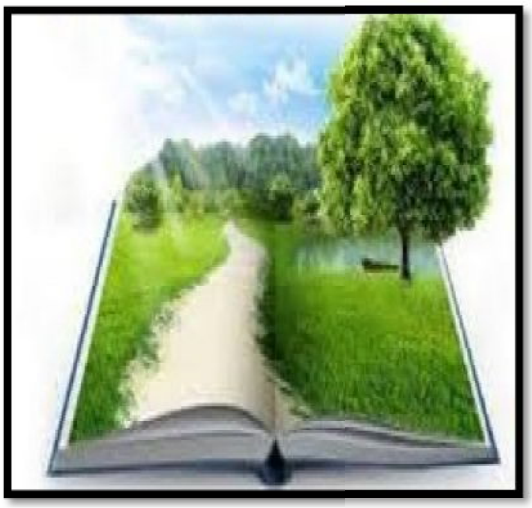
Art & Commerce College VadnerBhairav , Tal- Chandwad, DistNashik,Maharashtra.



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ता. चांदवड, जि. नाशिक


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Executive Summary

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development.

Art & Commerce College VadnerBhairav , Tal- Chandwad, Dist Nashik,is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher learning, the college has initiated 'The Green Campus' program that actively promote the various projects for the environment protection and sustainability.

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, 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. With this in mind, the specific objectives of the audit are to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student's health and learning college operational costs and the environment. The criteria, methods and recommendations used in the audit are based on the identified risks.

1. Introduction

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 was initiated with the motive of inspecting the work conducted within the organizations whose exercises

can cause 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 by carrying out Green Audit.

Green audit is assigned to the criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India and it declares the institutions as Grade A, B or C according to the scores assigned during the accreditation.

2. About the College

Art & Commerce College VadnerBhairav , Tal- Chandwad, Dist Nashik has been providing higher education to the students from different backgrounds in the rural area. It is affiliated to the SavitribaiPhule Pune University Pune. It Non-grant college. The College has its own precious building and situated on a specious and remarkably green campus. Started with a meager 80 students, the college has presently 307 students on its roll with 187 girl students of the total strength. Sprawling over 2.875 acres of land with built up area of around 11634.712 Sq. Meters, the college building has all the necessary physical and modern educational facilities. It is multi-facilities, co-educational college, the students pursue various under graduate programs in arts and commerce faculty. The college has efficient teaching and non-teaching staff. The college does its best and most contribute to National Development through serving the cause of social justice and ensuring equity by providing access to education to socially and economically backward students. The college does sincere – efforts to develop life skills and core-competencies among the students. Through curricular and extra-curricular actives the college imbibes appropriate value systems among the students. College spreads ICT literacy among the students, teachers and supporting staff make them to utilized. ICT in all their educational activities. The college undertakes several initiatives to progress the academic as well as other artistic skills , students are the nucleus of it. It toils for the welfare of them. Quality measure is the major initiative of the college. It has highly qualified and research oriented staff. Besides ICT, they implement several teaching to make education faithful. Large number of extension activities take place. Infrastructural facilities are adequate student progression is adequately proportionate. Governance is decentralized. Several best practices are follow to develop multifacilated personality of students.

VISION:

To promote educational, social, cultural and economic development of the students and inculcate in them the skills of employment, entrepreneurship and balanced emotional growth.

MISSION:

We are committed to providing value based holistic education in the fields of Arts and Commerce with emphasis on individual excellence, social commitments and quality enhancement of all the stakeholders.

Hon. Sarchitnis

Hon. Sarchitnis Message:

"Education is Not Preparation for Life; Education is Life Itself " - Hon. Smt. Nileematai Vasantrao Pawar, Sarchitnis, Martaha Vidya Prasarak Samaj, Nashik. This beautiful & profound statement encapsulates the value of education. Nothing can quite uplift our spirit in quite the same manner as education does. Yes, there are some exceptions of people attaining greatness without formal education. But for the rest of us, education is

the foundation on which to build our dreams into reality. Not long ago, education merely meant the transfer of knowledge from the teacher to the taught.

Today, education is much more than that. It has been estimated that the entire body of knowledge is doubling about every three years. To keep pace with this explosive growth is quite impossible. I firmly believe that the key differentiators that matters is the ethos of the Institute.

We are confident that our students will be meeting your requirements and contribute to your success, as has been out experience over past years. We request you to provide them the opportunity in your esteemed organization to achieve there career goals.

Hon. Principal

Principal Message:

Maratha VidyaPrasarkSamaj's Arts & Commerce College, VadnerBhairav, Chandwad was established in 2009. It is affiliated to University of Pune. It caters to the educational needs of students dwelling in rural areas around ChandwadTaluka.It provides graduation

courses in Arts and Commerce Its working principal to motive of institute “BHUJAN HITAY, BAHUJAN SUKHAY”

At present, students can opt for B.A. with any of the following special subjects- Economics, Politics and Marathi. The subject Geography and Psychology it taught at general level. Along with those courses the college has introduced Self Employment based Short term courses for girl students and women in the town. There is a separate gymnasium for boys and girls.

The college has been sanctioned an N.S.S. unit 100 volunteers. The departments organizing curricular, co-curricular, students welfare and social activities are as follows.

Commerce Association, Social Sciences Association, Literary Association, Students’ welfare Association, Girls Forum, Soft Skills Development Center, National Service Scheme and Gymkhana Association etc.

3. Objectives of the Study

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:Accordingly, Green Audit mainly emphasize the following key areas-

1. **Saving power :**

This includes energy audit where the auditors identifies way to save electric, natural gas, and other forms of power that are inefficient or being wasted in the organization. This is done by recommending more efficient electric heating & cooling etc.

2. **Saving water:**

This involves educating the employees on ways to save, recycle & reuse precious water resources both inside & outside the premises. The basic emphasis should be to reduce water consumption.

3. **Greening the work place:**

Thisis achieved by designing a greener office space. This involves useof alternate power sources like solar power, reducing biological contaminants like pesticides, implementing green landscaping option & rain water harvesting.

4. **Driving Green:**

Vehicle driving is one of the largest contributors to both energy use & environmental pollution. The employees' should be trained to make more fuel efficient driving choices, optimize fuel consumption & consider alternate fuel vehicles. Possibilities to use public transport or group travelling have also to be explored for reduced gas emissions. Periodic emission tests need to be conducted to check for efficient fuel consumption.

4. 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

5. Observations and Recommendations

5.1. Water Use

This indicator addresses water consumption, water sources, irrigation, storm water, appliances and fixtures. A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use.

Observations

The study observed that major sources of water is Well water. Water is used for drinking purpose from RO after treatmentthere are two RO having capacity 1500 liter per hour. Water is used for canteen, toilets, laboratory and gardening purpose. During the survey, no loss of water is observed, neither by any leakages nor by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 7,000 L/day, which include 5,000 L/day for domestic purposes, 2,000 L/day for gardening purpose.

From the Canteen, water used for drinking purpose analyzed as per IS 10500:2005 drinking water specification and observed it was potable.

Test Report

Sr. No.	Parameters	Results	Acceptable Limit as per IS 10500: 2012	Units
1.	Color	1	*Max.* 5	Hazen Units
2.	Odour	Agreeable	Agreeable	-
3.	pH	7.02	6.5-8.5	-
4.	Turbidity	0.7	*Max.* 1	N.T.U.
5.	Total Dissolved Solids	144	*Max*. 500	mg/L
6.	Calcium (as Ca)	9	*Max.* 75	mg/L
7.	Chloride (as Cl)	13	*Max*. 250	mg/L
8.	Fluoride (as F)	<0.05	*Max.* 1	mg/L
9.	Iron (as Fe)	<0.06	*Max.* 0.3	mg/L
10.	Magnesium (as Mg)	5.8	*Max.* 30	mg/L
11.	Nitrate (as NO_3)	8.12	*Max.* 45	mg/L
12.	Sulphate (as SO_4)	19.80	*Max.* 200	mg/L
13.	Alkalinity (as $CaCO_3$)	48	*Max.*200	mg/L

14.	Total Hardness (as $CaCO_3$)	60	*Max.* 200	mg/L
15.	*E.coli*	Absent	Not Detectable	/100 ml
16.	Total Coliforms	Absent	Not Detectable	/100 ml

RO Plant

Recommendations

- Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's used for such usage, are regularly serviced and the wastage of water is not below the industry average for such equipment's used in similar capacity.

- Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations.
- The college has no separate treatment plant for Sewage water which will use for gardening purpose.
- The college has to take actions to strengthen rain water harvesting. Rain water Measurement of quantity of water obtained from the rain water harvesting should be done.
- Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged. In campus small scale/medium scale/ large scale reuse and recycle of water system is necessary.
- Year wise water consumption report.
-

5.2 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

Energy source utilized by all the departments and common facility center is electricity only. Total energy consumption is determined as 65532 KWH/Year by major energy consuming equipment.

All the departments and common facility centers are equipped with LED lamps. Approximately 48LEDwere counted during survey. Besides this,recently 10 KW

photovoltaic cellwillproposed to installed in the campus as an alternate renewable source of energy. Equipment like Computers are used with power saving mode. Also, campus administration runs switch–off drill on regular basis. In all departments electricity was shut downafter occupancy time as one of the practices for energy conservation. For paperless environment and energy efficient use ERP system implemented in the campus.

Recommendations

- This includes evaluation of procurement practices with ISO 50001. This does not exactly mean that you need to buy the most efficient, but you need to buy the most efficient which is financially viable. Example AC with efficiency star ratings, Transformer etc.
- Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs
- Monitor and understand the importance of different sources of college energy consumption, and set appropriate and measurable targets for a reduction certain areas of consumption and/or in the overall consumption of energy.
- Ensures that all electronic and electrical equipment's, such as computers, are switched off when not in use.
- Centralized controls of lighting, auditorium etc. to avoid any miss-use of electricity
- Installation of LED lamps instead of CFL.
- Installation of Solar panels, Power Purchase Agreements with Solar Power Plant Owners to buy environmentally friendly energy Source etc.
- Shift to paperless regime wherever not required, example attendance muster replaced by biometrics, DG logbook replaced by computerised logbook, daily reports converted from paper to paper less, HOD meetings converted to paperless formats, and all such examples.
- Appreciate that it is preferable to purchase electricity from a company that invests in new sources of renewable and carbon-neutral electricity.

- If there are equipment's running on standby mode, reduce the energy consumption on standby mode or minimize the running of equipment's on standby mode

5.3 Waste Generation

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus. The different solid wastes collected as mentioned above.

Observations

College hasown facility to handle the canteen waste and used as a manure in garden. The total solid waste collected in the campus is 5 to 8 kg/day. Waste generated from tree droppings is a major solid waste in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Non Bio-degradable waste. Segregation of solid waste generated in all lab is also practiced. Single sided used papers reused for writing and printing in all departments. Important and confidential reports/ papers are sent for recycling after completion of their preservation period to localraddi center. Metal waste and wooden waste is stored and given to authorized Scrap agents for further processing. The institute has adopted composting in culture house on 158 sq. ft. land. The main purpose of this is to

reduce disposable waste in the college campus. After complete process of composting, it is used as manure in the garden and lawns

Composting Unit

Dust Bins

Recommendations

- Reduce the absolute amount of waste that produces from college staff offices.
- Make full use of all recycling facilities provided by Nagar panchayat and private suppliers, including glass, cans, white coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste with responsibility for recycling clearly allocated.
- Single sided papers to be used for writing and photocopy
- Important and confidential papers after their validity to be sent for pulping.

5.4 E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic Components contain cadmium, lead, mercury and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

Observations

The E-waste generally includes the tubelights,CFL, LED are stored intothe scrap yard of college andstored. This waste material isyet to be disposed. E-waste generated in the campus is very less in quantity. The college has total of 21 computers and 18 printers in working condition. The cartridges of laser printers are refilled outside the college campus. Administration conducts the awareness programmes regarding E-waste Management with the help of various departments.

The audit team noted that the technical life time / service life of most of the electronic equipment's is yet to be over, thus the presently there is limited generate ion of waste. However, college needs to device long term and regularized policy of the e -waste disposal in future.

Recommendations

- Use reusable resources and containers and avoid unnecessary packaging where possible.
- Recycle or safely dispose of white goods, computers and electrical appliances
- Always purchase recycled resources where these are both suitable and available.

5.5 Green Area

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

Green Area of College Campus

Observations

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal and all departments faculty members.

Campus is located in the vicinity of approximately 85 types (species) of trees.Total 317 trees are available in the college campus. Various tree plantation programs are being organized during the month of July and August at college campus and surrounding villages. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes plantation of various type of indigenous species of ornamental and medicinal as well as wild plant species. Under the biodiversity and ecological survey. Rain water harvesting plant is well maintained. Also college has well equipped Firefighting system.

Recommendations

- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects and community service.
- Create awareness of environmental sustainability and take actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- Celebrate every year 5th June as 'Environment Day' and plant trees on this day to make the campus more Green.

6. Environment

6.1 Air Quality: Air quality in the academic institute is very important for health of thestudents, faculty and staff of the institute. The air pollution sources in the college campus are wind storm, pollen grains, natural dust, vehicular emissions, generators, fires and laboratory fumes etc.

Observation: College has own vehicle for transportation for student therefore vehicle moment of student is very less in campus. Also college has enforced for use the electrical Bikes. Therefore many students purchased electrical Bikes.All results of Ambient Air monitoring Near Main Gate&Backside of college found within limits As perNational Ambient Air Quality Standards, 2009.

Vehicle for Transportation

Electrical Bike

Ambient Air Test Report(Near Main Gate)

Meteorological Data / Environmental Conditions				
Average Wind Velocity: 3.0 km/h	Wind Direction: E-W	Relative Humidity (Max./Min.): 73/65 %	Temperature (Max./Min.): 26/18°C	Duration of Survey: 24 h

Parameter	**Results**	**NAAQS 2009**	**Unit**
Sulphur Dioxide (SO_2)	**12**	80	µg/m^3
Nitrogen Dioxide (NO_2)	**18**	80	µg/m^3
Particulate Matter (size less than 10 µm)	**56**	100	µg/m^3
Particulate Matter (size less than 2.5µm	**20**	60	µg/m^3
Ozone (O_3)	**<19.6**	180	µg/m^3
Lead (Pb)	**<0.02**	1	µg/m^3
Carbon Monoxide (CO)	**0.54**	4	mg/m^3
Ammonia (NH_3)	**<4**	400	µg/m^3
Benzene (C_6H_6)	**<1**	5	µg/m^3
Benzo (a) Pyrene (BaP)	**<0.2**	1	ng/m^3
Arsenic (As)	**<0.3**	6	ng/m^3
Nickel (Ni)	**<3**	20	ng/m^3

Ambient Air Test Test Report(Back side)

Meteorological Data / Environmental Conditions				
Average Wind Velocity: 3.0 km/h	Wind Direction: E-W	Relative Humidity (Max./Min.): 73/65 %	Temperature (Max./Min.): 26/18°C	Duration of Survey: 24 h

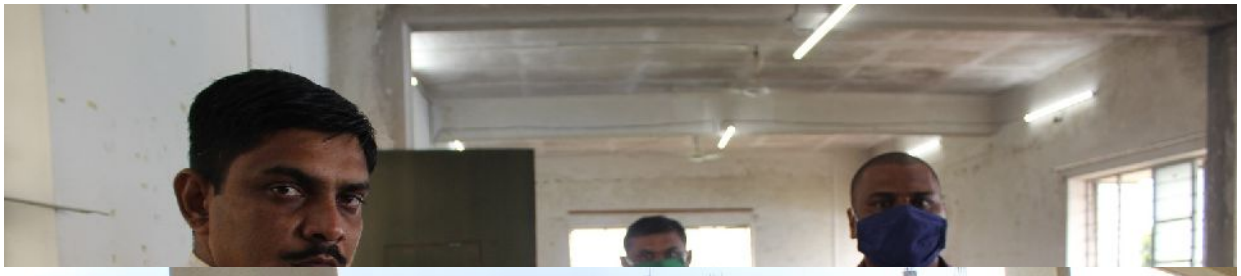
Parameter	**Results**	**NAAQS 2009**	**Unit**
Sulphur Dioxide (SO_2)	**10**	80	µg/m^3
Nitrogen Dioxide (NO_2)	**11**	80	µg/m^3
Particulate Matter (size less than 10 µm)	**42**	100	µg/m^3
Particulate Matter (size less than 2.5µm	**18**	60	µg/m^3
Ozone (O_3)	**<19.6**	180	µg/m^3
Lead (Pb)	**<0.02**	1	µg/m^3
Carbon Monoxide (CO)	**0.50**	4	mg/m^3
Ammonia (NH_3)	**<4**	400	µg/m^3
Benzene (C_6H_6)	**<1**	5	µg/m^3
Benzo (a) Pyrene (BaP)	**<0.2**	1	ng/m^3
Arsenic (As)	**<0.3**	6	ng/m^3
Nickel (Ni)	**<3**	20	ng/m^3

6.2 Noise Environment: The noise levels measurements were carried out using Noise level meter. The Noise levelsurvey was carried out at four locations, at outside, inside as well in classroom & first, second Floor. The majorsource of noise identified in the study area has been predominantly the vehicular movement and the transportation activities.

Location	**Time**	**1**	**2**	**3**	**4**	**5**	**Noise Level Readings dB (A)**
Outside	11.00	47	51	53	49	50	50.00
Inside(Porch)	11.30	51	50	50	48	49	49.06
In Classroom	12.00	52	52	51	51	50	51.02
1St Floor	2.00	48	49	48	48	49	48.04
2nd Floor	3.00	47	47	48	48	48	47.06

As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))			
Area Code	Area Type	Limits in dB (A)weighted scale	
		Day (6 a.m. to 10 p.m.)	Night (10 p.m. to 6 a.m.)
C	Residential	55	45

Observation: All results of Noise level monitoring (Inside & Outside) found within limits as per the Noise Pollution (Regulation & Control) Rules, 2000



6.3 Illumination Study: The Illumination Study were carried out using Lux meter. The Illumination Study was carried out at two locations, in Classroom & Laboratory

Sr. No.	Location	Time	Lux Level Reading (LUX)				Average LUX
			1	2	3	4	
1.	Class room	12:00	238	239	240	240	239.02
2.	Laboratory	12:30	232	235	239	239	236.00
3.	1St Floor	1.00	300	305	310	305	305.00
4.	2nd Floor	1.30	320	330	321	318	322.02

Observation: All results Illumination Study (Classroom & Laboratory) found within limits as per Factory Act Rules-Section-35, Schedule B.

6.4 Ventilation Study:

Sr. No.	Location	Temp. (^{0}C) (Max/Min)	Humidity (%) (Max/Min)	Local Air Velocities (m/s)					
				1	2	3	4	5	Average
1.	Class room	27/26	70/63	1.5	1.4	1.3	1.3	1.4	1.38
2.	Laboratory	26/24	78/70	1.4	1.2	1.3	1.4	1.5	1.36
3.	1St Floor	25/26	77/69	1.5	1.0	1.2	1.6	1.2	1.28
4.	2nd Floor	27/26	76/70	1.1	1.4	2.3	1.6	1.7	1.60
Observation: Air Velocity Should be at least 0.5 m/s to produce cooling effects **Remark:** Comfortable									

Ventilation Study

Photo Gallery

Photo Gallery

7. Acknowledgement

We are grateful to the committee members of Art & Commerce College VadnerBhairavTal- Chandwad, Dist Nashik to award this prestigious project and allowed us to enter the new era of Green Audit in the College Campus.

Further we sincerely thank the college staff for providing us necessary facilities and co-operation during the audit. This helped us in making the audit, a success.

Further we hope, this will boost the new generation to take care of Environment and propagate these views for many generations to come.

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Ashwamedh
Engineers & Consultants
Laboratory Services Division

GREEN AUDIT REPORT

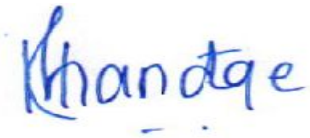
Art & Commerce College VadnerBhairav , Tal- Chandwad, Dist Nashik

Conclusion and Summary of Findings

1. The College has Rainwater harvesting system which is efficient and sufficient.
2. College has provided wet waste, dry waste and semi dry waste bines for segregation and collection of solid waste. This has been done in entire campus in open space and inside the buildings. The system is working efficiently.
3. College has no Solar System.
4. The College has created great awareness among the students and staff about the green practices.
5. The College is well landscaped and the green cover is reasonably good and they are found to beincreasing the green cover on a continuous basis.
6. The College canteen & other waste are composted and used as manure for the green cover of the campus.
7. College has no waste water treatment plant
8. The water quality in the campus including that of canteen is tested and found potable.
9. The College has provided RO treated water for drinking to every students
10. Noise level in Classrooms and labs is found less than 50 dbwhich is within the safe limits as per Noise Pollution Control rules,2000.

11. All results of Illumination studies (Classrooms and labs) found within limit as per Factory rules Section 35 Schedule b.
12. Ventilation found satisfactory.

For Ashwamedh Engineers & Consultants



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