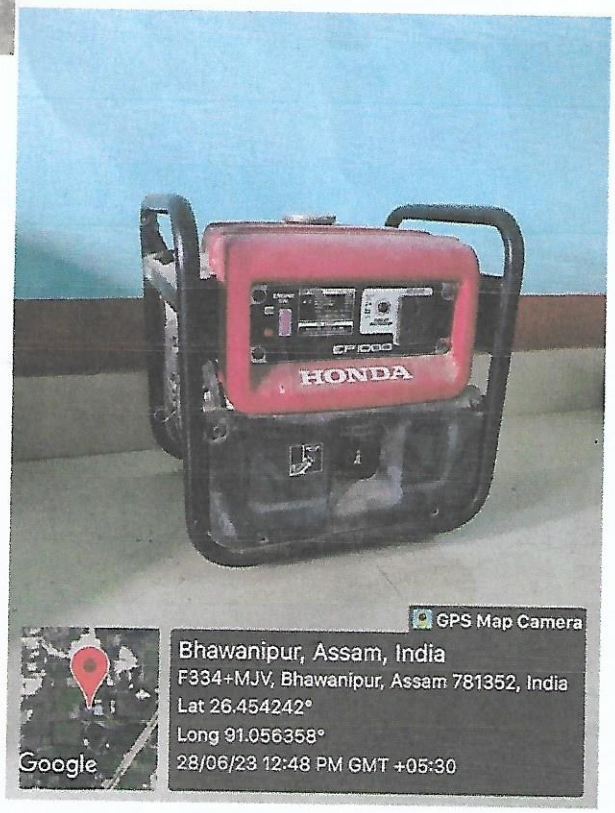
25 KVA Diesel Generator
(Make – Jackson & Co.)



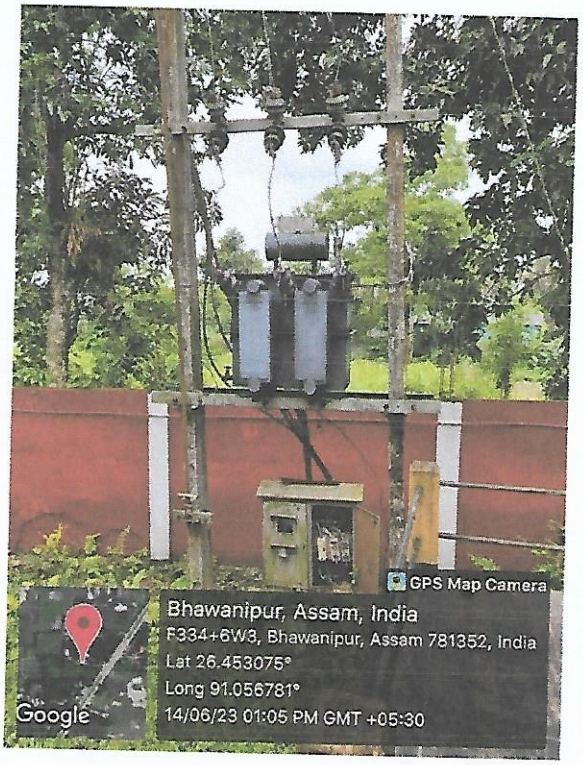


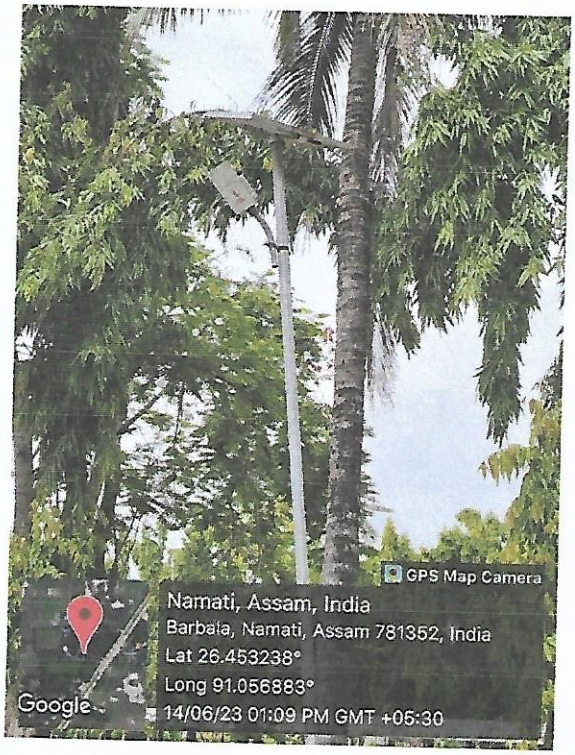
10.0 KVA Diesel Generator
(Make – Kirloskar)

0.85 KVA Diesel Generator
(Make – Honda)



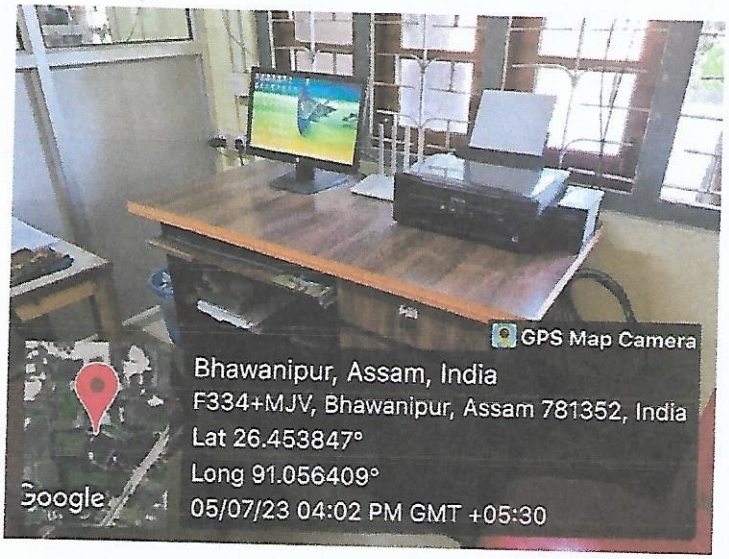
100 KVA Electric Transformer
(Supplied by APDCL)

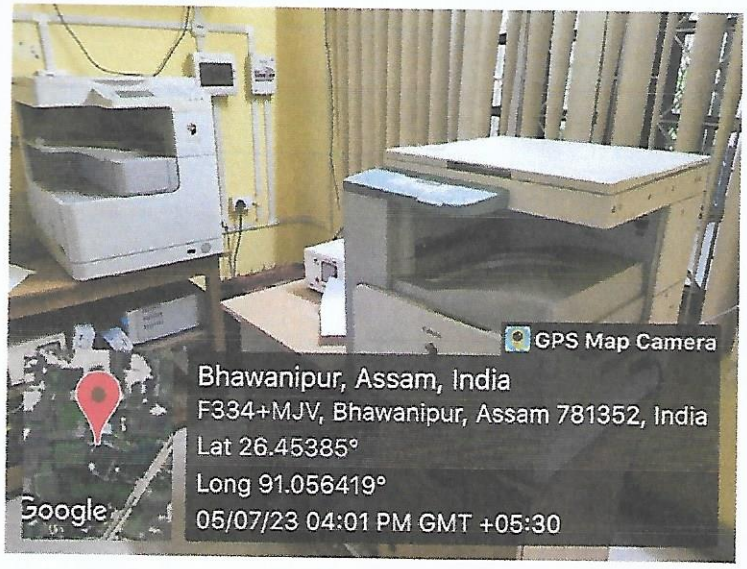




20 Watt street-light equipped
with solar panel (7 Units)

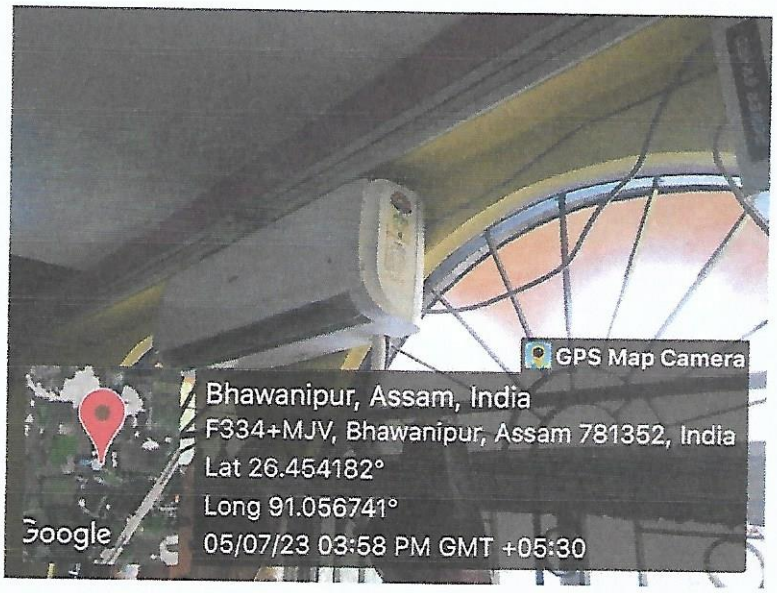
Computing Modules (70 Units)





Printing facilities (2 Units)

Water filter-cum-cooler (7 Units)



5-star energy efficient rated Air-conditioners (10 Units)