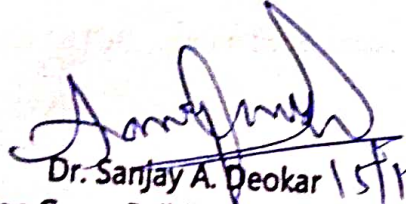




**SUPREME**  
Electrical Energy and  
Consultancy Services

## CERTIFICATE

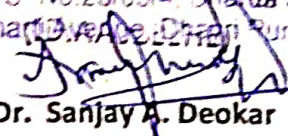
This is to certify that "Supreme Electrical Energy and Consultancy Services, LLP", Pune has conducted Green Audit of "Zeal Institute of Business Administration Computer Application and Research, Narhe, Pune-411041" It has been observed that the institute not only have implemented various Green measures in the campus for wellbeing of staff and students but also has separate Green policy of the campus which helps to maintain healthy environmental balance.

  
Dr. Sanjay A. Deokar 15/10/2022  
Indian Green Building Council (IGBC)  
Accredited Professional  
(ID:AA02EEHE)



**SUPREME ELECTRICAL ENERGY &  
CONSULTANCY SERVICES**

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Vimal Bharati Avenues, Dhayari, Pune-411041

  
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# **GREEN AUDIT REPORT (2022-23)**

**Zeal Institute of Business Administration Computer Application and  
Research**

**Pune-411041.**

**Phone No: 020-67206031/32/37, 9561090580**

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*Prepared by*  
**Supreme Electrical Energy and Consultancy Services LLP, Pune.**  
**Year:2022-23**

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## Preface

We are very grateful to the Management and Director of **“Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus”**, for giving us an opportunity to carry out Green Audit of the institute. Further, we sincerely thank to all other college staff for providing us necessary facilities, required data and co-operation during the Green Audit. This helped us to complete the Green Audit successfully.

Further, we hope, this will boost the new generation to create healthy environment in the campus and propagate these views for many generations to come.

Dr. Deokar Sanjay A.  
BEE Certified Energy Auditor (EA- 4494)  
Indian Green Building Council (AP)  
Environmental Lead Auditor (ISO:14001-2015)

## **CERTIFICATE**

This is to certify that "Supreme Electrical Energy and Consultancy Services, LLP", Pune has conducted Green Audit of **"Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus"**. It has been observed that the campus not only have implemented various Green measures in the campus for wellbeing of staff and students in the campus but also has separate Green policy of the campus which helps to maintain healthy environmental balance.

**Dr. Sanjay A.Deokar**  
**BEE Certified Energy Auditor (EA- 4494)**  
**Indian Green Building Council (AP)**  
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## **1. 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. Several institutions have applied various viewpoints to preserve the environment within the campus such as promotion of energy savings, recycling of waste, water use reduction, 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 plans. A green auditor will study an organization's environmental effects in a systematic and documented manner and will produce an environmental audit report. A clean and healthy environment aids effective learning and provides a conducive learning environment.

A clean and healthy environment aids effective learning and provides a conducive learning environment. Educational institutions now a day are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco- friendly. To preserve the environment within the campus, various measures are applied by the several educational institutes to solve their environmental problems such as promotion of the energy management & conservation, waste management, rainwater harvesting etc. The activities pursued by colleges can also create a variety of adverse environmental impacts. Green audit is a way to show for the institute what type of carbon footprint they are leaving on the planet and guide them to reduce it. Green Audit involves the inspection of an institute to assess the total environmental impact of its activities. As a part of such practice, Green Audit was conducted to evaluate the actual scenario in the campus.

Green audit can be a useful tool for an institute to determine how and where they are using the most energy or water or resources, an institute can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can also create health consciousness and promote environmental

## Green Audit Report for Zeal Institute of Business Administration Computer Application and Research", Narhe, Pune-411041

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awareness, values and ethics. It guides all staffs and students for better understanding of green impact in the campus. Green audit promotes financial savings through optimum utilization of resources.

**"Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus"** is deeply concerned about the problem of global warming and environmental hazards due to the development and urbanization. Thus, the institute has taken steps to make campus green by conducting Green Audit.

The baseline data prepared for the **"Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus"**, will be a useful tool for campus greening, resource management, planning of future projects, and a document for implementation of sustainable development of the college. Existing data will allow the institute to compare its programmes and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects. We expect that the management will be committed to implement the green audit recommendations to promote environment protection and sustainability. We are happy to submit this green audit report of **"Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus"**, to the concerned authorities.

## 2. About the College

The Institution aims at imparting education that is man making, character building and creating an ideal citizen in the global perspective. Such education is imparted that may boost career opportunities for self-fulfilment.

ZES has established in the year 1996, under the expert guidance of Shri. S. M. Katkar to provide quality education, Zeal Education Society has made a mark for itself as a renowned institute in the Pune region. ZES offer a team of highly qualified Staff, state of the art infrastructure and extraordinary vision that every student who is a part of the Zeal family marches out of the campus with top level confidence and abilities to be competent enough to face the cutting edge competition in the corporate world today. The society imparts knowledge from KG to PhD by establishing Zeal College of Engineering and Research, Zeal Polytechnic, Zeal Group of Management Institutes, Dnyanganga School, Dnyanganga Junior College, Dnyanganga College of Education and Silver Crest School. All the courses are approved by AICTE, New Delhi, recognized by DTE Govt. of Maharashtra & affiliated to Savitribai Phule Pune University. ZIBACAR welcomes you to the one the finest management institutes in Pune region. We are committed to the proper progress of students for a flourishing career.

The Institute aims at bringing out the budding talents within each student and offer a motivating supervision to discover their capabilities which can help them become competent professionals.

The Institute extends its full support and guidance through well qualified staff who are more that eager to improve professional as well as personal skills and help the students explore their full potential.

ZIBACAR offers state of the art infrastructure inclusive of a pleasant campus, up-to-date equipment and facilities that help the students to concentrate on their work. .

We have a team of highly qualified professors who strive to ensure that they impart knowledge which is sync with the University syllabus and the currents industry



prerequisites. The amenities like Culture Centre, Music Studio, Dance Studio, TED Studio etc. have been offering opportunities to the students to showcase their talent.

The college is equipped with state of art infrastructural facilities like advanced class rooms, laboratories with high end equipment's, updated library, playground, gymnasium and auditorium. The college has hostel facility for the boys and girls in the campus. Vision and Mission of the institute is given below:

**Vision:**

**To be recognized as a Management Institute of Excellence by developing an individual's potentials in the field of Management through spread of knowledge and wisdom in an intelligent environment.**

**Mission:**

- **By enriching the knowledge and enhancing the facilities through management education with relevance of industry and society as a whole.**
- **By facilitating a harmonious symphony of excellence in teaching with a practical approach which shall be synonymous with academic rigor, research culture and sustained efforts to maximize value based education.**
- **By developing holistic focus on character building along with a range of curricular, co-curricular and extracurricular activities.**

### **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 the Green Audit are:

- To introduce and aware students to real concerns of environment and its sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.
- To identify, quantify, describe and prioritize framework of environment sustainability in compliance with the applicable regulations, policies and standards.
- To promote the environment management and conservation in the college campus.

#### **4. Methodology**

In order to perform the 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 Management & Conservation.
- ☐ Waste water Management.
- ☐ Green area Management.
- ☐ Indoor Environment

## **5. Observations and Recommendations**

### **5.1 Water Management**

This point towards level of water consumption, types of water sources, water storage strategies, 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.

#### **a) Observations**

The study observed that the well with 48-diameter X 20 ft. depth having more than 10 lack liter of water storing capacity is the main source of water. The same water is used for cleaning and for gardening. Liquid waste from the points of generation like the canteen and toilet etc. is being let out as effluent into a proper drainage facility. Internal staff does the cleaning twice in a year and register is maintained. The institute has separate R.O plant for drinking water purpose.

- ✓ It has been observed that no water leakage is found at cooler side or in toilets also.
- ✓ College has constructed rooftop rainwater harvesting system for water conservation. The rainwater collected through network of PVC pipe line which outlets into open well with proper land slope. This is used for watering the tree and plants in the campus through drip irrigation system. This ideal Rain Water Harvesting system has ensured the provision of water to plants in the campus for 3 months in critical summer season.

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(Rainwater harvesting arrangement the in the college building)

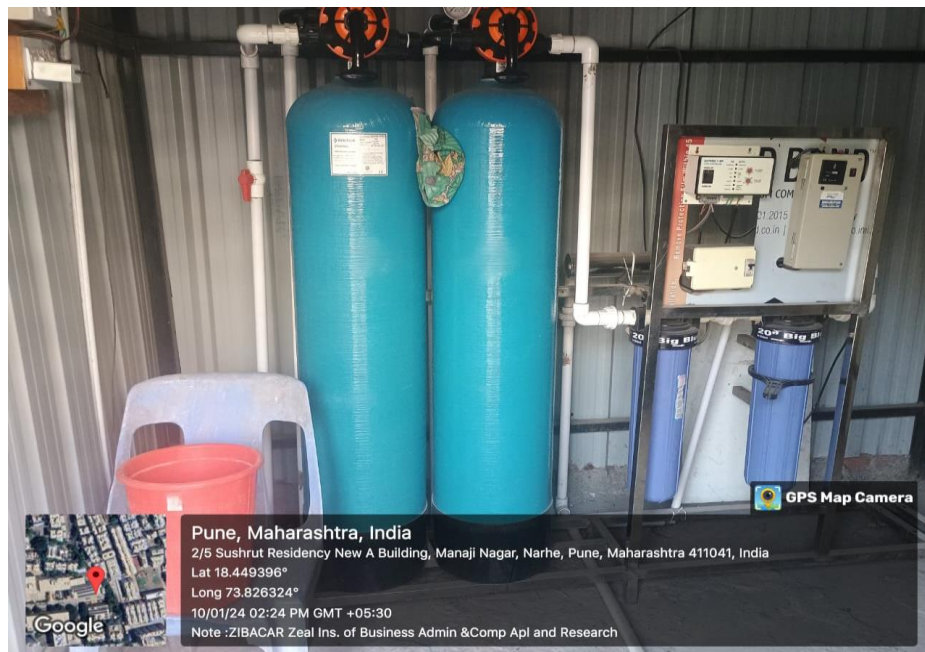


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(Open well for general water use arrangement in the Campus)



(R.O. Plant for drinking water)



**b) Recommendations**

- ☐ Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged. Filtering of suspended solids shall be ensured by providing suitable filtering media before letting the water into the collection tanks.
- ☐ Water efficient fittings & taps to be installed in toilets, bathrooms & to save water. Efficient and proper waste water disposal and recycling arrangement must be done.
- ☐ Drinking water testing has to be done once in 3 months. Water level monitoring & controlling overflow of water is necessary, for this implementation of automatic water level controller is essential.
- ☐ Minimize bore water use, thereby conserving water resources. Use pervious paver blocks in the campus to avoid the rain water run-off.
- ☐ The tank cleaning should be done twice in a month. Adopt IGBC Green policy in the campus.
- ☐ Install efficient water flush fixtures. Ensure continuous monitoring of water consumption, both on supply and demand side, to identify improvement opportunities in potable water efficiency.

## 5.2 Energy Management 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.

### a) Observations

Energy source utilized by all the departments and administrative section is electricity only. Total connected load is determined as 32 KW. All the departments and common facility centers are equipped with conventional 40 W tubes and 9w/18 W LED fixtures

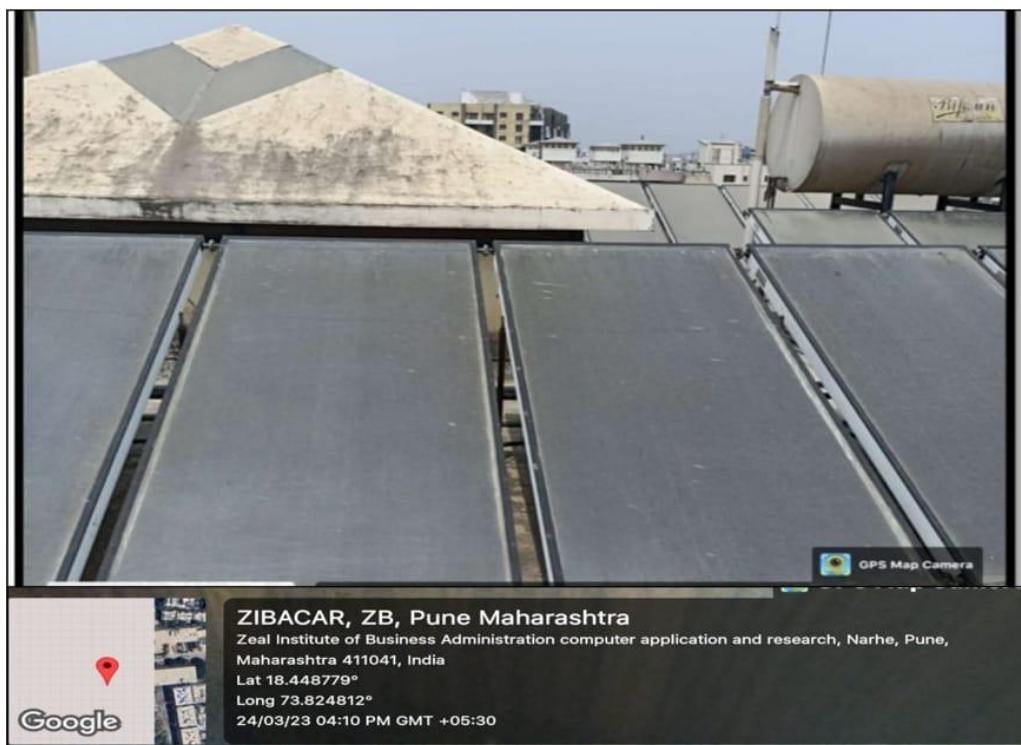
It has been observed that the use of 120 KW solar PV roof top renewable energy and 4000 liters per hour capacity roof top solar photovoltaic system at the girl's hostel is present in premises which help to minimize the environmental impacts of generating energy through fossil fuels.



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(120 KW roof top net metering Solar PV System in the Campus.)



(4000 Liter per/hr rooftop Solar PV hot Water System at Girls Hostel)

**b) Recommendations**

- Install integrated solar based LED street lights (12W/20W/30W) as per requirement. It can be fitted with timers to start & stop them automatically. Replace

old 40-watt T12 tubes by 18-watt LED tubes in a phased manner. Replace the existing ceiling fan (80W) by energy efficient brushless DC 28-Watt fans in a phased manner

- Use occupancy sensors in office & staff rooms.
- Use sensor based 5-Watt LED bulbs in toilets and bathrooms.
- Enhance energy efficiency in the interior spaces, to optimize energy consumption, thereby reducing environmental impacts.

### **5.3 Waste Management**

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 its management is a burning issue. 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.

#### **a) Observations**

It is observed that solid waste is the highest source of waste out of total waste generated. Journal papers, Record files are the main sources of solid waste. The solid waste disposal method adopted by institute is that paper is collected in bins and handed over to concerned authority. The wet waste is generated only in common canteen and hostel mess. The large amount of waste generated from mess and canteen of the campus is collected and then it is sent through local municipal authority for processing. Chemicals are stored in cupboard. There is no hazardous waste generated at college, whereas the used chemicals are diluted with water and then discharged in sand pit. The institution's key operations have less impact on the environment as the college is very conscious of generating negligible waste. Waste characterization is the first critical step in successful waste management. Institute have a simple solid waste management system. It involves everything from collection to disposal.

Paper and paper products, pens, disposable drink containers, waste food in canteen and compostable organic material etc. are the waste products in college campus.

Adequate number of trash cans and dust bins are placed all over the campus. Waste is separately collected at different locations in bins based on the properties like disposable and non-disposable waste material. The vegetable waste from the canteen are arranged to be disposed regularly to keep the campus clean. Liquid waste generated from canteen comprises of food wastes, dairy products and domestic waste water is discharged in soak pit. The toilet waste is collected through piping system and discharged into septic tank.

**There is a proper arrangement for building wastes segregation like dry, wet, plastic, paper, glass and biological wastes in the campus.** Institute facilitate proper disposal for recycling of wastes, thereby avoiding such waste being sent to landfills.

**E-waste of computers, electronic and electrical instruments/equipments is used for demonstration purpose to the students. Whereas outdated and scrap e-waste is handed over to local authorised scrap vendor.** UPS batteries are exchanged with new batteries considering scrap values from the suppliers. The institute also takes benefit of the various buy back offers from the suppliers.

**Garbage Compositing Plant:** The ZES has 11 acres of campus full of trees and plants. Due to greenery on the open space, naturally it leaves some dried leaves, branches, and unnecessary grass in the campus. Besides, there is vegetable and kitchen waste from canteen, paper pieces etc in the campus. This great volume of waste resulted into the positive idea of the construction of the Composting Plant in the college campus. The college regularly collects all the waste from the campus and stores it in the cement concrete .Composting Tank having 20 ft length x 10 ft width x 5 ft height having the storage capacity of 28 tons of organic material which is used as fertilizer for growing plants in the college campus. This composting plant has helped to keep the college campus clean and provided fertilizer for campus trees, plants and botanical garden in our college. It has proved very effective to maintain the cycle to green wastes. College has taken initiative to treat domestic liquid waste generated in college itself by installing Sewage Treatment



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Plant/Effluent Treatment Plant.STP is also energy efficient as there is no any electricity consumption for treatment of sewage water.



(Segregation of Glass, Paper, Plastic and Biological Waste)



The quantity of the e-waste produced in the college has been systematically disposed off. The College is aware that e-waste is hazardous to the environment and health of the people and it needs to be recycled or disposed in appropriate ways. Every year or two, e-waste is collected and sent off for further recycling and appropriate disposal through the electronic equipment's distributor. He repairs and maintains the College electronic equipment for smooth functioning.

**b) Recommendations**

1. Reduce the absolute amount of waste that is produced from college staff offices. Make full use of all recycling facilities provided by City Municipality, local authority and private suppliers, including glass, cans, white, colored and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
2. E-waste should be collected by approved E-waste Management Company.
3. Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
4. Encourage the use of green consumables in the interior space that have low impacts on human health and the environment.

**5.4 Green Area Management**

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 programs.

**a) Observations**

Campus is located in very environment friendly area. Various tree plantation programs are being organized at college campus and surrounding areas by institute. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among students. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species. Total green area in the campus is 4000 Square Meter. During trees/plants counting survey it is observed there are various trees in the institute campus which includes Neem, Sagwan, Kanchan, Bottle brush, Suru, Gulmohar, Rubber tree, Mango, Fig tree, Ashok, Badam, Chapa, Bakul, Arjun, Rain tree and many others which helps to keep healthy environment in the campus for the wellbeing of staffs and students. There are many initiatives taken by the college to make the campus ecofriendly.

- 1) The college maintains the plants and greenery around the campus.
- 2) The Tree Plantation drive are being conducted regularly.
- 3) Landscaping with trees and plants by using native species of local region to promote natural ecological conditions.
- 4) NSS volunteers had actively participated in cleaning & green area awareness activity organized at historical places.
- 5) Use of Bicycles/ Battery powered vehicles for intercampus transport.
- 6) Pedestrian Friendly pathways with pervious nature to prevent rainwater runoff.
- 7) Ban on use of plastics in campus.
- 8) Restricted use of vehicles- Organization of no Vehicle Days in the campus.

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(Plantation activities and Greenery in the Campus)

**b) Recommendations**

- ☐ Establish an institute level **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.
- ☐ Celebrate every year **5<sup>th</sup> June as 'Environment Day'** and plantation activities on this day to make the campus Green..
- ☐ Ensure that greenaudit is conducted annually and action is taken on the basis of audit report, recommendation and findings. Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- ☐ Encourage students and staff for Green campus conversion: Green Campuses can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 - 30 % and water savings around 30-50%.

**5.5 Indoor Environment**

**a) Observations:**

Good indoor environmental quality is essential to the health, happiness and productivity of occupants. It is observed that indoor environment of the institute is moderate. The indoor plant species are not sufficient to create healthy environment. The requirement is to have at least one plant in every 100 sq.ft of carpet area of regularly office spaces. Plants like these help in absorbing toxins like formaldehydes. This can improve the indoor air quality inside the space, besides enhancing the aesthetics. There are several factors which impact the quality of indoor environment such as:

- Access to Day lighting



- Indoor air quality
- Availability of fresh Air
- Thermal Comfort
- Cleanliness and hygiene
- CO2 monitoring
- Ergonomics and Acoustics
- Connection to the outdoor environment

**b) Recommendations:**

- In Future encourage the use of eco-certified interior products that consider impacts through the life cycle, thereby resulting in lower environmental impacts.
- Provide adequate outdoor air ventilation, to avoid pollutants affecting indoor air quality.
- Provide good working environment to enhance the productivity and well-being of occupants.
- Minimize the exposure of building occupants and maintenance persons to hazardous indoor and outdoor pollutants, thereby enhancing indoor air quality and occupant health.
- Promote occupant wellbeing so as to enhance physical, emotional and spiritual well-being of building occupants (Staff and students). Encourage use of indoor plants like Bamboo palm/Areca palm, Lady palm, Rubber Plant, Peace Lily, Spider Plant, Money plant, Kentia palm, Queensland Umbrella, Boston fern, Aloe Vera, Snake Plant, Mother in law's tongue, Corn or cornstalk plant which helps to remove air pollutants, removes formaldehydes, benzene, trichloroethylene, removes household chemicals & carcinogens, absorbs carbon dioxide, gives off oxygen, resistance to insects and absorbs VOC.

## 6. Conclusion

In the **"Zeal Institute of Business Administration Computer Application and Research, Pune"**, the audit process involved initial interviews with management to clarify policies, activities, records and the co-operation of staff and students in the implementation of mitigation measures. Staff and students were given training how to collect the data for the green audit process. In addition, the approach ensured that the management and staff are active participants in the green auditing process in the college. The baseline data prepared for the **"Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus"**, will be a useful tool for campus greening, resource management, 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. The green audit reports assist in the process of attaining an eco-friendly approach to the sustainable development of the college. Hope that the results presented in the green auditing report will serve as a guide for educating the college community on the existing environment related practices and resource usage at the college as well as spawn new activities and innovative practices. We expect that the management will be committed to implement the green audit recommendations. We are happy to submit this green audit report to the authorities of **"Zeal Institute of Business Administration Computer Application and Research, Pune-411041 campus"**, .Based on the Green audit conducted at your institute you are complying with all-important requirements of NAAC committee.

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