ENVIRONMENTAL AUDIT REPORT

Malad Kandivli Education Society's,

NAGINDAS KHANDWALA COLLEGE OF COMMERCE, ARTS & MANAGEMENT STUDIES AND SHANTABEN NAGINDAS KHANDWALA COLLEGE OF SCIENCE,

Bhavishya Bharat Campus, S V Road, Malad (West), Mumbai 400 064

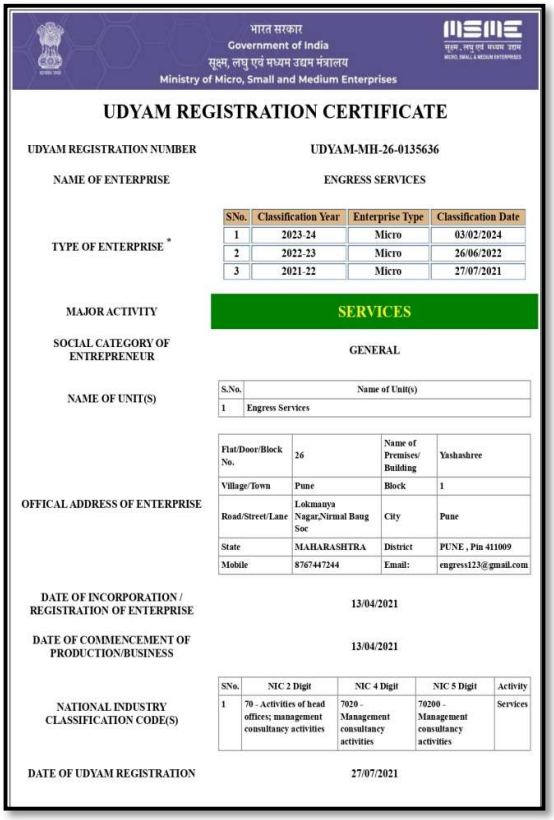
Year: 2024-25

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:



भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-MH-26-0135636
NAME OF ENTERPRISE	ENGRESS SERVICES

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	Engress Services

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION: 27/07/2021

ASSOCHAM

GEM Certificate

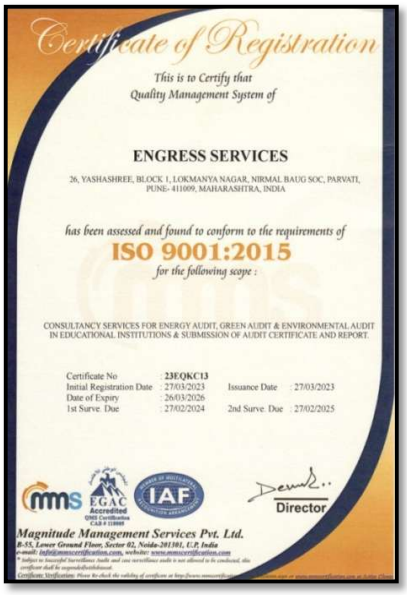
ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects.
ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar, Chairman, GEM
GEM CP 22/788
Deepak Sood, Secretary General, ASSOCHAM



Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

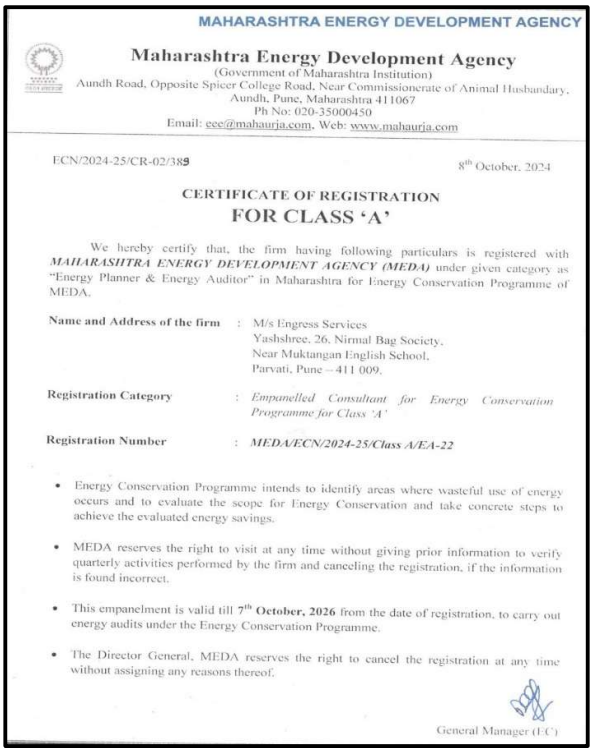
has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EQKC13
Initial Registration Date : 27/03/2023 Issuance Date : 27/03/2023
Date of Expiry : 26/03/2026
1st Surve. Due : 27/02/2024 2nd Surve. Due : 27/02/2025

mms EGAC Accredited IAF
Director

Magnitude Management Services Pvt. Ltd.
B-33, Lower Ground Floor, Sector 02, Noida-201301, U.P, India



MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2024-25/CR-02/389 8th October, 2024

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with *MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)* under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2024-25/Class A/EA-22*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **7th October, 2026** from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 14001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EEKW20
Initial Registration Date : 29/03/2023 Issuance Date : 29/03/2023
Date of Expiry : 28/03/2026
1st Surve. Due : 29/02/2024 2nd Surve. Due : 28/02/2025

mms EGAC Accredited IAF
Director

Magnitude Management Services Pvt. Ltd.
B-33, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

INDEX

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai for awarding us the assignment of Environmental Audit of their campus for the Year: 2024-25.

We are thankful to all the staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. An Environmental Audit is conducted at **Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai**

2. Pollution due to College Activities:

No	Head	Particulars
1	Solid Waste	Paper, Plastic Waste, Food, Organic Waste
2	Liquid Waste	Human Waste
3	Air Pollution	CO_2: On Account of Electricity Consumption

3. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Total Energy Consumed	**145144**	kWh
2	Annual CO_2 Emissions	**134.98**	tCO2e

4. Usage of Renewable Energy & Reduction in CO_2 Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant	**1**	kWp
2	Total Energy Generated by kWp Plant in 24-25	**1200**	kWh
3	Annual Reduction in CO_2 Emissions in 24-25	**1.12**	tCO2e

5. Indoor Air Quality:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**65**	**39**	**54**
2	Minimum	**60**	**35**	**45**

6. Indoor CO_2 Level:

No	Parameter/Value	CO_2, in ppm
1	Maximum	**634**
2	Minimum	**587**

7. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	**234**	**49.8**
2	Minimum	**219**	**46**

8. Water Quality Parameters:

No	Parameter	Value
1	pH Level	**7.39**
2	Total Dissolved Salts	**56**

9. Initiatives on Climate Change:

No	Head	Particulars
1	**Promotion of Renewable Energy**	Installation of 1 kWp Roof Top Solar PV Plant
2	**Promotion of Energy Efficiency**	Usage of Energy Efficient LED Lights
3	**Water Conservation**	Usage of Rain Water for recharging the Underground Water Table
4	**Initiatives on Green India Mission**	Internal Tree Plantation &Conductance of Tree Plantation Drive outside the Campus
5	**Environment Conservation/Awareness**	1. Conductance of Beach Cleanliness Drive 2. Conductance of Dry Leaves Collection Program 3. Conductance of E Waste Collection Drive

10. Assumptions:

1. Emission Fator of Electrical Energy: **0.93 Kg of CO_2 / kWh**
2. Average Solar PV Energy Generation: **4 kWh/Day**
3. Annual Solar Energy Generation Days: **300 Nos**
4. CO_2 Emissions are computed For **Scope- 2**
5. CO_2 Emissions are computed based on Electrical Energy purchased

11. References:

- For CO_2 Emissions: www.ccd.gujarat.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Quality Standards: www.cpcb.com
- For Solar PV Energy Generation: www.rooftopsolar.gov.in

ABBREVIATIONS

Kg	:	Kilo Gram
MSEDCL	:	Maharashtra State Distribution Company Limited
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM-2.5	:	Particulate Matter of Size 2.5 Micron
PM-10	:	Particulate Matter of Size 10 Micron
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

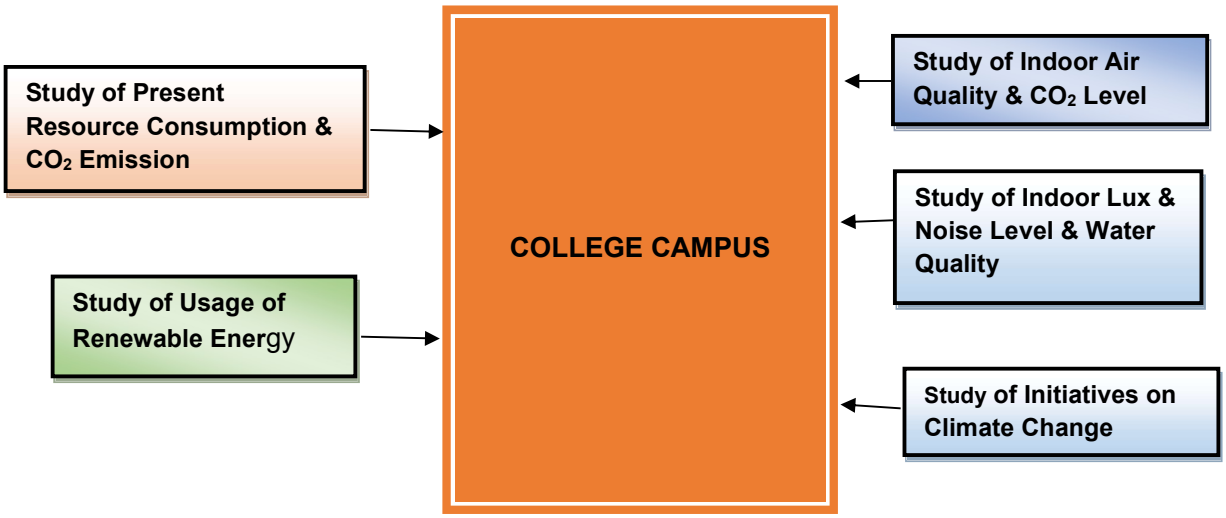
CHAPTER-I
INTRODUCTION

1. Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.2 Key Study Points:



1.3 College Location:

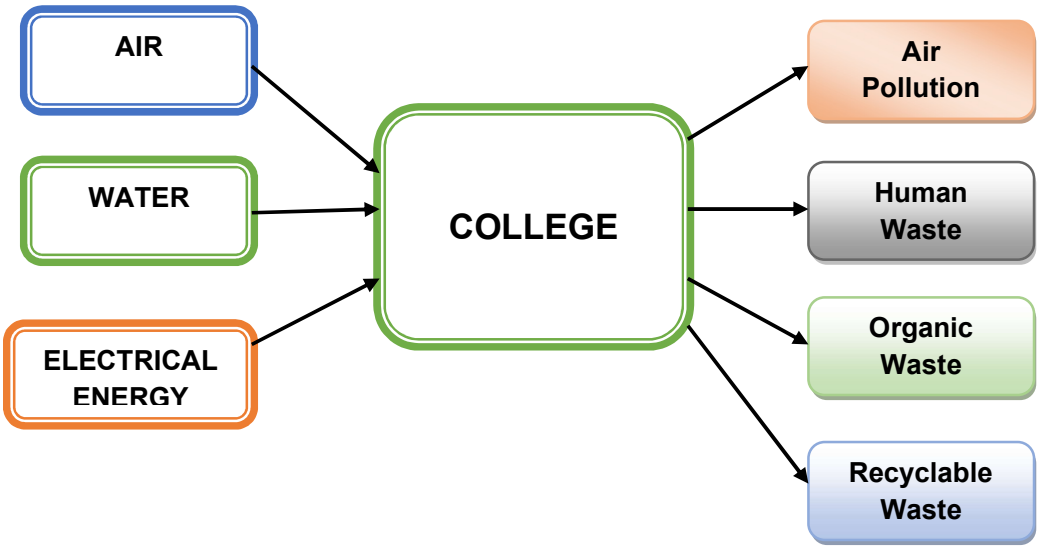
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of Resource Requirement & Waste of a College:



A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. The CO_2 Emission is computed for **Scope-2**

Emission Factor:

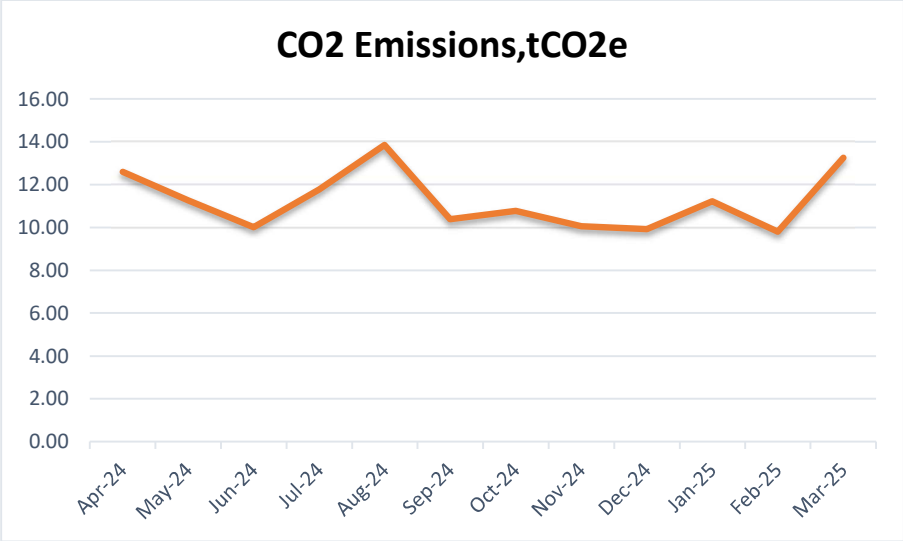
- Emission Fator of Electrical Energy: **0.93 Kg of CO_2 / kWh**

Table No 1: Study of Purchase of Energy & CO_2 Emissions: 24-25:

No	Month	Energy Purchased, kWh	CO_2 Emissions, tCO2e
1	Apr-24	13545	12.60
2	May-24	12122	11.27
3	Jun-24	10782	10.03
4	Jul-24	12671	11.78
5	Aug-24	14902	13.86
6	Sep-24	11176	10.39

7	Oct-24	11589	10.78
8	Nov-24	10819	10.06
9	Dec-24	10672	9.92
10	Jan-25	12072	11.23
11	Feb-25	10540	9.80
12	Mar-25	14254	13.26
13	Total	145144	134.98

Chart No 2: Month wise CO_2 Emissions:



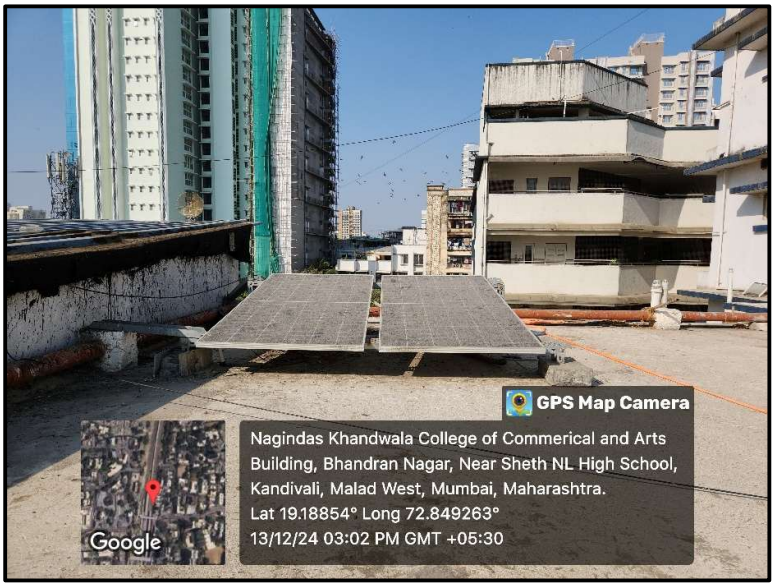
CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **1 kWp**
In the following Table, we present the reduction in CO_2 emissions due to Solar Energy:

Table No 2: Computation of Reduction in CO_2 Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	1	kWp
2	Energy Generated in the Year: 24-25	**1200**	kWh
3	1 kWh of Electrical Energy saves	**0.93**	Kg/kWh
4	**Qty of CO_2 Saved by Solar PV Plant = (2) *(3) /1000**	**1.12**	**MT of CO_2**

Photograph of Roof Top Solar PV Plant:



CHAPTER IV
STUDY OF INDOOR AIR QUALITY

1. Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

2. Air quality is a measure of the suitability of air for breathing by people, plants and animals.

3. Air Quality Index: Air Quality Index (AQI) is a number used by government agencies to measure the **Air Pollution** levels and communicate it to the population.

In this Chapter, we present three important Parameters: **AQI**- Air Quality Index, **PM-2.5**- Particulate Matter of Size 2.5 micron and **PM-10**- Particulate Matter of Size 10 micron

Table No 3: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Office	65	39	54
2	Classroom	63	39	52
3	Computer Lab	63	35	53
4	Library	61	36	46
5	Staff room	60	36	45
	Maximum	**65**	**39**	**54**
	Minimum	**60**	**35**	**45**

Table No 4: Air Quality Index Values & Concentration of PM 2.5 & PM10: (By CPCB):

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

Conclusion:

From the above measured values, we conclude that the observed values of AQI, PM-2.5 & PM-10 are in the **Satisfactory Range**, as per the guidelines given by Central Pollution Control Board.

CHAPTER V
STUDY OF INDOOR CARBON-DI-OXIDE LEVEL

In this Chapter, we present the CO_2 Level in the Campus.

Table No 5: Study of CO_2 Level:

No	Location	CO_2 Level in ppm
1	Office	623
2	Classroom	618
3	Computer Lab	589
4	Library	634
5	Staff room	587
	Maximum	**634**
	Minimum	**587**

Acceptable Level of CO_2 Level as per **World Health Organization** Standard is 1000 ppm

Conclusion:

From the above measured values, we conclude that the observed values of CO_2 Level are within the Limit of Acceptable Value furnished by World Health Organization

CHAPTER VI
STUDY OF LUX & NOISE PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include: **Lux Level and Noise Level.**

Table No 6: Study of Indoor Lux Level and Noise Level Parameters:

No	Location	Lux Level	Noise Level, dB
1	Office	219	48
2	Classroom	226	46
3	Computer Lab	223	49
4	Library	234	49.8
5	Staff room	220	48
	Maximum	**234**	**49.8**
	Minimum	**219**	**46**

Recommended Lux & Noise Level: As per BEE & ISHRAE Guidelines:

A) Noise Level Reference:		
No	**Location**	**Noise Level Range, dB**
1	Offices	45-50
2	Occupied Class Room	40-45
3	Libraries	35-40
B) Reference Lux Level, Lumens:		
1	For Class Rooms	**200 Plus**
2	For Reading Rooms	**200 Plus**

Conclusion:

From the above measured values, we conclude that:

- The Noise Level is within the prescribed Limit
- The Lux Level at various locations is Okay

CHAPTER VII
STUDY OF WATER QUALITY

In this Chapter, we present the Water Parameters like pH and TDS.

Table No 7: Study of Water pH and TDS:

No	Parameter	Value
1	pH Level	7.39
2	Total Dissolved Salts	56

Recommended Values of Water pH & TDS, as per BIS:

A) Reference:		
No	**Parameter**	**Water Parameters Range,**
1	pH Level	6.5 to 8.5
2	TDS	500 (Max)

Conclusion:

From the above measured values, we conclude that: The Water Parameters are within the prescribed Limit

CHAPTER-VIII
STUDY OF INITIATIVES ON CLIMATE CHANGE

The **Government of India** launched the **National Mission on Action Plan for Climate Change (NAPCC)** in 2008. The important initiatives under **NAPCC** for Educational include:

- Promotion of Solar Energy & Energy Efficiency
- Water Conservation
- Mission for Green India
- Capacity Building on Climate Change

In this Chapter we present the various Initiatives adopted by the College.

Initiatives on Climate Change:

No	Head	Action Taken	Photograph
1	**Promotion of Solar Energy**	Installation of Roof Top Solar PV Plant of Capacity 1 kWp	**Solar PV Plant:** 
2	**Promotion of Energy Efficiency**	Usage of LED Lights	**LED Lights** 
3	**Water Conservation**	Usage of rain Water for Recharging the Bore well & Underground Water Table	**Bore Well recharge Point** : 

4	**Mission for Green India**	Tree Plantation outside the Campus	**Tree Plantation Drive** 
5	**Environment Conservation**	Conductance of Beach Cleanliness Drive, Dry Leaves Collection Drive & E Waste Collection Drive	**Program on Beach Cleanliness Drive:**  **Dry Leaves Collection Drive:**  **E Waste Collection Drive**