

GREEN AUDIT – 2022-23



KRISTU JYOTI COLLEGE OF MANAGEMENT & TECHNOLOGY

CHETHIPUZHA, CHANGANACHERRY

KOTTAYAM, KERALA

EXECUTED BY



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PREFACE

Every institution should be imparting knowledge about the campus environment and its surroundings through activities that follows the principles of sustainability. Hence an evaluation is needed to understand where it stands in the path to be an environment friendly, talent nurturing educational institution. This Green Audit was done with the aim to assess and rate the sustainable nature of the campus. The college vision is “to enlighten and empower women in rural and suburban society and enable them to act as agents of social transformation and acquire knowledge of self and surroundings and to make the world a better place”. And in the **social goals**, it is written as “**to make the students aware of the pressing global issues and the moral responsibility to handover to the coming generation an eco-friendly life style and an earth free from pollution, filth, bigotry and corruption**”. It was observed by us from the students’ participation during the green audit.



ACKNOWLEDGEMENTS

We express our sincere gratitude to the management of M/s *Kristu Jyoti College of Management and Technology Changanacherry, Kottayam* for giving us an opportunity to carry out the project of Green Audit. We are extremely thankful to all the staffs for their support to carry out the studies and for input data, and measurements related to the project of Green audit.

Rev. Fr. Joshy Cheeramkuzhy CMI

Rev. Fr. Chacko Manackal CMI

Dr. Anu Antony

Principal

Bursar, Kristu Jyoti Group

IQAC Coordinator

Also congratulating our Green audit team members for successfully completing the assignment in time and making their best efforts to add value.

GREEN AUDIT TEAM

1. Mr. Santhosh A

Registered Energy Auditor of Bureau of Energy Efficiency (BEE – Govt. of India)
Accredited Energy Auditor No – EA 7597

2. Mr. Ashok KMP

Energy Manager of Bureau of Energy Efficiency, GRIHA Certified Professional

3. Mr. Jaideep P.P Sr. Project Engineer



Yours faithfully

Managing Director
Athul Energy Consultants Pvt Ltd



GENERAL DEATAILS

The general details of the M/s *Kristu Jyothi College of Management and Technology* Changanacherry, Kottayam are given below in table.

Sl. No:	Particulars	Details
1	Name of the College	Kristu Jyoti College of Management and Technology, Changanacherry
2	Address	Kristu Jyoti College of Management and Technology Chethipuzha, Changanacherry Kottayam
3	Contact Person	Rev. Fr. Joshy Cheeramkuzhy CMI (Principal) Ph: 9496101681
4	Contact Number & E mail of the college	0481-2720696/62351011681 kjcmt@kjcmt.ac.in , kjc@kjcmt.ac.in
5	Web site	www.kjcmt.ac.in
6	Type of Building	Educational Institution
7	Annual Working Days	210
8	No: of Shifts	Day Shift (One) (9:00 AM -4:00 PM)
9	No: of students enrolled	1727
10	No: of teaching & non-teaching staff	Teaching - 81 non-teaching - 24
11	No: of departments	06
12	Total Land Area	05 Acres
13	Total Build up area	
14	No: of Programmes	UG – 07 and PG -04
15	Average power consumption per month. (kWh/month)	12771
16	Average electricity charges per month. (Rs. /month)	113544



ABOUT KRISTU JYOTI COLLEGE OF MANAGEMENT AND TECHNOLOGY

The Kristu Jyoti Group of educational institutions came into fruition with the Monastic Council of CMI Fathers of Chethipuzha led by rev. Fr. James Kozhimattom CMI having setup the Kristu Jyoti School linked to Sacred Heart Monastery in the year 1982. In the month of June 1982 marked the coming into being of Kristu Jyoti English Medium School as well. In order to cater to the needs of the students and the parents, Placid Vidya Vihar Senior Secondary School of CBSE mode got formed in 1988. In 2002 Kristu Jyoti College of Management and Technology was put into operation along with the novel institutions such as KristuJyoti Kindergarten and Play School. The ICSE oriented school, the Kristu Jyoti, Vidyaniketan commenced functioning in the academic year 2005-2006 onwards.

Kristu Jyoti College of Management & Technology was established in the year 2002 at Chethipuzha, Changanacherry, Kottayam, Kerala, India. Since its inception, it has been affiliated to Mahatma Gandhi University and also does have the approval of All India Council for Technical Education, New Delhi (AICTE). The first course, that was provided by the college was MCA in the year 2002. The college also extended courses such as M.Sc Bioinformatics and B.Com Computer Applications in the year 2004. The year 2010 paved the way for the college inducting into its scheme of things two more courses viz BCA and BBA. In the subsequent year 2011, the college introduced the courses such as BCom (Finance and Taxation) and MCom Finance. The other courses, the college incorporated into its fold are BSc Psychology in 2014, BSc Geology and BA English in 2015, MHRM and MSc Psychology in 2020.

VISION

Empowering students to meet needs of the society by focusing on academic, technological and professional excellence.

MISSION

To provide quality education through an effective teaching –learning process, skill development and integrated personnel progression.



Figure 1 MAIN BUILDING

GREEN AUDIT

The whole world is on the road to a sustainable development, and the environment conservation is the top priority among the list as every human activity has its effect on their surroundings, which is the environment. Hence be it a house, a commercial building, an industrial building, or any other construction will disturb the balance of the environment. It is very important to do a detailed study about the effects on the environment. This is conducted under the name of *Green Audit*, which can be defined as *the official examination of the effects a company or other organization has on the environment, especially the damage that it causes*. The objectives of the green audit can be listed as follows:

- Including participants from every section of the organization in the auditing process.
- Understanding the environment by drawing a simple sketch of the total area.
- Identifying the activities in the premises and listing them.
- Calculating the resource consumption like the land and water.
- Assessing the waste management and disposal.
- Study the energy usage pattern.
- Identify the good practices.
- Suggest the viable solutions to improve the sustainable nature of the institution.
- Compile the report with the above-mentioned details.
- Conduct a walkthrough audit to check the suggestions implemented by the institution and suggest for further improvements
- Verify all the points with actual measurements is it is meeting the performance and gave suggestions for improvement

CAMPUS ENVIRONMENT

The environment in and around the college campus plays an important part in maintaining a healthy atmosphere in nurturing talents. Trees are the major source of the oxygen we breathe, and receiver of the carbon dioxide we exhale. The sustainability of an ecosystem depends on the number of plants and trees in and around the surroundings

Ultimately the campus is maintaining natural equilibrium with open spaces, buildings, trees, birds along with human interactions



FIGURE 2: CAMPUS VIEW

Scientific studies are proved that the nature can able to cure any diseases and this will reduce the stress among students during theirs studies and also increase the compassion among them and to nature. Ultimately the campus is maintaining natural equilibrium trees, birds and water bodies with human beings. Gardens and landscape are an aesthetic delight and it promotes attentiveness of students. Persons exposed to plants have higher level of positive feelings (pleasant, calm) as opposed to negative feelings (anger, fear).

SUSTAINABLE CONSTRUCTION OF BUILDINGS

Energy consuming devices installed to achieve the comfort levels for the occupants of the building gives rise to heat generation which adversely affects the environment within the building and in the surrounding. Buildings are thus the major pollutants that affect the urban air quality and contribute to climate change. Buildings are the major consumers of energy during their construction, operation and maintenance.

Kristu Jyoti College of management and Technology has developed an ecological design in their buildings and adopted minimum negative impact on ecosystem. Their approach to the constructional activities consciously is to conserve energy and ecology and avoid the adverse effects of ecological damage.

Kristu Jyoti College of management and Technology management constructed the building to optimum utilisation of land and classrooms and with abundant light and natural ventilation. Maximum day light ingress and natural ventilation increases the indoor air quality and avoid the sick building syndrome. The whole facility and buildings are designed to maximum and optimum utilisation of land without affecting the natural hill area



FIGURE 3: BUILDING VIEW

CARBON DIOXIDE LEVELS

Air quality is a major area of concern inside a building. The percentage share of oxygen and carbon dioxide should be such that the occupants are able to perform their tasks without any discomfort. This is generally done through a provision of fresh air duct for the air conditioning systems or by providing windows. Numerous factors need to be considered for the design and fabrication of the fresh air supply system like the number of occupants, weather pattern and air quality of the location, and so on. For the human comfort, production of carbon-dioxide (CO₂) within a building space is the prime area of consideration. This is associated with respiration which produces CO₂. As a result, the carbon-dioxide levels will increase if ventilations are not provided.

As per various standards (like the ASHRAE Standard 62.1-2016), indoor CO₂ concentrations up to 1200 ppm is considered acceptable. For a typical outdoor condition, this value may change from 300 to 500 ppm.

The measurements were recorded along different locations inside the campus and the peak values are given in the following sections. The key concentration was on the study of carbon dioxide levels.

Table 1 CO₂ LEVELS IN BUILDING

Sl. No.	AREA	Measured CO ₂	Standard CO ₂ level (Range)	Remarks
Main Block				
1	Class room BBA	550	300-500	Good
2	Corridor	625	300-500	Good
4	HOD room MCA	600	300-500	Good
1	Class room MCA	550	300-500	Good
2	Corridor	550	300-500	Good
3	HOD Room Geology	530	300-500	Good
4	Principal Office	480	300-500	Good
5	Office	460	300-500	Good
Miscellaneous and others				
1	Canteen	550	300-500	Good
2	Ladies Hostel	560	300-500	Good

1. HERBAL GARDEN

The literal meaning of Ayurveda is “science of life,” because ancient Indian system of health care focused on views of man and his illness. It has been pointed out that the positive health means metabolically well-balanced human beings. Ayurveda is also called the “science of longevity” because it offers a complete system to live a long healthy life. It is an interactive system that is user-friendly and educational. It teaches the patient to become responsible and self-empowered. It is a system for empowerment, a system of freedom, and long life. A significant part of knowledge and tradition is

currently being eroded due to modernization, acculturation and availability of alternatives. Therefore, it is urgent to inculcate young minds to realize the fascinating knowledge and tradition associated with these resources, and help them understand the immense potentials the Kerala medicinal plants possess for the future.

The “Promoting Herbal Gardens in Schools and colleges” has been a fun-filled learning activity for the students where they got the opportunity to learn about the medicinal plants by actually planting the medicinal herbs and watching them grow in their gardens, and by exploring information about them from various sources.



FIGURE 4: HERBAL GARDEN IN COLLEGE

The task of making the garden itself has been enriching in terms of making students realize the importance of teamwork such as detailed planning, and allocation of tasks within a team. For the teachers, herbal garden project has been useful in terms of ease with which they could integrate the concept with other subject matter activities, such as writing essays, poems and stories, making posters, drawing and painting, making herbariums, and even preparing food recipe using some of the culinary herbs students have planted in their gardens. Kerala Government is also making lot of initiatives to developing and inculcating the herbal gardens in schools and colleges.

2. KUTTIVANAM (SMALL FOREST)

Kristu Jyoti College for management and technology developed an untouched and protected version of forest in their premises. This is maintaining in the form of old tradition such as Kavau, the small untouched forest which we can able to see in most parts Kerala. Kavau is maintained as forest areas that human beings are mostly prohibited and considered a sacred place in the Keralite. The location of Kuttivanam is side of college area which is an untouched and silent zone in the college.



Figure 5 KUTTIVANAM

Such a place can have following benefits to the ecosystem.

1. **Maintain the equilibrium of air and food:** Humans and animals need food and oxygen and excrete carbon dioxide and water. The plants, algae, etc, in the Kuttivanam use carbon dioxide and water and release or produce oxygen and food.
2. **Filter and store water, and drastically reduce storm-water runoff:** Forests filter and regulate the flow of water. The litter over the forest floor acts as a sponge which filters, stores and gradually releases the water to natural channels and ground water.
3. **Conserve valuable topsoil and reduce soil erosion:** A forest is like a protective green cloth over Mother Earth's fragile body.
4. **Conserve biodiversity and balance ecology:** In a natural environment, the populations of species are balanced to an optimum minimum level
5. **Reduce pollution:** Plants can remove and/or Phyto remediate pollutants and contaminants from soil and water.
6. **Arrest or reverse global warming:** Global warming can cause extinction of species, tropical cyclones, extreme weather, tsunamis, abrupt climatic change, sea level rise, increased human stress resulting in violence, etc. These are just a few of its catastrophic effects. Plants can lock CO₂ in their bodies to save our planet and the life on it.



3. VEGETABLE GARDEN

It is a garden that exists to grow vegetables and other plants useful for human consumption. Gardening can provide students with hands-on learning opportunities while increasing environmental awareness and vital experience in problem-solving. The vegetable gardens are changing the eating habits of the students

Gardens are a wonderful way to use the college campus as a classroom, reconnect students with the natural world and the true source of their food, and teach them valuable gardening and agriculture concepts and skills that integrate with several subjects, such as math, science, art, health and physical education, and social studies, as well as several educational goals, including personal and social responsibility. They gain self-confidence and a sense of "capableness" along with new skills and knowledge in food growing — soon-to-be-vital for the 21st century students become more fit and healthy as they spend more time active in the outdoors and start choosing healthy foods over junk food.



Figure 6 VEGETABLE GARDEN

4. GREENERY IN THE COLLEGE

Kristu Jyoti College for management and technology located in Chettipuzha as part of Kristu Jyoti institutions 6 km away from Changanacherry town of total area of 12 acres of land covered by trees and it is well protected by management. Educational institutions serve as important incubators for developing a 'green' sense among students and teachers and create a new generation of professionals to drive the future change. Green sense is the sensitivity towards environment that is addressed in our decisions, practices and general lifestyle. In Kristu Jyoti College of management and technology teaching sustainability and environment not in books but it is demonstrated in the campus



FIGURE 7: SCENIC COLLEGE PERIPHERALS

5. OXYGEN PARK

Green space in the college where you can go for morning and evening walks, as well as a comfort station. Oxygen Park is a location where we can rest and release all our stress by nature. In this aesthetic location with ample ventilation take us into heaven in the earth. This park is about anyone who wants to spend some quiet time amidst nature. Fitness enthusiasts, get here for some fresh air and for peaceful resting place.

In this oxygen park classes are conducted by college which are increasing the creativity and it is practical way of learning methods to understand nature

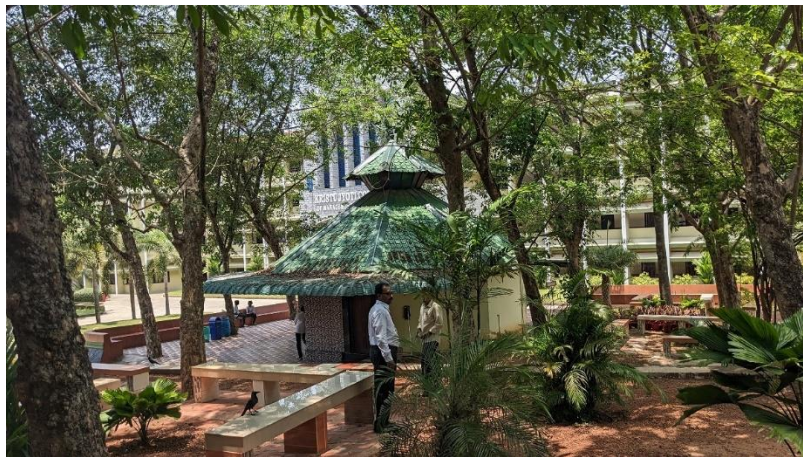


Figure 8 OXYGEN PARK

6. SILENT ZONE

Now a day's silent zones are getting important in academic institutions. The noise pollution leads to stress and other medical and neurotic problems to children's and also creativity and absorption capacity of knowledge is also going down. For reduction of academic stress level there is apace for complete relaxation which gives the importance of silence zone. Kristu Jyoti College for management and technology have aerated certain silent zones in the college itself. . Natural silence zones are also crated in the college campus where there is no sound other than natures sound.



Figure 9 SILENT ZONE

7. OPEN GROUNDS

Education is incomplete without sports and games. Sports and games **are beneficial in teaching us punctuality, responsibility, patience, discipline, and dedication towards our goal.** The importance of games and sports in student's life is immense. It has proved to be very therapeutic in nature. Sports help improve stronger social skills, such as dispute management and sport-based interaction. **Sports inculcate the feeling of fairness in a child and it encourages them to be committed, taking defeat in a positive manner.** It teaches us to be joyful, united, and appreciative in life. Students are the youth of our Nation, and they need to be energetic, physically active, and mentally fit. By understanding the responsibility to make its students as healthy Kristu Jyoti College for management and technology built and maintained football ground, volley and badminton court in a greenery surroundings. .



Figure 10 OPEN PLAY GROUNDS

8. OPEN AUDITORIUM

Open stage on side of the main b building can accommodate more than 1000 persons. The stage is located in the one side . Nature playing a vital role in this stage because it will create only sound not echo or noise during the show. Due to the leaves of the plants will absorb all the echo reverberated from the buildings. Due to the stage is designed in open atmosphere the sound reflections are less also giving a scenic beauty to the college. This open stage designed for multipurpose. This used as for badminton court and volley ball court, resting place, etc.



Figure 11 OPEN NATURE AUDITORIUM

WATER AUDIT

The requirement of water for the college, hostels and gardening etc are met by supply from four OPEN well. The water from OPEN wells are collected in one tanks of capacity 30 KL concrete tank

The water from different wells are checked in an accredited laboratory in time to time to ensure its potability.

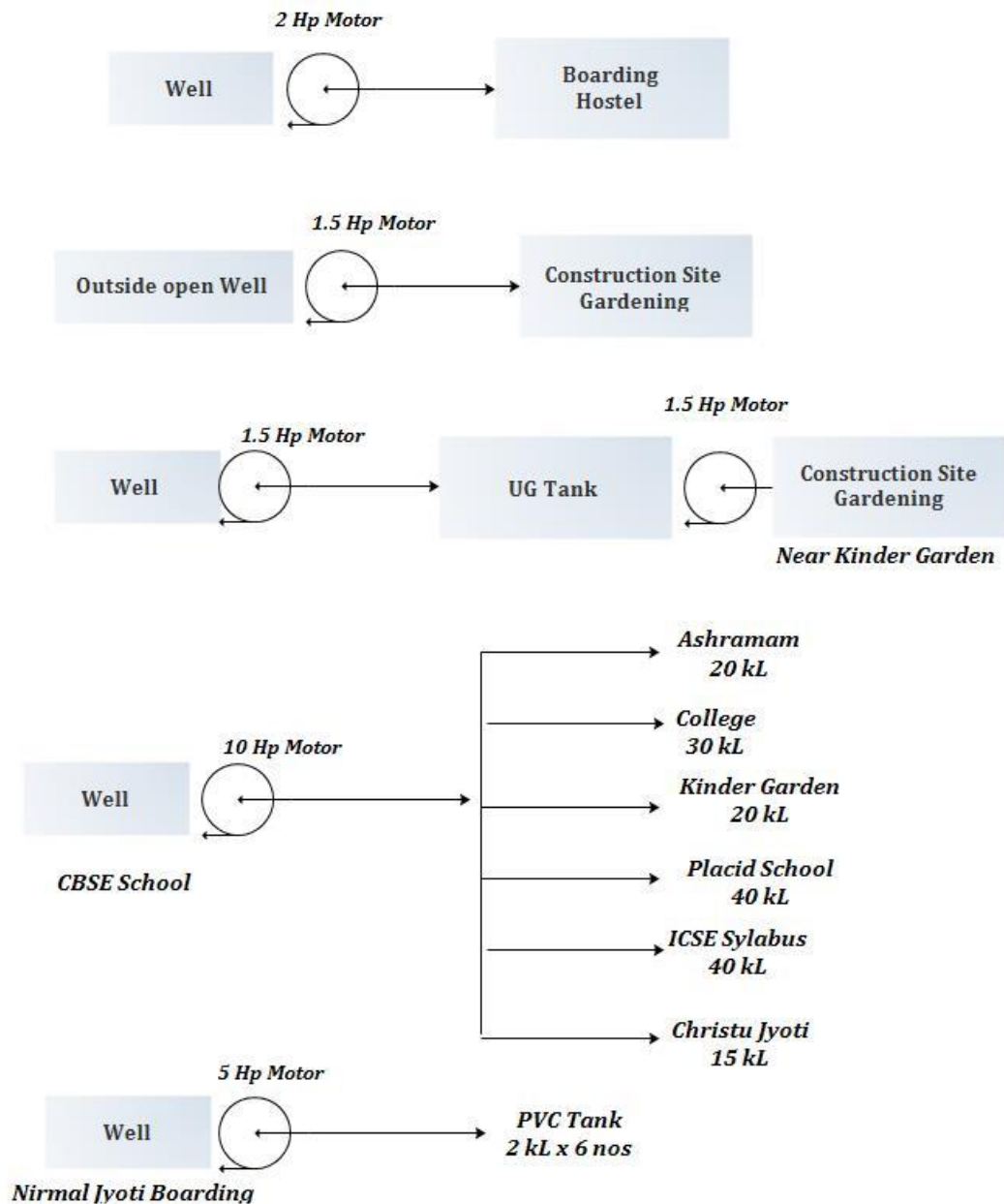


Figure 12 WATER DISTRIBUTION DIAGRAM

1. WATER RESOURCES

There are four well which are demonstrated in water circuit diagram. UTILITIES

The labs have the highest tap points whereas the toilet accounts for the major consumption. The water outlet points in the college campus l are listed in the following table.

Table 2 LIST OF WATER TAPS

Location	No: of taps
Washing area taps	54
Toilets for students	40
College compound and garden	12
Staff rooms	29
Total	125

2. GROUND WATER RECHARGING

Rainwater harvesting (RWH) is a technique of collection and storage of rainwater into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). There are different methods for artificial rain water harvesting. Ground water recharging by different means and collection of rain water for direct use by installation of rain water collection tank. Ground water recharging methods are decided by detailed study of rain fall, geological and hydrogeological mapping of the area etc. Another method of rainwater harvesting is rooftop harvesting. With rooftop harvesting consists of installation of pipes, filtration unit, by pass valve, tanks pumps etc.

College adopted drip irrigation for gardening for reducing water usage .Separate personnel's are devoted for water distribution systems in the college.



Figure 13 RAIN WATER RECHARGING FOR BOREWELL AND POND



Rainwater harvesting for ground water recharge.

Advantages

- Conservation of water for future use
- Biological purity of water is good
- It is environment friendly, controls soil erosion and flood and provides sufficient soil moisture even during summer months
- It provides a natural distribution system between recharge and discharge points
- Quality improvement by infiltration through the permeable media
- Water stored underground is relatively immune to natural and man-made catastrophes

STUDENTS INITIATIVES AND OUT REACH ACTIVITIES

WORLD GEOLOGIST DAY

In connection with World Earth Day Observation, as April 08 2022 Geology department of college conducted a seminar about topic “Groundwater Scenario in Kerala” by Smt. Ancy Joseph, Director, Department of Ground Water, Government of Kerala.



Figure 14 WORLD GEOLOGIST DAY

WORLD EARTH DAY

In connection with World Earth Day Observation, as April 22 2022 Geology department of college conducted an exhibition of specimens of various types rocks, minerals etc. in the college. The programme is inaugurated by Principal by Rev. Fr. Joshy Cheeramkuzhy CMI.



Figure 15 WORLD EARTH DAY

WORLD ENVIRONMENT DAY

World Environment Day is led by the United Nations Environment Programme (UNEP) and held annually on 5 June since 1973, is the largest global platform for environmental public outreach and is celebrated by millions of people across the world.



Figure 16 WORLD ENVIRONMENT DAY

WORLD NAURE CONSERVATION DAY

World Nature Conservation Day is an annual event held on July 28. This day stresses the need for preserving a healthy environment and natural resources to maintain a stable and healthy society. Kristu Jyothi organized a cleaning programme and planting of saplings in the premises of Changanacherry Railway Station. This is inaugurated by Hon. MLA Job Michil.



Figure 17 WORLD NATURE CONSERVATION DAY

WORLD WET LAND DAY

In connection with World WET LAND Day Observation, as February 01 -2023 Nature club of college conducted a seminar about topic “Understanding wet lands. “Shri. Dilip Kumar P.G., Head of the Department of Geology, Government College Kottayam conducted the awareness session.

CONCLUSION:

Green Audit is the most efficient & ecological way to solve such an environmental problem. Green Audit is one kind of professional care which is the responsibility of each individual who are the part of economic, financial, social, environmental factor. Green audits can “add value” to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). The green audit reports assist in the process of attaining an eco-friendly approach to the development of the college.

The auditors observed during the campus visit and after the conversation with the staff and students of M/s Kristu Jyoti College of Management and technology that they have taken continuous and considerable effort in several years for nurturing and maintaining the green coverage over the campus which is being well appreciated by us.

ANNEXURE - 1

GRIHA CP CERTIFICATE



GREEN RATING FOR INTEGRATED HABITAT ASSESSMENT

GRIHA CERTIFIED PROFESSIONAL CERTIFICATE

This is to certify that

Ashok K M P

has qualified as a **GRIHA** Certified Professional For V. 2015

Date of issue: 19th June 2020

Note : This certification is valid only for GRIHA version 2015.



Chief Executive Officer
GRIHA Council