



Deva Matha College

Kuravilangad P.O, Kottayam



GREEN AUDIT REPORT 2020-21



Preface

Institutional self-inquiry is a natural and necessary outgrowth of quality of higher education. Concern about environmental degradation and realization of values of environment are logical consequences of scholarly research, teaching and learning process. In its pursuit for improving environmental quality and to maintain a pristine environment for the future generation of students, Deva Matha College, Kuravilangad has made a self-inquiry on environmental quality of the campus with the following objectives: (i) To establish a baseline of existing environmental conditions with focus on natural and physical environment; (ii) To understand the current practices of sustainability with regard to the use of water and energy, generation of wastes, purchase of goods transportation, etc; (iii) To promote environmental awareness through participatory auditing process; and (iv) To create a report that document baseline data of good practices and provide future strategies and action plans towards improving environmental quality for future.

This report is compiled by a committee constituted by IQAC. As there was no standard model for such an environment/green audit of campuses in the state, the committee brainstormed and evolved a questionnaire and audit methodology. With the help of student volunteers, the major part of the data was compiled, which the committee analysed.

The committee has made recommendations to take environment protection and energy management to higher levels and it is hoped that this will receive due attention of College Management, Staff members and Student community.

GREEN AUDIT COMMITTEE




DEVA MATHA COLLEGE KURAVILANGAD

AUDIT COMMITTEE

INTERNAL AUDIT COMMITTEE

1. DR. SUNIL C MATHEW – PRINCIPAL , DEVA MATHA COLLEGE, KURAVILANGAD
2. MR. ANISH THOMAS – IQAC CO-ORDINATOR
3. DR. SMITHA SEBASTIAN- ASST. PROFESSOR, DEPT. OF BOTANY.
4. JERRY JOSEPH- ASST. PROFESSOR, P.G DEPT. OF PHYSICS
5. GINCY BABY- ASST. PROFESSOR, P.G DEPT. OF ZOOLOGY
6. CHITHRA K.N- ASST. PROFESSOR, P.G DEPT. OF BOTANY
7. ANJANA PRAKASH- ASST. PROFESSOR, P.G DEPT. OF CHEMISTRY

EXTERNAL EXPERTS

1	<p>DR. DRISSYA T.K SENIOR SCIENTIST CENTER FOR WATER RESOURCES DEVELOPMENT AND MANAGEMENT</p>	
2	<p>DR.DEEPA K.G ASST. PROFESSOR, DEPT. OF PHYSICS KERALA UNIVERSITY</p>	 

DEVA MATHA COLLEGE, KURAVILANGAD

VISION AND MISSION

Our Vision

The college envisages the intellectual development, moral uprightness, social commitment, cultural refinement, spiritual enlightenment, and emotional maturity of the younger generation.

Our Mission

We hope to translate our fond vision into a concrete reality through the various programmes launched by the college, having the following as thrust areas.

- Globally relevant academic excellence
- Value based human development
- Adequate training for higher education
- Identification of opportunities for the disadvantaged
- Ensuring gender justice and integrity of creation
- Formation of responsible leadership
- Preparation of healthy family life
- Foster religious harmony and advance science and religious engagement
- Soft skill training



INDEX

1. RECOMMENDATIONS.....	6
2. ENERGY AND ENVIRONMRNT AUDIT	
I. INTRODUCTION.....	9
II. OBJECTIVES.....	9
III. AUDIT METHODOLOGY.....	10
IV. DATA COLLECTED.....	15
V. CARBON FOOTPRINT AND CARBON OFFSETTING.....	65
VI. DATA ANALYSIS	66
VII. RECCOMENDATIONS AND CONCLUSION.....	69
3. WATER AUDIT	
I. INTRODUCTION.....	71
II. OBJECTIVES.....	71
III. METHODOLOGY.....	71
IV. DATA COLLECTION.....	73
V. CONCLUSIONS	77
VI. RECCOMENDATIONS.....	78
4. WASTE MANAGEMENT AUDIT	
I. INTRODUCTION.....	79
II. OBJECTIVES.....	81
III. METHODOLOGY.....	81
IV. DATA COLLECTION.....	83
V. CONCLUSION AND RECCOMENDATIONS.....	84
5. BIODIVERSITY AUDIT	
I. AIMS AND OBJECTIVES.....	88
II. METHODOLOGY.....	89
III. OBSERVATIONS.....	90
IV. RECCOMENDATIONS.....	99
V. PHOTOGRAPHS.	100
6. STUDENT VOLUNTEERS.....	107

RECOMMENDATIONS

ENERGY AND ENVIRONMENT AUDIT

1. Energy and environmental audit has to be conducted every two years to analyse improvements and identify critical shortcomings in energy management. Collaboration with Energy Management Centre (EMC) can be sought for future audits.
2. 100% LED lighting should be a target to be achieved in next two years, up from current level of 65.1%
3. College should ensure that every new purchase of electrical equipment are B.E.E 5 Star rated. Discretion of electricians may not be entertained.
4. Useful Daylight illuminance (UID) and air circulation can be improved to 100% from existing 66.8% by making sure that windows are kept open in regular working days.
5. 100% energy efficient behaviour (switching off electrical equipment immediately after use) for both staff and students should be achieved in next one year.
6. Electrical equipment with more than 5Hrs. of daily usage (210 no.) can be replaced with B.E.E 5 Star rated devices.
7. Solar generation can be improved by installing more solar panels. Grid connected Rooftop solar project of K.S.E.B can be employed in the college. If production capacities are fully utilized, the college could become net electricity exporter.
8. Green habitat concept should be adopted for all future building constructions of the college. This could reduce energy usage, increase aesthetics of the buildings and reduce carbon footprint.
9. College level awards can be given to promote energy efficient practices among departments
10. Free spaces in the college can be planted with indigenous tree varieties. This could reduce carbon footprint.
11. Green Policy of the college can be modified based on findings of the Audit.
12. The college may participate in Energy Management Centre (EMC)- ENERGY SAVING AWARD next year after making improvements in energy use patterns.

WATER AUDIT

13. Install water efficient taps with an aerator or flow restrictor to use less water.
14. Regularly check for leaks and fix immediately. Even a slowly dripping tap can waste 10000 L of water over a year.
15. Create awareness about water efficiency to encourage water saving behaviours.
16. Waste water from the laboratories should be recycled in a proper manner.
17. Posters could be placed at the wash areas as well as toilets to make the students aware about the value of water resources.

WASTE MANAGEMENT AUDIT

18. Conduct awareness programs in order to improve the knowledge about the importance of waste management.
19. Add educational signs at each recycling and waste bin with pictures of products frequently disposed.
20. Use of disposable glasses should be avoided and instead, reusable glasses/vessels may be used for events organized in the campus
21. Develop a short guide to distribute to staff and students and faculty on waste management practice such as recycling, composting and reusing.
22. Increase the number of recycling bins on campus to ensure a recycling bin is paired with every landfill bin.
23. Create a pledge to reduce waste and aim to increase diversion rates for students, staff and faculty to sign.
24. Implement a system to ensure recycling bins are in each classroom and office space.
25. Develop the Green Department Certification program and require each department to participate once every 3yrs.
26. Eliminate single use, non-recyclable products from being distributed on campus. Instead make the switch to recyclable, compostable and reversible products.
27. A combined effort with the local governing bodies to collect and manage plastic waste weekly will greatly help to reduce them.
28. Establishment of the coloured bins to segregate the waste.
29. An effort to collect waste from each department and then try to recycle them will be effective.

BIODIVERSITY AUDIT

30. It is recommended that a Nakshtra Udyanam is to be developed in the campus
31. It is suggested that a Plot may be identified and necessary steps done to grow Botanical Garden
32. The medicinal plants in the campus needs to be identified and conserved.
33. Indigenous flowering plants which flower for whole year and readily available for insects and birds may be planted in the campus
34. Name boards could be displayed on plants in the campus area.
35. Ban use of chemical pesticides within the campus.
36. Patches of wild-flower habitats have to be fenced and protected from reclamation.
37. Plant more Trees preferably indegenious ones in the Campus

ENERGY AND ENVIRONMENT AUDIT 2020-21

INTRODUCTION

Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions. Institutional energy audit is an effective tool in defining and pursuing comprehensive energy management programme.

Energy Conservation Act, 2001, defines Energy Audit as

"The verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption".

OBJECTIVES

The Energy Audit provides the vital information base for overall energy conservation program covering essentially energy utilization analysis and evaluation of energy conservation measures. It aims at;

1. Comprehensive data collection related to number of electrical equipments, their power usage, energy efficiency rating of various equipments
2. Assessing present pattern of energy consumption at student, staff and department levels in the college.
3. Analysing adoption of various energy conservation practices in the college, utilization of renewable energy sources, future prospects in these areas.
4. Grading various departments according to ENERGY CONSERVATION AND MANAGEMENT MATRIX (ECMM).
5. Calculation of CARBON FOOTPRINT and CARBON OFFSET of the college.

6. Recommend measures to be adopted to ensure better usage efficiency and cost effectiveness of various energy resources utilized by the college

METHODOLOGY

STAGE 1: DATA COLLECTION

The team adopted a three pronged strategy to collect required data for the audit process.

Firstly collection of data regarding number, power and usage of various electrical equipment in the college, Bureau of Energy Efficiency (B.E.E) star rating of equipments, efficiency in usage of windows, were collected at department level using a Survey Form in Excel format.

Secondly, data regarding mode of transport used to reach college, energy saving behavioural practices etc. of students were collected with the help of Google Form based surveys among students.

Thirdly, data regarding mode of transport used to reach college, energy saving behavioural practices, emission standards of personal vehicles used etc. of staff members of the college were collected using Google Form based surveys among staff members.

Model Survey Form – Department wise data collection;

APPLIANCE	No. OF APPLIANCES	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs. AVG. USE PER DAY
BULBS :						
LED						
CFL						
INCANDESCENT						
SOLAR LAMPS						
FANS						
COMPUTER						
AC						

REFRIGERATORS						
WATER COOLERS						
PROJECTOR						
TV						
INDUCTION COOKER						
OTHERS						
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No.					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL						
OPAQUE						
TRANSPARENT						
VENTILATIONS	No.					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.					
NO. OF LPG CYLINDERS USED PER YEAR	No:	TOTAL AVG. COST (Rs.):				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:	TOTAL AVG. COST (Rs.):				
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.						

Due to Covid 19 lockdown data collection among staff and students were conducted through Google forms. Infrastructure data were collected by physical inspection.

Questionnaire – Staff survey

- 1) MODE OF TRANSPORT USED TO REACH THE COLLEGE?
- 2) AVERAGE DISTANCE TRAVELLED EACH DAY (ON WORKING DAYS)?
- 3) B.S STAGE (BHARAT STAGE EMISSION NORMS) OF YOUR PERSONAL VEHICLE?
- 4) FUEL USED AND MILAGE OF YOUR PERSONAL VEHICLE?
- 5) DO YOU ADOPT CAR/BIKE POOLING PRACTICES TO REACH THE COLLEGE?
- 6) ARE YOU INTERESTED TO CHOOSE AN E - VEHICLE IN NEAR FUTURE?

- 7) DO YOU MAKE SURE THAT ELECTRICAL EQUIPMENTS IN THE COLLEGE ARE TURNED OFF AFTER USE?
- 8) DO YOU UTILIZE CHARGING POINTS IN THE COLLEGE TO CHARGE YOUR PERSONAL DEVICES?

Questionnaire – Student survey

1. MODE OF TRANSPORT USED TO REACH THE COLLEGE?
 - 1) AVERAGE DISTANCE TRAVELLED EACH DAY (ON WORKING DAYS)?
 - 2) B.S STAGE (BHARAT STAGE EMISSION NORMS) OF YOUR PERSONAL VECHICLE?
 - 3) DO YOU ADOPT CAR/BIKE POOLING PRACTICES TO REACH THE COLLEGE?
 - 4) ARE YOU INTERESTED TO CHOOSE AN E - VEHICLE IN NEAR FUTURE?
 - 5) DO YOU MAKE SURE THAT ELECTRICAL EQUIPMENTS IN THE COLLEGE ARE TURNED OFF AFTER USE?
 - 6) DO YOU UTILIZE CHARGING POINTS IN THE COLLEGE TO CHARGE YOUR PERSONAL DEVICES?

Department related data were collected from 20 departments (offices, auditoriums and other facilities included).

Staff survey were conducted among 108 participants, including teaching and non-teaching staff of the college. Student survey were conducted with a sample size of 739 respondents

CARBON FOOTPRINT

Carbon footprint is the measure of the impact of our activities on the environment, and in particular climate change. It relates to the amount of greenhouse gases (GHGs) produced in our day to day lives through burning of fossil fuels for electricity, heating and transportation, etc. It is a measurement of all GHGs we individually produce and has units of tones (or kilogram) of CO₂ equivalent. Carbon footprint were calculated using the methodology based on the reference, Mary Lissy P N (2012).

A Carbon footprint is made of the sum of two parts: the Primary footprint and the Secondary footprint:

1. The Primary footprint is a measure of our direct emissions of CO₂ from the burning of fossil fuels including domestic energy consumption and transportation. We have direct control of these emissions.

2. The Secondary footprint is the measure of the indirect CO₂ emissions from the whole lifecycle of products we use- those associated with their manufacture and eventual breakdown.

Various emission factors of the institution and its standard CO₂ equivalent are listed below.

EMISSION FACTORS

Sl.No	Emission inventory	CO ₂ equivalent Emitted
1	Human factor	1.14kg per person per day
2	Petrol	2.3 kg per litre
3	Diesel	2.7kg per litre
4	hydroelectricity	0.68956kg per kwh
5	Solar based electricity	0.05kg per kwh
6	Solid waste	0.125kg per kg
7	L.P.G	1.5kg per kg
8	Buildings	0.1867kg/sq.mt./year
9	Food waste	1.7kg/kg

Carbon footprint for one year were calculated assuming 100 fully functional working days (due to Covid 19 lockdown) for various departments and 300 working days for college office. Carbon offsetting done by the college due to its green cover were calculated.

STAGE 2: DATA ANALYSIS

Based on the data collected on the previous stage, college level data regarding energy usage, energy use efficiency and energy efficient behavioural traits of staff and students were consolidated. Pie charts on following heads were drawn for each department to identify critical gaps in their energy usage efficiency.

1. Percentage of B.E.E Star rated equipment in the department.
2. Percentage of L.E.D bulbs used.
3. Percentage of windows kept open in a regular working day.
4. Mode of transport used – Students
5. Mode of transport used – Staff

6. Energy efficient behaviour (switching off electrical devices immediately after use)- students
7. Energy efficient behaviour (switching off electrical devices immediately after use)- staff

Taking inputs from ENERGY CONSERVATION BUILDING CODE (ECBC) 2017- MINISTRY OF POWER, Govt. of India (Building classification (e) – educational institutions) and various behavioural aspects of energy management, an **ENERGY CONSERVATION AND MANAGEMENT MATRIX (ECMM)** was formulated by the Audit Committee with following weightage distribution.

Sl.no	CRITERIA	WEIGHTAGE
C1	Percentage of equipment with B.E.E 4 or 5 star rating	10
C2	Percentage of L.E.D s out of total bulbs	15
C3	Percentage of windows kept open in a regular working day.	15
C4	Installed renewable energy capacity	5
C5	Innovative energy management practices	5
C6	Energy conserving transport practices adopted to reach the college - STUDENTS (public transport, pedestrians, cycle)	15
C7	Energy conserving transport practices adopted to reach the college – STAFF (public transport, pedestrians, cycle)	10
C8	Energy conserving behavioural traits – STUDENTS (switching off electrical equipment immediately after use)	15
C9	Energy conserving behavioural traits – STAFF (switching off electrical equipment immediately after use)	10
	TOTAL	100

Based on the department level data and utilizing the ENERGY CONSERVATION AND MANAGEMENT MATRIX energy management matrix formulated,

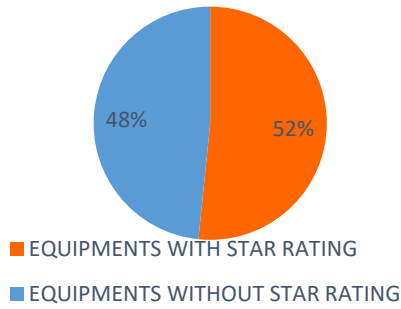
departments were classified into four categories; BEST PERFORMERS, GRADE A, GRADE B, GRADE C.

DATA COLLECTION

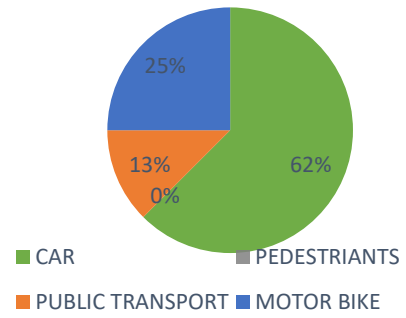
Data collected from various college departments are listed below.

DEPT- MALAYALAM	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED(KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :	0	0	0	0	0	0
LED	0	0	0	0	0	0
CFL	11	40	5	2.2	4	0
INCANDESENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	14	80	5	5.6	10	4
COMPUTER	2	250	3	1.5	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	1	300	8	2.4	0	0
PROJECTOR	2	250	1	0.5	1	0
TV	1	100	0	0	1	0
INDUCTION COOKER	1	1000	1	1	0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	16					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	20	0				
OPAQUE	20	0				
TRANSPARENT	0	0				
VENTILATIONS	No. 6					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 250 (Solar energy used in One Computer)					
NO. OF LPG CYLINDERS USED PER YEAR	No:0	TOTAL AVG. COST (Rs):Nil				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: Nil	TOTAL AVG. COST(Rs):Nil				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	We, Department of Malayalam benefited the solar energy project of the College.					

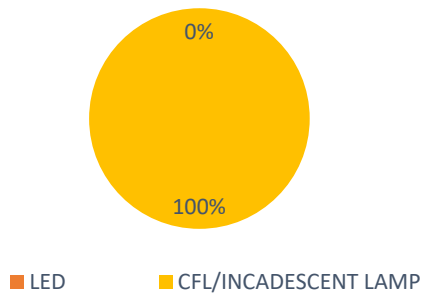
PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED



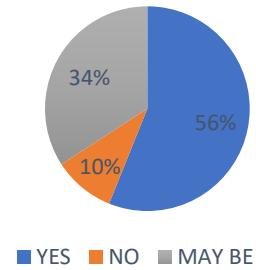
MODE OF TRANSPORT-STAFF



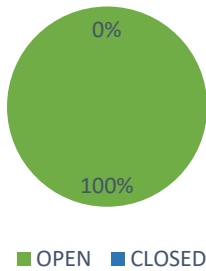
TYPES OF BULBS USED



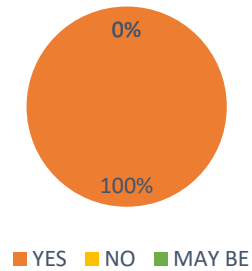
ENERGY EFFICIENT BEHAVIOR (SWITCHING -OFF EQUIPMENTS AFTER USE)-STUDENTS



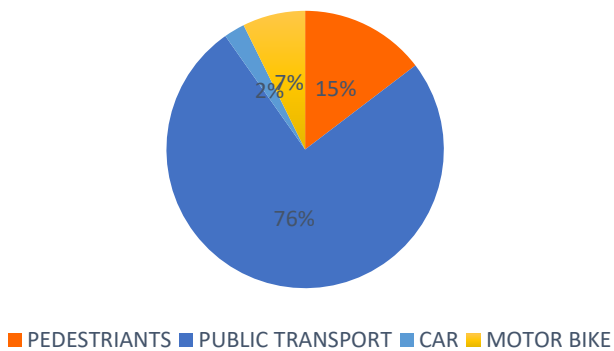
PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY



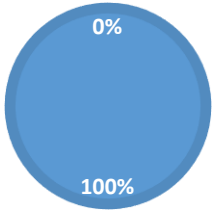
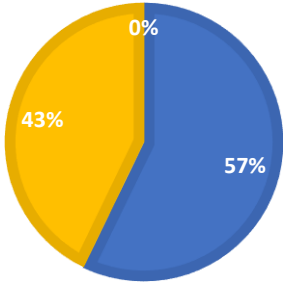
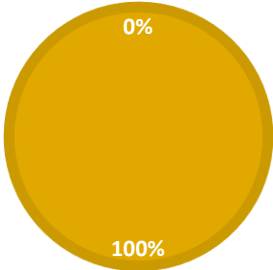
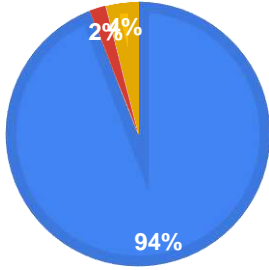
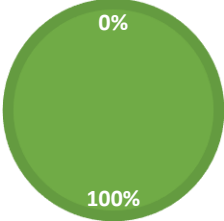
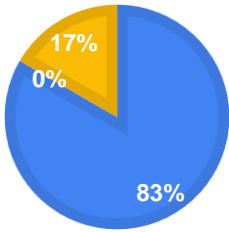
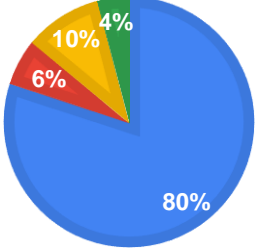
ENERGY EFFICIENT BEHAVIOR(SWITCHING OFF-EQUIPMENTS AFTER USE)-STAFF



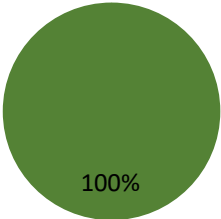
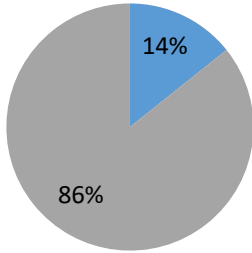
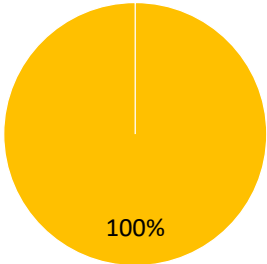
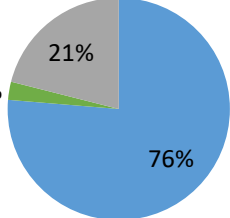
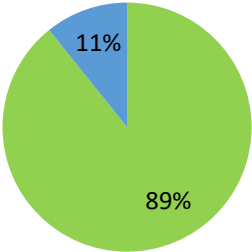
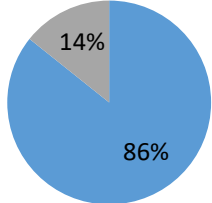
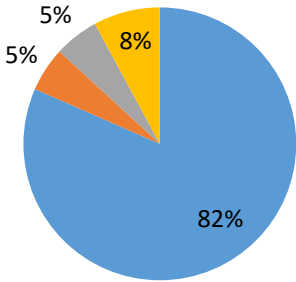
MODE OF TRANSPORT USED - STUDENTS



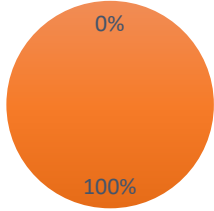
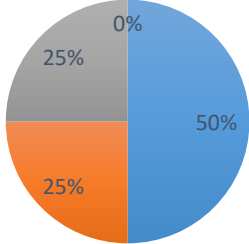
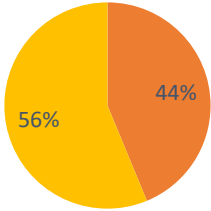
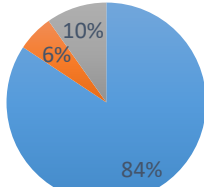
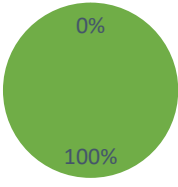
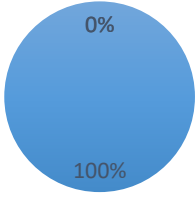
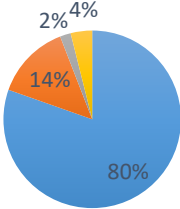
DEPT- ENGLISH	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY(KW)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS: LED	7	9w	5	0.315	0	0
CFL	0	0	0	0	0	0
INCANDESENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	7	250w	5	8.75	0	0
COMPUTER	4	25w	3	0.3	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	1	300	8	2.4	0	0
PROJECTOR	3	0	2	0	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No.					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	5	0				
OPAQUE	5	0				
TRANSPARENT	0	0				
VENTILATIONS	No.					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0					
NO. OF LPG CYLINDERS USED PER YEAR	No:2	TOTAL AVG. COST (Rs): NA				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:0	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	Nil					

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>■ NO.OF EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS</p>	<p>MODE OF TRANSPORT USED- STAFF</p>  <p>■ PUBLIC TRANSPORT ■ MOTOR BIKE ■ CAR</p>
<p>TYPES OF BULB USED</p>  <p>■ LED ■ CFL</p>	<p>ENERGY EFFICIENT BEHAVIOUR(SWITCHING OFF EQUIPMENTS AFTER USE)-STUDENTS</p>  <p>■ Yes ■ No ■ Maybe</p>
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULARS WORKING DAY</p>  <p>■ OPEN ■ CLOSED</p>	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF ELECTRICAL EQUIPMENTS AFTER USE)- STAFF</p>  <p>■ Yes ■ No ■ May be</p>
<p>MODE OF TRANSPORT USED- STUDENTS</p>  <p>■ PUBLIC TRANSPORT ■ CAR ■ PEDESTRIAN ■ MOTOR BIKE</p>	

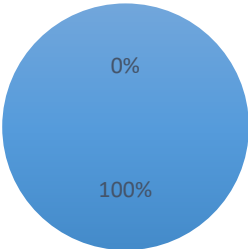
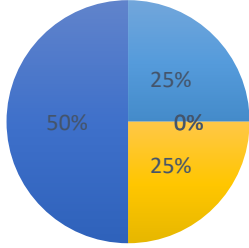
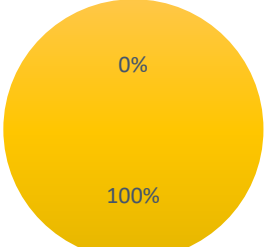
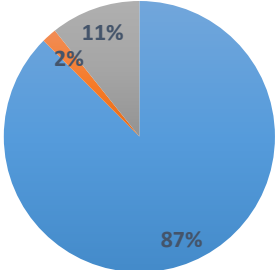
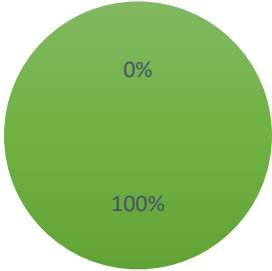
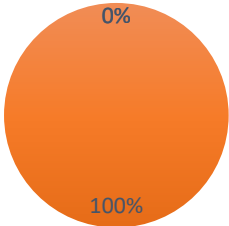
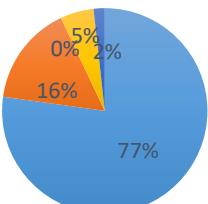
DEPT- COMMERCE	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVARAGE UNITE OS ENERGY CONSUMED PER DAY (KWH)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	0	0	0	0	0	0
CFL	5	23 W	2	0.23	0	0
INCANDESENT	1	40 W	0.2	0.008	0	0
TUBE LIGHT	17	20 W	1	0.34	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	22	56 W	5	6.16	0	0
LAPTOP	1	30 W	1	0.03	0	0
COMPUTER	32	150 W	2.5	12	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	1		5		0	0
PROJECTOR	6		4		0	0
TV	1		0	0	0	0
INDUCTION COOKER	1	1800 W	0.2	0.36	0	0
OTHERS	NIL	0	0	0	0	0
TOTAL NO OF EQUIPMENTS	87					
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		No. 21				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	27	7				
OPAQUE	27	7				
TRANSPARENT	0	0				
VENTILATIONS	31					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.:0					
NO. OF LPG CYLINDERS USED PER YEAR	No:1	TOTAL AVG. COST (Rs): 650	650			
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:NIL	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	NIL					

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>100%</p> <ul style="list-style-type: none"> ■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS 	<p>Mode OF Transport -Staff</p>  <p>14% 86%</p> <ul style="list-style-type: none"> ■ Public Transport ■ Motor Bike ■ Car ■ Pedestrian
<p>TYPE OF BULB USED</p>  <p>100%</p> <ul style="list-style-type: none"> ■ LED ■ CFL/INCADESCENT LAMB 	<p>Energy Efficient Behavior (Switching off Equipments After Use)-Students</p>  <p>3% 76% 21%</p> <ul style="list-style-type: none"> ■ Yes ■ No ■ Maybe
<p>PERCENTAGE OF WNDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>11% 89%</p> <ul style="list-style-type: none"> ■ OPEN ■ CLOSED 	<p>Energy Efficient Behavior (Switching off Equipments After Use)-Staff</p>  <p>14% 86%</p> <ul style="list-style-type: none"> ■ Yes ■ No ■ Maybe
<p>Mode Of Transport-Students</p>  <p>5% 5% 8% 82%</p> <ul style="list-style-type: none"> ■ Public Transport ■ Motor Bike ■ Car ■ Pedestrian 	Empty cell

DEPT- ECONOMICS						
	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (HOURS)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY (KWh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 HOURS AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	7	5	2	0.07	0	0
CFL	3	9	2	0.054	0	0
INCANDESENT	6	10	2	1.2	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	12	55	3	1.98	0	0
COMPUTER	1	350	1	0.35	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	1	150	0.16	0.024	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		4				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	17	0				
OPAQUE	0	0				
TRANSPARENT	17	0				
VENTILATIONS	13					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.					
NO. OF LPG CYLINDERS USED PER YEAR	1					
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:	TOTAL AVG. COST(Rs):				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.		NIL				

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS</p>  <p>0% 100%</p> <p>■ WITH STAR RATING ■ WITHOUT STAR RATING</p>	<p>MODE OF TRANSPORTATION USED: STAFF</p>  <p>0% 25% 50% 25%</p> <p>■ Public Transportation ■ Pedesrian ■ Car ■ Motor Bike</p>
<p>TYPES OF BULBS USED</p>  <p>56% 44%</p> <p>■ LED ■ CFL/INCADESCENT</p>	<p>ENERGY EFFICIENT BEHAVIOUR: STUDENTS (SWITCHING OFF DEVICES AFTER USE)</p>  <p>10% 6% 84%</p> <p>■ Yes ■ No ■ May be</p>
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>0% 100%</p> <p>■ OPEN ■ CLOSED</p>	<p>ENERGY EFFICIENT BEHAVIOUR: STAFF (SWITCHING OFF DEVICES AFTER USE)</p>  <p>0% 100%</p> <p>■ YES ■ NO ■ MAY BE</p>
<p>MODE OF TRANSPORTATION USED: STUDENTS</p>  <p>2% 4% 14% 80%</p> <p>■ Public Transportation ■ Pedesrian ■ Car ■ Motor Bike</p>	

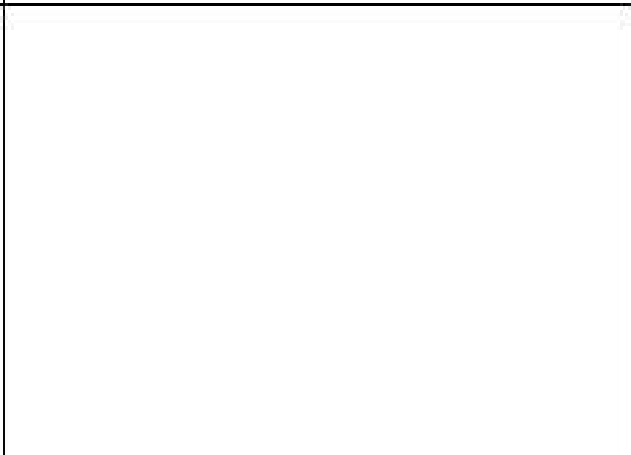
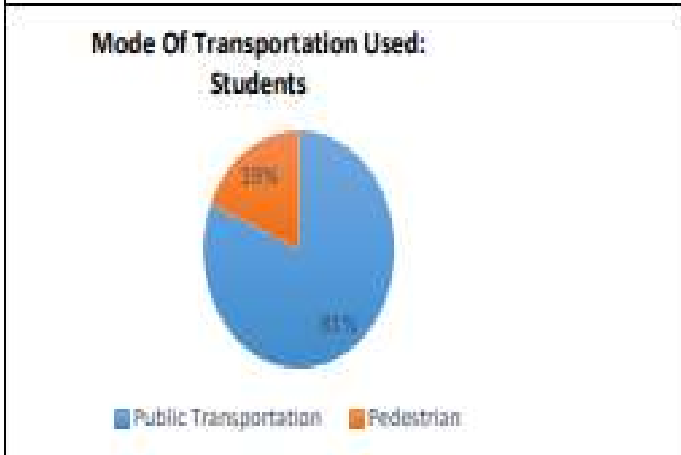
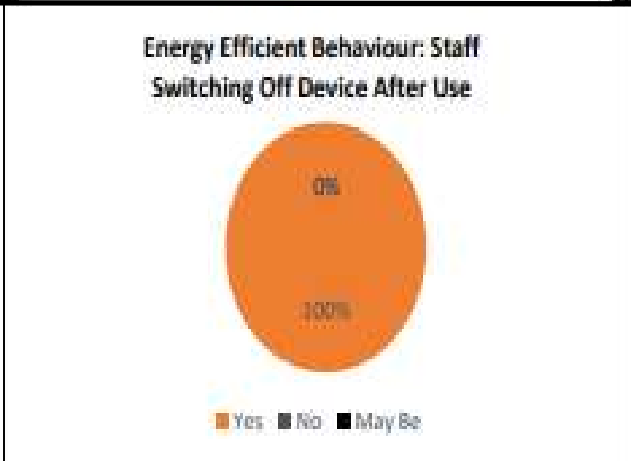
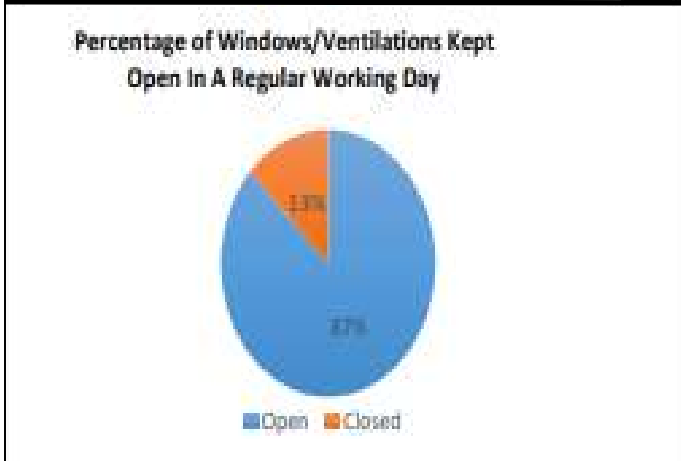
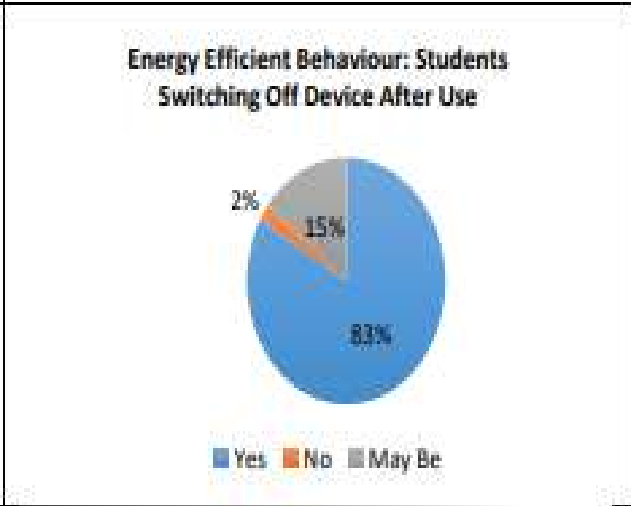
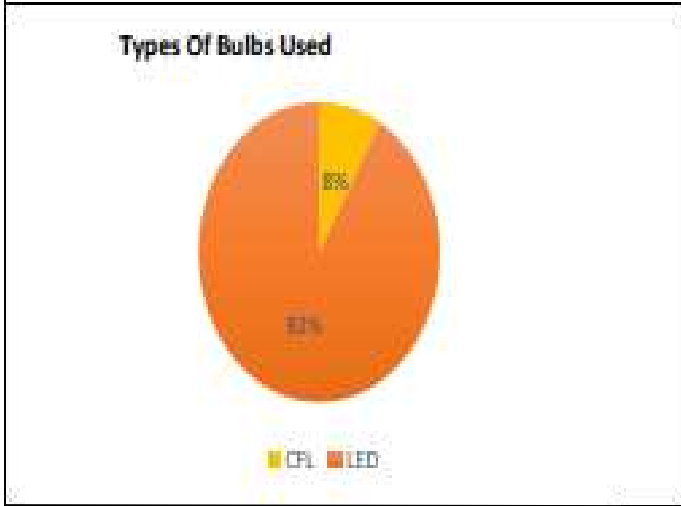
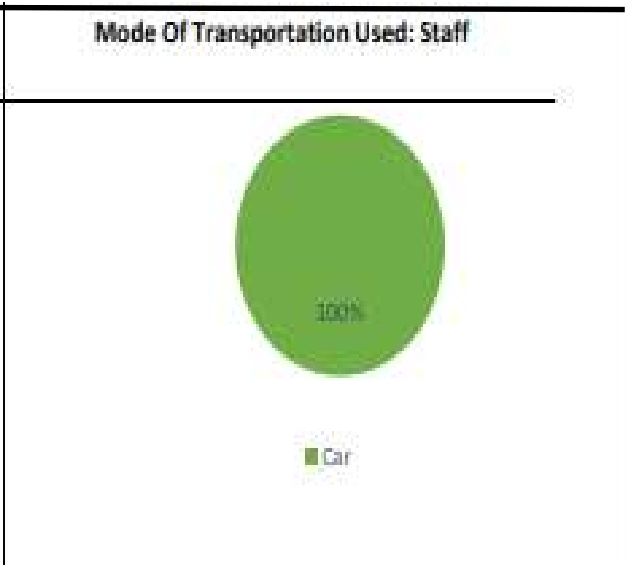
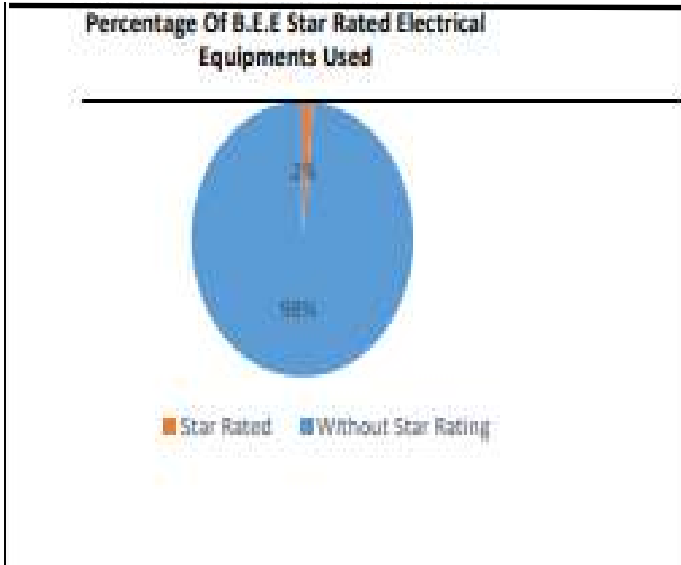
DEPT- MATHEMATICS	No. OF APPLIANCES	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs. AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	0	0	0	0	0	0
CFL	11	15	0.25	0.04125	0	0
INCANDESENT	1	55	0.25	0.01375	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	12	75	5	4.5	0	3
COMPUTER	1	200	5	1	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	0	0	0	0	0	0
TV	0	0		0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0
1.Kettle	1	1800	1	1.8	0	0
2.Wifi	1	6	6	0.036	0	1
3.LCD Projector	1	300	0.5	0.15	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No. 12					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	18	0				
OPAQUE	11	0				
TRANSPARENT	4	0				
VENTILATIONS	No.5					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0					
NO. OF LPG CYLINDERS USED PER YEAR	No: 0	TOTAL AVG. COST (Rs): 0				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: Nil	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	STAFF AND STUDENTS OF THE DEPARTMENT MAKE SURE THAT THE ELECTRICAL EQUIPMENTS ARE SWITCHED OFF IMMEDIATELY AFTER USE.					

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS No. 	<p>MODE OF TRANSPORT USED - STAFF</p>  <p>25% 0% 25% 50%</p> <ul style="list-style-type: none"> ■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE ■ MOTOR BIKE ■ CAR
<p>TYPE OF BULBS USED</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ LED BULBS ■ CFL/INCADESCENT LAMP 	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE) - STUDENTS</p>  <p>11% 2% 87%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAYBE
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ OPEN ■ CLOSED 	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE) - STAFF</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAYBE
<p>MODE OF TRANSPORT USED- STUDENTS</p>  <p>5% 0% 2% 16% 77%</p> <ul style="list-style-type: none"> ■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE ■ MOTOR BIKE ■ CAR 	

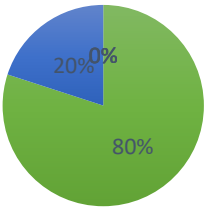
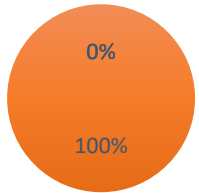
DEPT- B.Sc. BOTANY						
	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hours)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY(KWh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hours AVG. USE PER DAY
APPLIANCE						
BULBS :					0	0
LED	22				0	0
CFL	2				0	0
FANS	18	60 W	10 Min	0.18	0	0
COMPUTER	6	125 W	1 hour	0.75	0	0
AC	1	1000 W	1 Hour in 3 days	0.33	0	0
REFRIGERATORS	1	125	5 Hours	0.625	1	0
PROJECTOR	3	190 W			0	0
OTHERS	0	0	0	0	0	0
1.LED Microscope	10	5W			0	0
2.Centrifuge	1	125W			0	0
3.Weighing balance	1	20W			0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		45				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	26	7				
OPAQUE	11	0				
TRANSPARENT	15	0				
VENTILATIONS	21					
INSTALLED RENEWABLE ENERGY CAPACITY	Solar inverter 3000 W					
NO. OF LPG CYLINDERS USED PER YEAR	1.5	2200				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.				SOLAR INVERTER		

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p> <p>0% 100%</p> <p>■ NO.OF EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS NO.</p>	<p>MODE OF TRANSPORT USED-STAFF</p> <p>25% 75%</p> <p>■ MOTOR BIKE ■ CAR</p>
<p>TYPES OF BULB USED</p> <p>100%</p> <p>■ CFL</p>	<p>ENERGY EFFICIENT BEHAVIOUR(SWITCHING OFF EQUIPMENTS AFTER USE)-STUDENTS</p> <p>91% 7% 2%</p> <p>■ YES ■ NO ■ MAY BE</p>
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p> <p>93% 7%</p> <p>■ OPEN ■ CLOSED</p>	<p>ENERGY EFFICIENT BEHAVIOUR(SWITCHING OFF EQUIPMENTS AFTER USE)-STAFF</p> <p>0% 100%</p> <p>■ YES ■ NO ■ MAY BE</p>
<p>MODE OF TRANSPORT USED-. STUDENTS</p> <p>91% 3% 2% 1% 1%</p> <p>■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CAR</p>	

DEPT- B.Sc. PHYSICS	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY (Kwh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULB: LED	10	9	8	0.72	0	8
CFL	16	45	8	5.76	0	8
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	19	70	8	10.64	0	14
COMPUTER	12	25	4	1.2	0	0
AC	1	1000	1	1	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	2	150	1	0.3	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	1	1500	0.5	0.75	0	0
OTHERS						
Minor Lab equipments	10	25	4	1	0	2
Research equipment	4	100	0.5	0.2	0	0
Total		75				
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		No. 0				
WINDOWS		OPEN (No.)		CLOSED (No.)		
TOTAL		34		6		
OPAQUE		20		0		
TRANSPARENT		14		0		
VENTILATIONS		19				
INSTALLED RENEWABLE ENERGY CAPACITY		IN WATTS.2500				
NO. OF LPG CYLINDERS USED PER YEAR		No:0		TOTAL AVG. COST (Rs):0		
QUANTITY OF FIREWOOD USED PER YEAR		QUANTITY:0		TOTAL AVG. COST(Rs):0		
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT		LAB AND DEPARTMENT ARE RUN WITH SOLAR POWER				

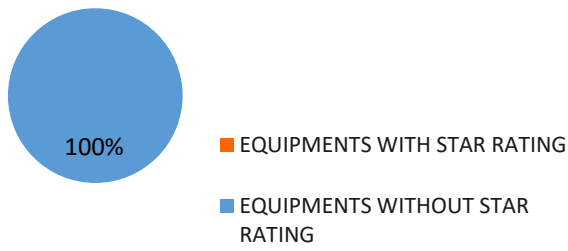


DEPT. B.Sc. ZOOLOGY	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY(KW)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS: LED	0	0	0	0	0	0
CFL	20	60	3HRS	3.6	0	0
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	22	55	5HRS	6.05	0	2
COMPUTER	9	250 WATTS	4 HRS	9	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	1	1 KILOWATTS	24 HRS	24	0	1
WATER COOLERS	0	0	0	0	0	0
INVERTER	1	5 KV	2HRS	10	0	0
PROJECTOR	4	350 WATTS	4HRS	5.6	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		15				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	15	2				
OPAQUE	17					
TRANSPARENT	0					
VENTILATIONS	10					
INSTALLED RENEWABLE ENERGY CAPACITY	0					
NO. OF LPG CYLINDERS USED PER YEAR	1	825				
QUANTITY OF FIREWOOD USED PER YEAR	0	TOTAL AVG. COST(Rs):				
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.		NIL				

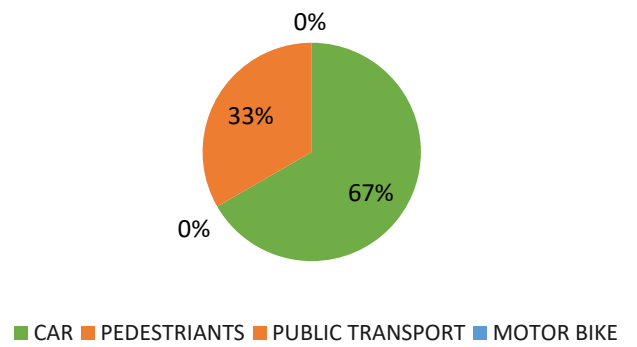
<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS 	<p>MODE OF TRANSPORT-STAFF</p>  <p>0% 20% 80%</p> <ul style="list-style-type: none"> ■ CAR ■ PUBLIC TRANSPORT ■ CYCLE ■ MOTOR BIKE ■ PEDESTRIAN
<p>TYPE OF BULBS USED</p>  <p>38% 62%</p> <ul style="list-style-type: none"> ■ LED ■ CFL/INCANDESCENT 	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE)-STUDENTS</p>  <p>7% 4% 89%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAYBE
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>10% 90%</p> <ul style="list-style-type: none"> ■ OPEN ■ CLOSED 	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE)-STAFF</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAYBE
<p>MODE OF TRANSPORT USED- STUDENTS</p>  <p>4% 12% 11% 73%</p> <ul style="list-style-type: none"> ■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE ■ MOTORBIKE ■ CAR 	Empty cell

DEPT- B.Sc. CHEMISTRY	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY (kWh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	0	0	0	0	0	0
CFL	28	60	3	5.04	0	0
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	19	55	4	4.18	0	0
COMPUTER	7	250	4	7	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	1	1KW	24	24	0	1
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	1	350W	2	0.7	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	1	1900	30 minutes	0.95	0	0
OTHERS					0	0
Microwave	2	1000	1hr	2	0	0
Centrifuge	2	220V	1hr	0.22	0	0
Hot air oven	2	2370	3hr	14.22	0	0
Muffle furnace	1	220	5hr	1.1	0	0
IR lamp	1	230V	1hr	0.23	0	0
Electric bunsen	7	300W	3hr	6.3	0	0
Electronic balance	2	50 Hz	30 minutes	0.05	0	0
Potentiometer	3	10-18mV	2hr		0	0
Conductivity Meter	5	220V	2hr	0.88	0	0
Polarimeter	2	220V			0	0
UV Spectrophotometer	1		not working		0	0
Distillation Unit	1	220V	5hr	1.1	0	0
Melting Point apparatus	2	12 V	1hr		0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		No. 670				
WINDOWS	OPEN (No.)	CLOSED(No.)	ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT. Nil			
TOTAL	39	0				
OPAQUE	34	0				
TRANSPARENT	5	0				
VENTILATIONS	No.17					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. Nil					
NO. OF LPG CYLINDERS USED PER YEAR	No:8	TOTAL AVG. COST (Rs): 1200				

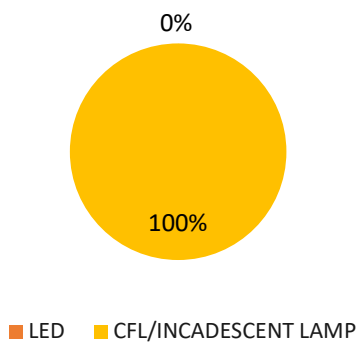
PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED



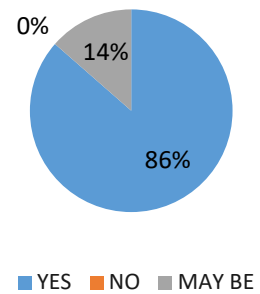
MODE OF TRANSPORT-STAFF



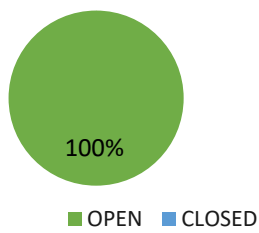
TYPES OF BULBS USED



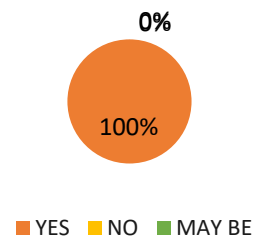
ENERGY EFFICIENT BEHAVIOR (SWITCHING -OFF EQUIPMENTS AFTER USE)-STUDENTS



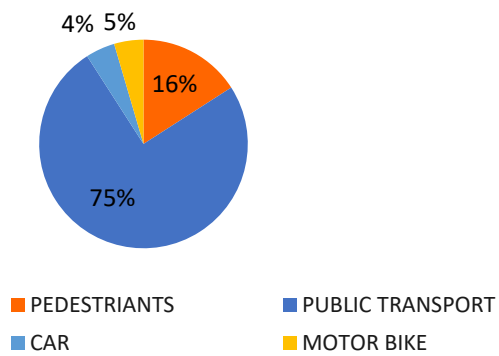
PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY



ENERGY EFFICIENT BEHAVIOR(SWITCHING OFF-EQUIPMENTS AFTER USE)-STAFF



MODE OF TRANSPORT USED - STUDENTS



M.SC PHYSICS- S.F	NUMBER	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	4	9	3	0.108	4	0
CFL	20	25	3	1.5	0	10
INCANDESENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	19	70	1	1.33	0	7
COMPUTER	1	100	1	0.1	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
INVERTER	1	5000	1	5	0	0
PROJECTOR	1	150	0	0.15	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0

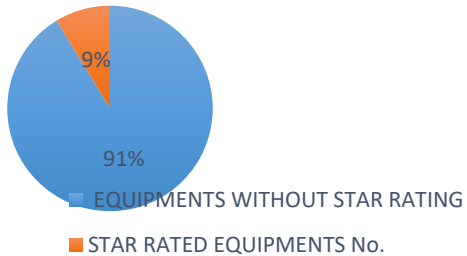
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No. 32
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WINDOWS	OPEN (No.)	CLOSED (No.)
TOTAL	7	7
OPAQUE	0	7
TRANSPARENT	4	3
VENTILATIONS	No.10	
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0	

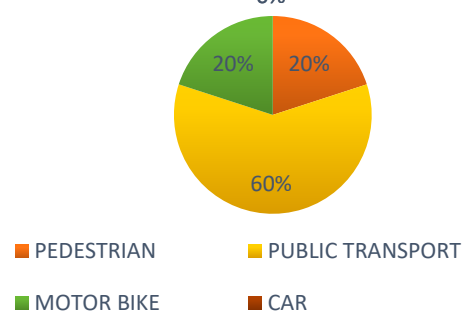
NO. OF LPG CYLINDERS USED PER YEAR	No: 0	TOTAL AVG. COST (Rs): 0
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: 0	TOTAL AVG. COST (Rs):0

ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	STAFF AND STUDENTS OF THE DEPARTMENT MAKE SURE THAT THE ELECTRICAL EQUIPMENTS ARE SWITCHED OFF IMMEDIATELY AFTER USE.
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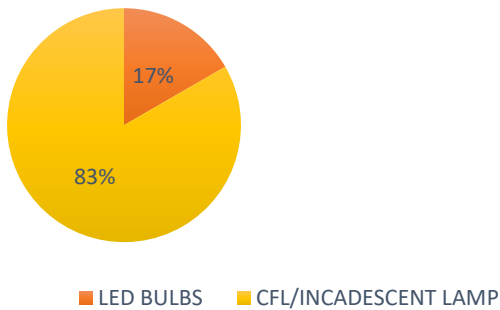
PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED



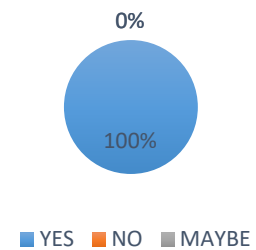
MODE OF TRANSPORT-STAFF



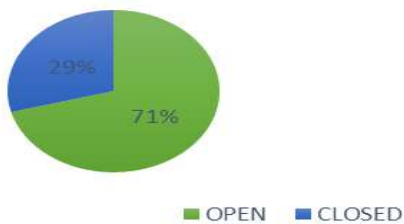
TYPE OF BULBS USED



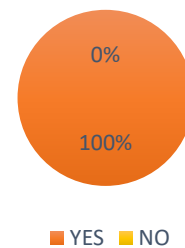
ENERGY EFFICIENT BEHAVIOUR(SWITCHING OFF ELECTRICAL EQUIPMENTS AFTER USE)-STUDENTS



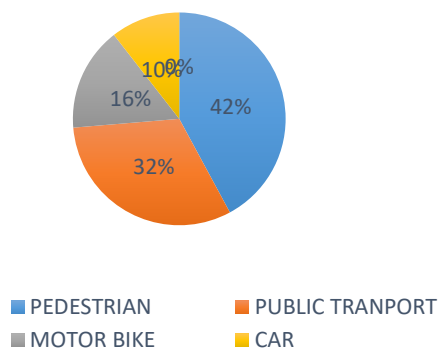
PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY



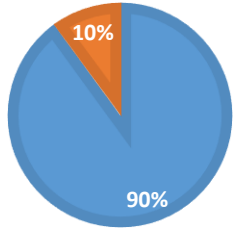
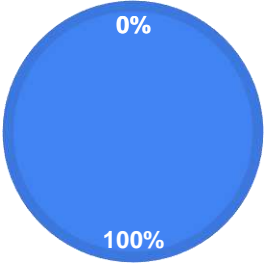
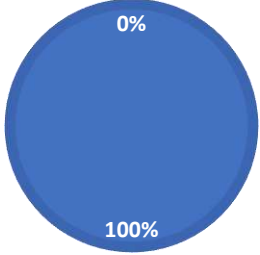
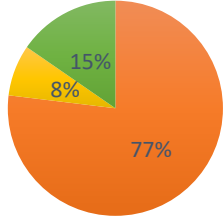
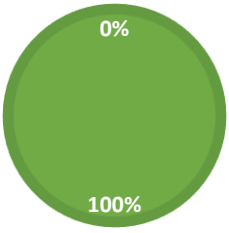
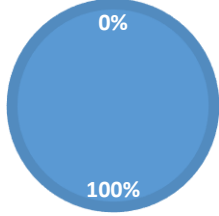
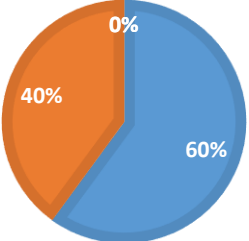
ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF DEVICES AFTER USE) STAFF



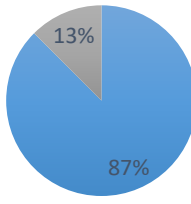
MODE OF TRANSPORT-STUDENTS



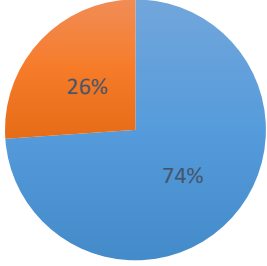
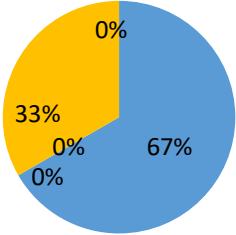
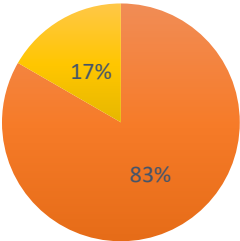
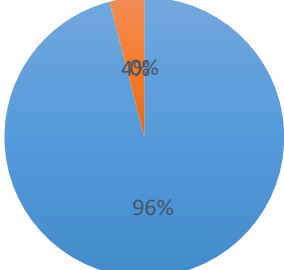
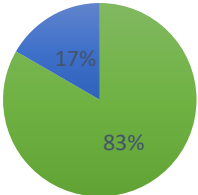
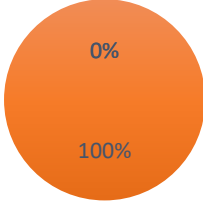
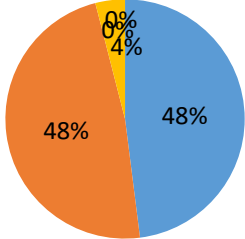
M.Sc. ZOOLOGY S.F	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY(Kw)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS:						
LED	0	0	0	0	0	0
CFL	3	10	1	0.03	0	0
INCANDESENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	9	75	6	4.05	0	4
COMPUTER	7	25	4	0.7	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	1	150	24	3.6	1	1
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	1	0	0	0	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS						
1 centrifuge	1	0	0	0	0	0
2 Incubator	1	0	0	0	0	0
3 wax baths	1	0	0	0	0	0
4 microwave ovens	1	0	0	0	0	0
5 autoclaves	1	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		No. 33				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	14					
OPAQUE	14					
TRANSPARENT						
VENTILATIONS	6					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.					
NO. OF LPG CYLINDERS USED PER YEAR	1	TOTAL AVG. COST (Rs):				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:	TOTAL AVG. COST(Rs):				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.		NIL				

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS</p>	<p>MODE OF TRANSPORT- STAFF</p>  <p>■ PUBLIC TRANSPORT ■ CAR ■ PEDESTRIAN</p>
<p>TYPES OF BULBS USED</p>  <p>■ LED ■ CFL</p>	<p>ENERGY EFFICIENT BEHAVIOUR(SWITCHING OFF EQUIPMENTS AFTER USE)-STUDENTS</p>  <p>■ YES ■ NO ■ MAY BE</p>
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>■ OPEN ■ CLOSED</p>	<p>ENERGY EFFICIENT BEHAVIOUR(SWITCHING OFF EQUIPMENTS AFTER USE)-STAFF</p>  <p>■ YES ■ NO</p>
<p>MODE OF TRANSPORT- STUDENTS</p>  <p>■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CAR ■ MOTORBIKE</p>	Empty cell

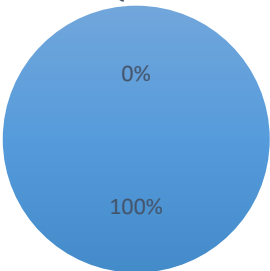
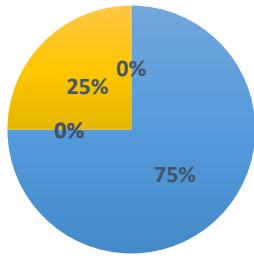
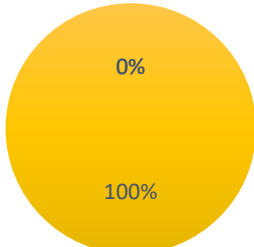
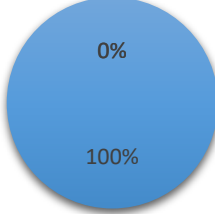
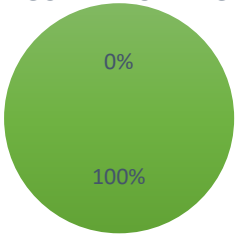
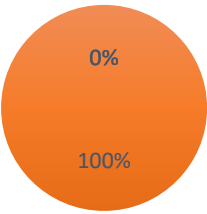
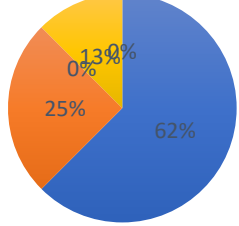
M.Sc. BOTANY S.F	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hours)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY(KWh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hours AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	4	9	7	0.252	0	4
CFL	1	15	7	0.105	0	1
INCANDESENT	3	40	7	0.84	0	3
FANS	9	70	7	4.41	0	9
COMPUTER	4	200	2	1.6	0	1
REFRIGERATORS	2	200	16	6.4	2	2
PROJECTOR	2				0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		6				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	10	2				
OPAQUE	0	0				
TRANSPARENT	0	0				
VENTILATIONS	No.					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.					
NO. OF LPG CYLINDERS USED PER YEAR	No: 2	TOTAL AVG. COST (Rs):2000				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: 0	TOTAL AVG. COST(Rs):				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.						
		NO.				

<p>Percentage Of B.E.E Star Rated Electrical Equipments</p>  <p>■ Star Rated Equipments ■ Without Star Rating</p>	<p>Mode Of Transportation Used: Staff</p>  <p>■ Public ■ Pedestrian ■ Car</p>
<p>Type Of Bulbs Used</p>  <p>■ CFL/INCADESCENT ■ LED</p>	<p>Energy Efficient Behaviour: Students (Switching Off Device After Use)</p>  <p>■ Yes ■ No ■ May Be</p>
<p>Percentage Of Windows/Ventilations Kept Open In A Regular Working Day</p>  <p>■ Open ■ Closed</p>	<p>Energy Efficient Behaviour: Staff (Switching Off Device After Use)</p>  <p>■ Yes ■ No ■ May Be</p>
<p>Mode Of Transportation Used: Students</p>  <p>■ Public ■ Pedestrian ■ Motor Bike</p>	

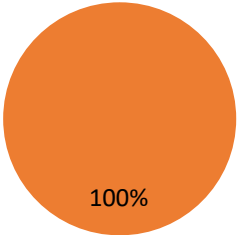
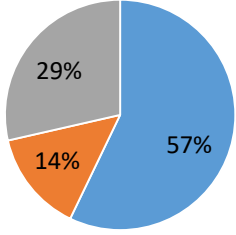
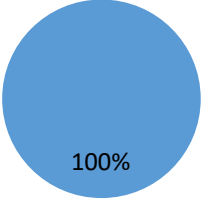
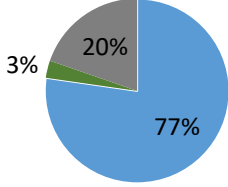
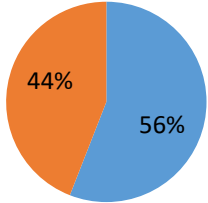
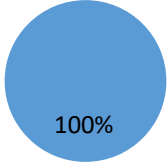
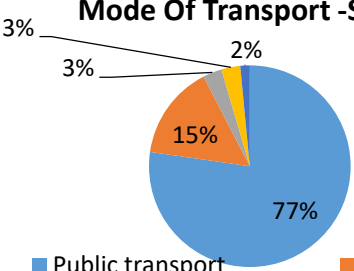
M.Sc. CHEMISTRY S.F	No. OF APPLIANCES	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs. AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	5	9	3	0.135	3	0
CFL	1	15	3	0.045	0	0
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	6	75	8	3.6	0	6
COMPUTER	5	200	2	2	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	1	200	24	4.8	1	1
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	1	100	0	0.1	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0					
1.MICROWAVE OVEN	1	1500	0.1	0.15	0	0
2.AIR OVEN	2	1500	2	6	0	0
3.ELECTRONIC BALANCE	1	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		0				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	10	1				
OPAQUE	0	0				
TRANSPARENT	0	1				
VENTILATIONS	0					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0					
NO. OF LPG CYLINDERS USED PER YEAR	No: 6	TOTAL AVG. COST (Rs): 0				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: Nil	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	STAFF AND STUDENTS OF THE DEPARTMENT MAKE SURE THAT THE ELECTRICAL EQUIPMENTS ARE SWITCHED OFF IMMEDIATELY AFTER USE.					

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS No.</p>	<p>MODE OF TRANSPORT USED- STAFF</p>  <p>■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE ■ MOTOR BIKE ■ CAR</p>
<p>TYPE OF BULBS USED</p>  <p>■ LED BULBS ■ CFL/INCADESCENT LAMP</p>	<p>ENERGY EFFICIENT BEHAVIOUR - STUDENTS</p>  <p>■ YES ■ NO ■ MAY BE</p>
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>■ OPEN ■ CLOSED</p>	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE) - STAFF</p>  <p>■ YES ■ NO ■ MAY BE</p>
<p>MODE OF TRANSPORT USED- STUDENTS</p>  <p>■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE ■ MOTOR BIKE</p>	

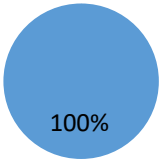
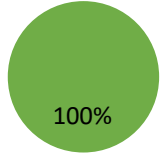
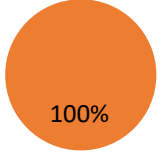
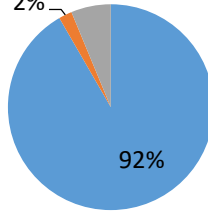
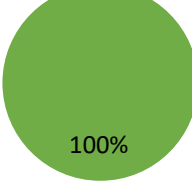
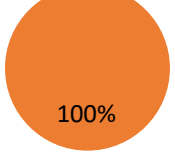
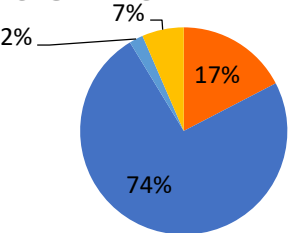
M.Sc. MATHEMATICS S.F	No. OF APPLIANCES	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs. AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	0	0	0	0	0	0
CFL	4	80	3	0.96	0	0
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	4	240	5	4.8	0	0
COMPUTER	0	0	0	0	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	0	0	0	0	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0					
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		2				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	4	0				
OPAQUE	0	0				
TRANSPARENT	4	0				
VENTILATIONS	2					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0					
NO. OF LPG CYLINDERS USED PER YEAR	No: 0	TOTAL AVG. COST (Rs): 0				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: Nil	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	STAFF AND STUDENTS OF THE DEPARTMENT MAKE SURE THAT THE ELECTRICAL EQUIPMENTS ARE SWITCHED OFF IMMEDIATELY AFTER USE.					

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS No. 	<p>MODE OF TRANSPORT USED - STAFF</p>  <p>0% 25% 0% 75%</p> <ul style="list-style-type: none"> ■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE
<p>TYPES OF BULBS USED</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ LED BULBS ■ CFL/INCADESCENT LAMP ■ SOLAR LAMPS 	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE) - STUDENTS</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAYBE
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ OPEN ■ CLOSED 	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF EQUIPMENTS AFTER USE) - STAFF</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAYBE
<p>MODE OF TRANSPORT USED-STUDENTS</p>  <p>0% 13% 0% 25% 62%</p> <ul style="list-style-type: none"> ■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ CYCLE ■ MOTOR BIKE ■ CAR 	Empty cell

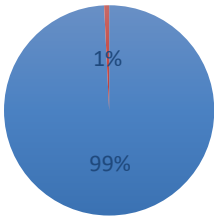
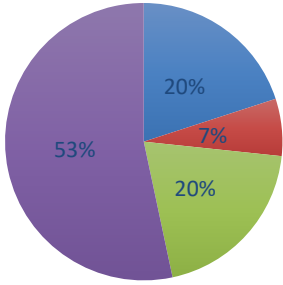
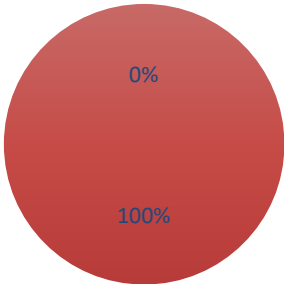
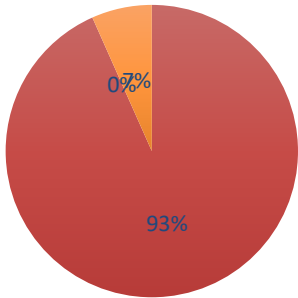
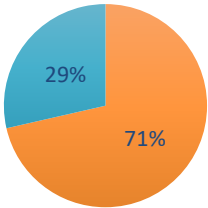
B.Com S.F	No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVARAGE UNITS OF ENERGY CONSUMED PER DAY (KWh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	34	20	1	0.68	0	0
CFL	0	0	0	0	0	0
INCANDESENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	25	70	7	12.25	0	7
COMPUTER	26	200	2	10.4	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	1	120	8	0.96	0	1
PROJECTOR	1	150	1	0.15	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	1	1200	1	1.2	0	0
OTHERS						
PRINTER	1		1		0	0
ROUTER	1		8		0	1
TOTAL No. OF APPLANCES	91					
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		No. 68				
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	0	26				
OPAQUE	0	0				
TRANSPARENT	0	26				
VENTILATIONS	33					
INSTALLED RENEWABLE ENERGY CAPACITY IN WATTS.	0					
NO. OF LPG CYLINDERS USED PER YEAR	No:0	TOTAL AVG. COST (Rs):0				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:NIL	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.		NIL				

<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>100%</p> <ul style="list-style-type: none"> ■ EQUIPMENTS WITH STAR RATING ■ EQUIPMENTS WITHOUT STAR RATING 	<p>Mode Of Transport- Staff</p>  <ul style="list-style-type: none"> ■ Public Transport ■ Motor bike ■ Car
<p>TYPES OF BULB USED</p>  <p>0%</p> <p>100%</p> <ul style="list-style-type: none"> ■ LED ■ CFL/INCADESCENT LAMP 	<p>Energy Efficient Behavior (Switching off Equipments After Use)-Students</p>  <ul style="list-style-type: none"> ■ Yes ■ NO ■ Maybe
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>44%</p> <p>56%</p> <ul style="list-style-type: none"> ■ OPEN ■ CLOSED 	<p>Energy Efficient Behavior (Switching Off Equipments After Use)-Staff</p>  <p>100%</p> <ul style="list-style-type: none"> ■ Yes ■ No ■ Maybe
<p>Mode Of Transport -Students</p>  <p>3%</p> <p>3%</p> <p>2%</p> <p>15%</p> <p>77%</p> <ul style="list-style-type: none"> ■ Public transport ■ Motorbike ■ Car ■ battery scooter ■ Pedastrian 	

B.A TRIPLE MAIN	No. OF APPLIANCES	POWER(W ATTS)	AVERAGE USAGE PER DAY (Hrs)	Units if of power used (kwh)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	14	20	7	1.96	0	0
CFL	0	0	0	0	0	0
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	14	90	7	8.82	0	
COMPUTER	1	250	5	1.25	0	0
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS					0	
PROJECTOR	1	150	2	0.3	0	0
TV					0	0
INDUCTION COOKER	1	1000	1	1	0	
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.		No.				
OWINDOWS0	OPEN (No.)	CLOSED (No.)	ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT. Nil			
TOTAL	12	0				
OPAQUE	0	0				
TRANSPARENT	12	0				
VENTILATIONS	16					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.					
NO. OF LPG CYLINDERS USED PER YEAR	No:	TOTAL AVG. COST (Rs):				

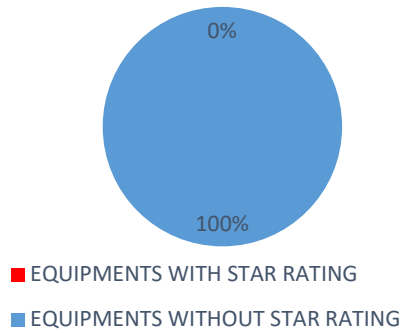
<p>PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED</p>  <p>100%</p> <ul style="list-style-type: none"> ■ EQUIPMENTS WITH STAR RATING ■ EQUIPMENTS WITHOUT STAR RATING 	<p>MODE OF TRANSPORT-STAFF</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ CAR ■ PEDESTRIANTS ■ PUBLIC TRANSPORT ■ MOTOR BIKE
<p>TYPES OF BULBS USED</p>  <p>100%</p> <ul style="list-style-type: none"> ■ LED ■ CFL/INCADESCENT LAMP 	<p>ENERGY EFFICIENT BEHAVIOR (SWITCHING OFF-EQUIPMENTS AFTER USE)-STUDENTS</p>  <p>2% 6% 92%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAY BE
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>100%</p> <ul style="list-style-type: none"> ■ OPEN ■ CLOSED 	<p>ENERGY EFFICIENT BEHAVIOR(SWITCHING OFF-EQUIPMENTS AFTER USE)-STAFF</p>  <p>0% 100%</p> <ul style="list-style-type: none"> ■ YES ■ NO ■ MAY BE
<p>MODE OF TRANSPORT USED - STUDENTS</p>  <p>2% 7% 17% 74%</p> <ul style="list-style-type: none"> ■ PEDESTRIANTS ■ PUBLIC TRANSPORT ■ CAR ■ MOTOR BIKE 	

COLLEGE OFFICE								
		No. OF APPLIANCES	POWER(WATTS)	AVERAGE USAGE PER DAY (Hrs)	AVERAGE UNITS OF ENERGY CONSUMED PER DAY (KW)	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY	
APPLIANCE								
BULBS :		0	0	0	0	0	0	
LED		82	9	8	5.9	0	20	
CFL		0	0	0	0	0	0	
INCANDESCENT		0	0	0	0	0	0	
SOLAR LAMPS		0	0	0	0	0	0	
FANS		25	60	8	12	0	7	
COMPUTER		16	25	8	3.2	0	9	
AC		3	1200	8	28.8	0	1	
REFRIGERATORS		1	500	24	12	1	1	
WATER COOLERS		1	500	9	4.5	0	1	
PROJECTOR		0	0	0	0	0	0	
TV		0	0	0	0	0	0	
INDUCTION COOKER		0	0	0	0	0	0	
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.			No. 60					
WINDOWS		OPEN (No.)	CLOSED (No.)					
TOTAL		20	8					
OPAQUE		0	0					
TRANSPARENT		20	8					
VENTILATIONS		No.0						
INSTALLED RENEWABLE ENERGY CAPACITY		IN WATTS.0						
NO. OF LPG CYLINDERS USED PER YEAR		No:0	TOTAL AVG. COST (Rs):0					
QUANTITY OF FIREWOOD USED PER YEAR		QUANTITY:0	TOTAL AVG. COST(Rs):0					
ANY INNOVATIVE ENERGY COSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.			STAFF OF THE DEPARTMENT MAKE SURE THAT THE ELECTRICAL EQUIPMENTS ARE SWITCHED OFF IMMEDIATELY AFTER USE					

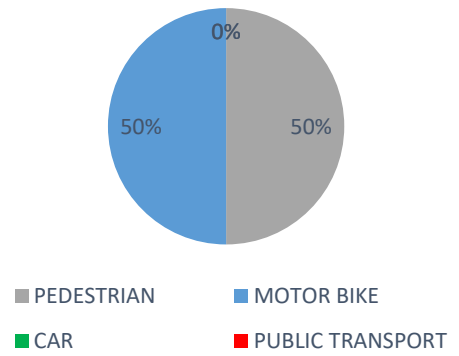
<p>PERCENTAGE OF B.E.E RATED ELECTRICAL EQUIPMENTS USED</p>  <p>■ EQUIPMENTS WITHOUT STAR RATING ■ STAR RATED EQUIPMENTS</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Equipments without star rating</td> <td>99%</td> </tr> <tr> <td>Star rated equipments</td> <td>1%</td> </tr> </tbody> </table>	Category	Percentage	Equipments without star rating	99%	Star rated equipments	1%	<p>MODE OF TRANSPORT USED- STAFF</p>  <p>■ CAR ■ PUBLIC TRANSPORT ■ PEDESTRIAN ■ MOTOR BIKE</p> <table border="1"> <thead> <tr> <th>Mode of Transport</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Motor bike</td> <td>53%</td> </tr> <tr> <td>Car</td> <td>20%</td> </tr> <tr> <td>Pedestrian</td> <td>20%</td> </tr> <tr> <td>Public transport</td> <td>7%</td> </tr> </tbody> </table>	Mode of Transport	Percentage	Motor bike	53%	Car	20%	Pedestrian	20%	Public transport	7%
Category	Percentage																
Equipments without star rating	99%																
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<p>TYPE OF BULBS USED</p>  <p>■ LED ■ CFL/INCANDESCENT BULB</p> <table border="1"> <thead> <tr> <th>Type of Bulb</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>LED</td> <td>100%</td> </tr> <tr> <td>CFL/Incandescent bulb</td> <td>0%</td> </tr> </tbody> </table>	Type of Bulb	Percentage	LED	100%	CFL/Incandescent bulb	0%	<p>ENERGY EFFICIENT BEHAVIOUR (SWITCHING OFF ELECTRICAL EQUIPMENTS AFTER USE)-STAFF</p>  <p>■ YES ■ NO ■ MAYBE</p> <table border="1"> <thead> <tr> <th>Behavior</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>93%</td> </tr> <tr> <td>No</td> <td>7%</td> </tr> <tr> <td>Maybe</td> <td>0%</td> </tr> </tbody> </table>	Behavior	Percentage	Yes	93%	No	7%	Maybe	0%		
Type of Bulb	Percentage																
LED	100%																
CFL/Incandescent bulb	0%																
Behavior	Percentage																
Yes	93%																
No	7%																
Maybe	0%																
<p>PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY</p>  <p>■ OPEN ■ CLOSED</p> <table border="1"> <thead> <tr> <th>Status</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Open</td> <td>71%</td> </tr> <tr> <td>Closed</td> <td>29%</td> </tr> </tbody> </table>	Status	Percentage	Open	71%	Closed	29%	Empty cell										
Status	Percentage																
Open	71%																
Closed	29%																

LIBRARY	No. OF APPLIANCE S	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs)	UNITS OF ENERGY CONSUMED (KWh)PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	15	12	6	1.08		8
CFL	17	45	6	4.59		4
INCANDESENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	8	60	6	2.88		4
COMPUTER	9	25	8	1.8		3
AC	0	0	0	0	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	0	0	0	0	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No. 25					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	10	38				
OPAQUE						
TRANSPARENT	10	38				
VENTILATIONS	No.6					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS.					
NO. OF LPG CYLINDERS USED PER YEAR	No:	TOTAL AVG. COST (Rs):				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:	TOTAL AVG. COST(Rs):				
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	NIL					

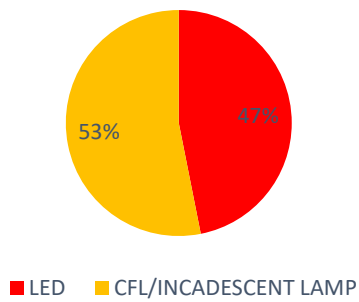
PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS



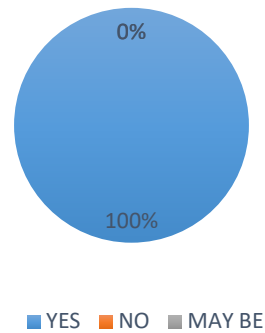
MODE OF TRANSPORT USED-STAFF



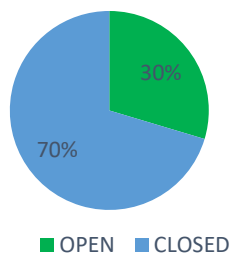
TYPES OF BULBS USED



ENERGY EFFICIENT BEHAVIOR(SWITCHING OFF-EQUIPMENTS AFTER USE)-STAFF

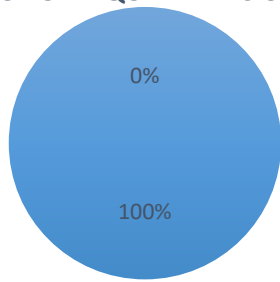


PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY



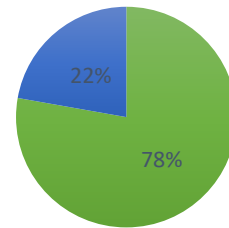
COMMON SPACES (AUDITORIUMS Etc.)	No. OF APPLIANCES	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs. AVG. USE PER DAY
APPLIANCES						
BULBS :						
LED	40	18	8	5.76	0	15
CFL	25	36	8	7.2	0	4
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	0	0	0	0	0	0
FANS	61	70	2	8.54	0	0
COMPUTER	0	0	0	0	0	0
AC	6	1200	1	7.2	0	0
REFRIGERATORS	0	0	0	0	0	0
WATER COOLERS	0	0	0	0	0	0
INVERTER	0	0	0	0	0	0
PROJECTOR	2	150	1	0.3	0	0
TV	0	0	0	0	0	0
INDUCTION COOKER	0	0	0	0	0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No. 35					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	22	0				
OPAQUE	0	12				
TRANSPARENT	22	0				
VENTILATIONS	No.20					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0					
NO. OF LPG CYLINDERS USED PER YEAR	No: 0	TOTAL AVG. COST (Rs): 0				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY:0	TOTAL AVG. COST(Rs):0				
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.						

**PERCENTAGE OF B.E.E STAR RATED
ELECTRICAL EQUIPMENTS USED**



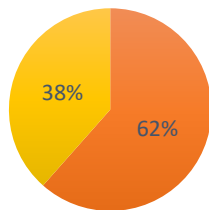
■ EQUIPMENTS WITHOUT STAR RATING
■ STAR RATED EQUIPMENTS No.

**PERCENTAGE OF
WINDOWS/VENTILATIONS KEPT OPEN
IN A REGULAR WORKING DAY**



■ OPEN ■ CLOSED

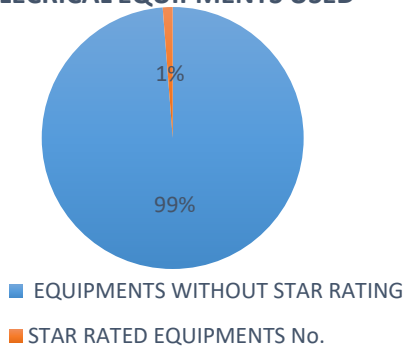
TYPE OF BULBS USED



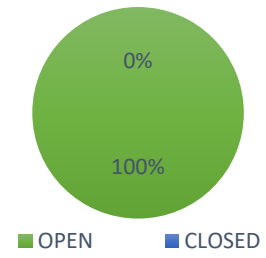
■ LED BULBS ■ CFL/INCADESCENT LAMP

HOSTEL	No. OF APPLIANCES	POWER (WATTS)	AVERAGE USAGE PER DAY (Hrs.)	UNITS OF ENERGY CONSUMED (KWh) PER DAY	APPLIANCES WITH 5 OR 4 STAR ENERGY RATING (No.)	No. OF APPLIANCES WITH MORE THAN 5 Hrs. AVG. USE PER DAY
APPLIANCE						
BULBS :						
LED	104	12	4	4.992	0	6
CFL	11	18	4	0.792	0	4
INCANDESCENT	0	0	0	0	0	0
SOLAR LAMPS	2	0	24	0.048	0	2
FANS	41	70	8	22.96	0	30
COMPUTER	1	25	24	0.6	0	1
AC	0	0	0	0	0	0
REFRIGERATORS	2	550	24	26.4	2	2
WATER COOLERS	0	0	0	0	0	0
PROJECTOR	0	0	0	0	0	0
TV	1	120	3	0.36	0	0
INDUCTION COOKER	1	1500	1	1.5	0	0
OTHERS	0	0	0	0	0	0
TOTAL NO. OF PLUG POINTS IN THE DEPARTMENT.	No. 45					
WINDOWS	OPEN (No.)	CLOSED (No.)				
TOTAL	42	0				
OPAQUE	12	0				
TRANSPARENT	30	0				
VENTILATIONS	No.30					
INSTALLED RENEWABLE ENERGY CAPACITY	IN WATTS. 0					
NO. OF LPG CYLINDERS USED PER YEAR	No: 20	TOTAL AVG. COST (Rs): 31280				
QUANTITY OF FIREWOOD USED PER YEAR	QUANTITY: 5 ton	TOTAL AVG. COST(Rs):15000				
ANY INNOVATIVE ENERGY CONSERVATION PRACTICES, RENEWABLE ENERGY USAGE PRACTICES FOLLOWED IN THE DEPARTMENT.	SOLAR WATER HEATER					

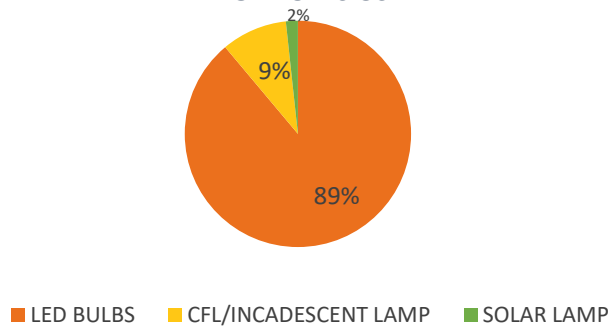
PERCENTAGE OF B.E.E STAR RATED ELECTRICAL EQUIPMENTS USED



PERCENTAGE OF WINDOWS/VENTILATIONS KEPT OPEN IN A REGULAR WORKING DAY



TYPE OF BULBS USED



CONSOLIDATED DATA – STAFF SURVEY

Based on the survey conducted among **108 staff members** of the college, the following observations were obtained.

1. Mode of transport used by staff members (From 108 staff responses)

MODE OF TRANSPORT	PERCENTAGE OF STAFF
PUBLIC TRANSPORT	28.7%
CAR	43.5%
TWO WHEELER	24.1
PEDESTRIAN	9.3%
CYCLE	0.9%

2. **BS STAGE** (EMISSION STANDARD) of vehicles used by staff. (From 71 responses)

BS STAGE	PERCENTAGE OF STAFF
BS 6	12.3%
BS 4	56.8%
BS 3	18.9%

3. **Fuel used** for personal vehicles - Staff(From 108 staff responses)

FUEL	PERCENTAGE OF STAFF
PETROL	72.9%
DIESEL	23%
E- VEHICLE	0%

4. Usage of **car pooling practices** to reach the college - staff(From 108 staff responses)

CAR POOLING	PERCENTAGE OF STAFF
YES	17.6%
NO	82.4%

5. Staff interest to adopt **E- VEHICLES** in future.

INTERESTED	PERCENTAGE OF STAFF
YES	69.4%
NO	30.6%

6. **Energy efficient behaviour** (Turning off devices after use)– Staff

Energy efficient behaviour	PERCENTAGE OF STAFF
YES	95.4%
NO	0%
MAY BE	4.6%

CONSOLIDATED DATA – STUDENT SURVEY

Based on the survey conducted **among 739 students** of the college, the following observations were obtained.

1. Mode of transport used by students to reach the college (From 739 responses)

MODE OF TRANSPORT	PERCENTAGE OF STUDENTS
PUBLIC TRANSPORT	76.5%
CAR	3.7%
TWO WHEELER	7.6%
PEDESTRIAN	12.4%
CYCLE	0.1%
E- VEHICLE	0.1%

2. **BS STAGE** (EMISSION STANDARD) of vehicles used by students. **(From 200 responses)**

BS STAGE	PERCENTAGE OF STUDENTS
BS 6	22.5%
BS 4	32%

BS 3	19%
------	-----

3. Usage of **car pooling practices to reach the college** – Students (From 739 responses)

CAR POOLING	PERCENTAGE OF STUDENTS
YES	13.7%
NO	86.3%

*10% (72) of students utilize pooling practices to reach the college on a daily basis.

4. Students intrest to adopt **E- VEHICLES** in future.

INTERESTED	PERCENTAGE OF STUDENTS
YES	64.1%
NO	35.9%

5. Energy efficient behaviour (Turning off devices after use)– Students

Energy efficient behaviour	PERCENTAGE OF STUDENTS
YES	86.2%
NO	3%
MAY BE	11%

ENERGY USAGE DATA – COLLEGE LEVEL

MONTH	ELECTRICITY-UNITS	ELECTRICITY - COST (Rs)	FUEL - DIESEL, (LITERS)	FUEL COST (Rs)	LPG CYLINDERS (No.)	LPG COST (Rs)	FIRE WOOD(Q uantity)	FIRE WOOD COST (Rs)
2020 July	2494	18621	48	3360	02	3128	0	0
2020 August	2354	22896	0	0	0	0	0	0
2020 September	1567	17392	0	0	0	0	0	0
2020 October	2035	20667	0	0	0	0	0	0
2020Nov	2454	18978	40	2880	0	0	0	0
2020 Dec	2114	8179	0	0	0	0	0	0
2021 Jan	3358	30351	0	0	0	0	0	0
2021Feb	5170	43307	44	3520	0	0	0	0
2021 March	4500	38550	0	0	2	3240	0	0
2021 April	NA		46	4140	0	0	0	0
2021 May	NA		0	0	0	0	0	0
2021 June	NA		0	0	0	0	0	0
TOTAL	26046	218941	178	13900	4	6368		

CARBON FOOTPRINT

Carbon footprint is the measure of the impact of our activities on the environment, and in particular climate change. Carbon footprint were calculated using the methodology based on the reference, Mary Lissy P N (2012).

Due to COVID 19 lockdown and shift to online mode of education, 100 fully working days for college and 300 working days for college office were considered for calculations

Sl.No	Emission inventory	Units CO2 equivalent Emitted	Calculated Value.
1	Human factor	1.14kg per person per day	115368 kg
2	Petrol	2.3 kg per litre	Nil
3	Diesel	2.7kg per litre	480.6 kg
4	hydroelectricity	0.68956kg per kwh	17961.3 kg
5	Food waste	1.7kg/kg	8500 kg

6	Solid waste	0.125kg per kg	130 kg
7	L.P.G	1.5kg per kg	90 kg
8	Buildings	0.1867kg/sq.mt./year	1663.2 kg
TOTAL			144192 kg

CARBON OFFSETTING

Carbon offsetting is the action or process of compensating for CO₂ emissions arising from industrial or other human activity, by participating in schemes designated to make equivalent reductions of carbon dioxide in the atmosphere. Devamatha college kuravilangad has a large portion of the campus under green cover. The carbon offsetting capability of the college is given below.

Sl.No.	Types of flora	Amount of CO ₂ absorbed	Total number/area	Quantity of carbon absorbed
1	Full-grown trees	6.8 kg per year	238	1618.4 kg
2	Semi-grown trees	3.4 kg per year	102	346.8 kg
3	Shrubs	1 gm. per year/sq. ft.	75000 sq.ft	75 kg
4	Lawn	1 gm per year/sq ft	100000 sq.ft	100 kg
TOTAL CARBON ABSORBED				2140.2 kg

DATA ANALYSIS

Based on data collected, following observations were made.

College infrastructure

Based on the data provided by various departments, it was estimated that

1. Among total electrical equipment in the college, less than 2% is B.E.E. (Bureau of energy efficiency) star rated.

2. Out of total lamps in the college, 65.1% (353) are LED's, 32.8% (178) are CFL, and 0.02% (11) are incandescent.
3. In regular working day, out of 468 windows in the college, 313(66.8%) are kept open.
4. Number of equipment with more than 5hr average daily wage are 221
5. It was observed that the departments functioning under newly built buildings (S.F Bloc) are well positioned to employ energy efficient practices, As all of them have transparent windows, 100% LED lighting, large ventilations etc.
6. Installed solar power capacity of the college is 5.5kw .After considering spaces which are solar panel installable, it was found that the solar power production potential of the college is 193kw. (1kw of solar power can be generated from 10sq.m area).
7. Carbon offsetting capability of the college is 1.49% of its CO2 equivalent emission

Staff

1. Energy efficient behaviour among staff member are evident as 95.5% of staff make sure that electrical equipment are turned off immediately after use.
2. 17.6% of staff adopt car or bike pooling to reach the college.
3. 40% of staff utilize energy efficient and eco-friendly transport method to reach the college (public transport, cycle, pedestrians ...)
4. Interest among staff to adopt green transport technologies are visible as 69.4% of staff had shown interest to shift to E-Vehicles in future.
5. 72.9% of staff having personal vehicle use comparatively eco-friendly fuel, petrol.
6. Bharat Stage 6 (BS Stage) emission norm standard vehicles are used by 12.3% of staff members.

STUDENTS


1. Energy efficient behaviour among students are evident as 86.2% of students make sure that electrical equipment are turned off immediately after use.
2. More than 10% of students adopt car or bike pooling to reach the college daily.
3. 89.2% of students utilize energy efficient and eco-friendly transport method to reach the college (public transport, cycle, pedestrians ...)

4. Interest among students to adopt green transport technologies are visible as 64% of students had shown interest to shift to E-Vehicles in future.
5. Bharat Stage 6 (BS Stage) emission norm standard vehicles are used by 22.5% of student having personal vehicle.

ENERGY CONSERVATION AND MANAGEMENT MATRIX (ECMM) SCORES

No.	DEPARTMENT	C1	C2	C3	C4	C5	C6	C7	C8	C9	TOTAL
1	MALAYALAM	5.2	0	15	5	5	13.65	1.3	8.4	10	63
2	ENGLISH	0	15	15	0	0	13.5	0	14.1	8.3	66
3	COMMERCE	0	0	13.35	0	0	13.5	1.4	11.4	8.6	48
4	ECONOMICS	0	6.6	15	0	0	14.1	5	12.6	10	63
5	MATHEMATICS	0	0	15	0	5	13.95	2.5	13.05	10	60
6	B.Sc. BOTANY	0.2	13.8	13.05	5	0	15	0	12.45	10	70
7	B.Sc. ZOOLOGY	0	0	13.95	0	0	14.25	0	13.65	10	52
8	B.Sc. PHYSICS	0	5.7	13.5	5	5	12.6	0	13.35	10	65
9	B.Sc. CHEMISTRY	0	0	15	0	0	13.65	3.3	12.9	10	55
10	B.Com S.F	0	15	8.4	0	0	11.85	5.7	11.55	10	63
11	B.A TRIPLE MAIN	0	15	15	0	0	13.65	0	13.8	10	67
12	M.Sc. PHYSICS S.F	0.9	2.55	10.65	5	5	11.1	8	15	6	64
13	M.Sc. ZOOLOGY S.F	1	0	15	0	0	15	10	11.55	10	63
14	M.Sc. BOTANY S.F	0.8	7.5	12.45	0	0	14.1	5	13.65	8.7	62
15	M.Sc. CHEMISTRY S.F	2.6	12.45	12.45	0	5	14.4	6.7	14.4	10	78
16	M.Sc. MATHEMATICS S.F	0	0	15	5	5	13.05	7.5	15	10	71
17	OFFICE	0.1	15	10.65	0	5	-	2.7	-	9.3	61*
18	LIBRARY	0	7.05	6.5	0	0	-	7	-	-	46*
19	COMMON SPACES	0	9.3	11.7	0	5	-	-	-	-	52*
20	HOSTELS	0.1	13.35	15	0	5	-	-	-	-	67*

**Scaled*

BEST PRACTICES BADGE	ECMM SCORE	DEPARTMENTS
 <p>BEST PERFORMER ENERGY MANAGEMENT</p>	70+	M.Sc. CHEMISTRY S.F M.Sc. MATHEMATICS S.F B.Sc. BOTANY
 <p>GRADE - A ENERGY MANAGEMENT</p>	55-69	MALAYALAM B.Com S.F B.A TRIPLE MAIN M.Sc. PHYSICS S.F M.Sc. ZOOLOGY S.F M.Sc. BOTANY S.F ENGLISH ECONOMICS MATHEMATICS B.Sc. PHYSICS B.Sc. CHEMISTRY OFFICE HOSTELS
 <p>GRADE - B ENERGY MANAGEMENT</p>	45-54	COMMERCE B.Sc. ZOOLOGY LIBRARY COMMON SPACES
 <p>GRADE- C ENERGY MANAGEMENT</p>	Below 45	Nil.

RECOMMENDATIONS

1. Energy and environmental audit has to be conducted every two years to analyse improvements and identify critical shortcomings in energy management. Collaboration with Energy Management Centre (EMC) can be sought for future audits.
2. 100% LED lighting should be a target to be achieved in next two years, up from current level of 65.1%
3. College should ensure that every new purchase of electrical equipment are B.E.E 5 Star rated. Discretion of electricians may not be entertained.
4. Useful Daylight illuminance (UID) and air circulation can be improved to 100% from existing 66.8% by making sure that windows are kept open in regular working days.
5. 100% energy efficient behaviour (switching off electrical equipment immediately after use) for both staff and students should be achieved in next one year.
6. Electrical equipment with more than 5Hrs. of daily usage (210 no.) can be replaced with B.E.E 5 Star rated devices.
7. Solar generation can be improved by installing more solar panels. Grid connected Rooftop solar project of K.S.E.B can be employed in the college. If production capacities are fully utilized, the college could become net electricity exporter.
8. Green habitat concept should be adopted for all future building constructions of the college. This could reduce energy usage, increase aesthetics of the buildings and reduce carbon footprint.
9. College level awards can be given to promote energy efficient practices among departments
10. Free spaces in the college can be planted with indigenous tree varieties. This could reduce carbon footprint.
11. Green Policy of the college can be modified based on findings of the Audit.
12. The college may participate in Energy Management Centre (EMC)- ENERGY SAVING AWARD next year after making improvements in energy use patterns.

CONCLUSION

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 utilization at the college. Insights in to behavioural aspects of Energy management and grading based on ENERGY CONSERVATION AND MANAGEMENT MATRIX (ECMM) Scores can help the college to formulate future course of action in this direction.

References

1. ENERGY CONSERVATION BUILDING CODE (ECBC) – 2017. Ministry of Power, Govt. of India.
2. Bureau of Energy Efficiency (B.E.E) Website.
3. Bureau of Energy Efficiency (B.E.E) Audit Methodology document.
4. Energy Management Centre (E.M.C) Kerela - Website

WATER AUDIT 2020-21

Water is a key driver and is vital to development of Biodiversity, Agriculture, Humans as well as the Economy. With recent experiences across the world and in India, the water scarcity and security is emerging issues. Groundwater depletion and water contamination are taking place at an alarming rate in our state. Water management is a crucial step of sustainable development and it also has been made an integral part of the Sustainable Development Goals (SDGs). Hence it is essential to examine the quality and usage of water in our college. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. Water audit is a technique or method which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The water audit team (P.G. Department of Chemistry) investigates sources of water, its distribution channels, water quality and problems associated with water management in the institution.

METHODOLOGY

The methodology adopted to conduct the Water Audit of the Institution had the following components.

1. **Onsite Visit:** Field visit was conducted by the Audit Team of P.G. Department of Chemistry. The key focus of the visit was on assessing the sources of water and its distribution channels.
2. **Questionnaire:** Responses from the staffs and students regarding the quality and usage of water were collected as part of the water audit.
3. **Focus Group Discussion:** Discussions were held with the authorities and staff members about various aspects of water Audit. The discussion was focused on identifying the attitudes and awareness towards water quality and water usage in the institution.
4. **Quality Analysis:** The sample collection (both drinking and Tap water) was carried out during the visits. The water samples from one cooler and a common tap were taken from the campus. Collected water samples were analysed in the scientific manner as prescribed by the standard procedures.

Data about Water Management in the Campus

SL NO	PARAMETERS	Response	Remarks
1.	Sources of water	<i>Wells</i>	
2.	No. of Wells	<i>3</i>	
3.	No. of motors used	<i>3</i>	
4.	Horse power – Motor	<i>NA</i>	
5.	Depth of well –Total	<i>NA</i>	
6.	Average water level	<i>NA</i>	
7.	Number of water tanks	<i>2</i>	
8.	Capacity of tank	<i>30000 L</i>	
9.	Quantity of water pumped every day	<i>45000 L</i>	
10.	No. of Taps	<i>427</i>	<i>Excluding Canteen</i>
11.	Any water wastage/why?	<i>Nil</i>	
12.	Water usage for gardening	<i>500L</i>	
13.	Waste water sources	<i>Laboratories, Common taps & Canteen</i>	
14.	Use of waste water	<i>Nil</i>	
15.	Whether waste water from labs mixed with ground water	<i>Yes</i>	
16.	Any treatment for lab water	waste water is kept in a covered pit	
17.	Whether any green chemistry method practiced in labs	“Micro scale analysis “is implemented for Chemistry students	
18.	No. of water coolers	<i>08</i>	
19.	Rain water harvest available?	<i>Yes</i>	
20.	No of units and amount of water harvested	<i>02, 250000 L</i>	<i>15000L used per day for toilet purposes</i>

21.	Any leaky taps	<i>Nil</i>	
22.	Amount of water lost per day	<i>Nil</i>	
23.	Any water management plan used?	Water management audit conducted	
24.	Any water saving techniques followed?	<i>Yes</i>	<i>No wastage of water from the distilling unit in P.G. Department of Botany</i>
25.	Are there any signs reminding peoples to turn off taps after use?	<i>No</i>	
26.	Total usage of water per day	60500 L	Main tank -30000L, Hostel -15000L, Reservoir – 15000L , Gardening – 500L

Water Usage Survey Responses

A survey has been conducted by the audit team among the staff and students of the institution regarding water usage. The responses are shown in the following tables.

1. Do You Carry Drinking Water To The College Usually?

	Staff (97)		Students(739)		Total (836)	
	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>
Yes	62.9	61	83.9	620	81.46	681
No	37.1	36	16.1	119	18.54	155

2. Is There Availability Of Clean Drinking Water In The College?

	Staff (97)		Students(739)		Total (836)	
	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>
Yes	88.7	86	90.4	668	90.20	754

<i>No</i>	<i>11.3</i>	<i>11</i>	<i>9.6</i>	<i>71</i>	<i>9.80</i>	<i>82</i>
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3. Is There Adequate Availability Of Water For Washing Hands And Other Purposes In The College?

	<i>Staff (97)</i>		<i>Students(739)</i>		<i>Total (836)</i>	
	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>
<i>Yes</i>	<i>93.8</i>	<i>91</i>	<i>92.7</i>	<i>685</i>	<i>92.82</i>	<i>776</i>
<i>No</i>	<i>6.2</i>	<i>6</i>	<i>7.3</i>	<i>54</i>	<i>7.18</i>	<i>60</i>

4. Do You Make Sure That The Tap Remains Properly Closed After Every Use?

	<i>Staff (97)</i>		<i>Students(739)</i>		<i>Total (836)</i>	
	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>	<i>Responses in %</i>	<i>Responses in No.s</i>
<i>Yes</i>	<i>99.0</i>	<i>96</i>	<i>98.6</i>	<i>729</i>	<i>98.68</i>	<i>825</i>
<i>No</i>	<i>1.0</i>	<i>1</i>	<i>1.4</i>	<i>10</i>	<i>1.32</i>	<i>11</i>

Water Quality Analysis

Water samples from two sources (Tap and Cooler) were collected and analysed for its quality parameters. The samples includes water from the cooler which is used for drinking and tap water sample which is used for other purposes. The samples were collected, preserved and transported to **KISCO - SOIL, WATER TESTING LAB EDANAD, PALA (Approved by Kerala State Pollution Control Board) PCB/LAB/B/01/2017** and analysed for various physio-chemical parameters. The major parameters analysed include dissolved oxygen, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids, turbidity and E.coli bacteria. The results presented in the Table 1 &2 are comparable with the values of acceptable limits prescribed by different agencies.

Table 1**WATER ANALYSIS REPORT - TAP**

PARAMETERS	UNITS	ACCEPTABLE LIMIT	RESULT
pH		6.5 - 8.5	5.295
TURBIDITY	NTU	1	0.4
ELECTRICAL CONDUCTIVITY (EC)	dS/m	0.5	0.094
CALCIUM (Ca)	mg/l	75	2.1
MAGNESIUM (Mg)	mg/l	30	1.82
IRON (Fe)	mg/l	0.3	ND
MANGANESE (Mn)	mg/l	0.1	ND
NITRATE	mg/l	45	50
ALKALINITY	mg/l	200	6.1
CHLORIDES	mg/l	250	50
SULPHATE	mg/l	200	ND
HARDNESS	mg/l	200	12.7
TOTAL DISSOLVED SOLIDS (TDS)	mg/l	500	47
FLUORIDE	mg/l	1.0	ND
COLIFORM BACTERIA	MPN	< 39	15
<u>E.coli</u> BACTERIA	MPN	ABSENT	ABSENT

*ND - NOT DETECTED



AUTHORISED SIGNATORY

Table 2

<u>WATER ANALYSIS REPORT - DRINKING WATER</u>			
PARAMETERS	UNITS	ACCEPTABLE LIMIT	RESULT
pH		6.5 - 8.5	5.663
TURBIDITY	NTU	1	0.3
ELECTRICAL CONDUCTIVITY (EC)	dS/m	0.5	0.098
CALCIUM (Ca)	mg/l	75	1.9
MAGNESIUM (Mg)	mg/l	30	1.86
IRON (Fe)	mg/l	0.3	ND
MANGANESE (Mn)	mg/l	0.1	ND
NITRATE	mg/l	45	50
ALKALINITY	mg/l	200	12.2
CHLORIDES	mg/l	250	40
SULPHATE	mg/l	200	ND
HARDNESS	mg/l	200	12.4
TOTAL DISSOLVED SOLIDS (TDS)	mg/l	500	49
FLUORIDE	mg/l	1.0	ND
COLIFORM BACTERIA	MPN	< 39	4
<u>E.coli</u> BACTERIA	MPN	ABSENT	ABSENT

Conclusions and Recommendations

The identified sources of water in the campus includes 3 wells. The institution have water tanks with capacity of 15000 L each and 2 rain water harvesting plants with a total capacity of 2.5 lakhs litres. The institution requires 60500 Litres of water per day for drinking purpose, wash areas, toilets, labs and gardening. As per the available data average per capita consumption of water per day is 31.84 L.

Major waste water sources identified are laboratories and common taps. At present, there is no mechanism for the reuse of waste water. The institution has provided 8 water coolers at different locations with a total capacity of 320 L which ensures adequate availability of clean drinking water.

Cut off mechanism in the motor pump used and reusing of water in the distilling units in the P.G. Department of Botany are unique techniques followed in the campus for avoiding wastage of water.

The audit team has conducted a survey on water usage. 81.46 % of the respondents usually carry drinking water to the college. 90.4% is satisfied with the availability of clean drinking water. 92.7 % responded that there is adequate availability of water for washing hands and other purposes. An overwhelming majority of respondents are well aware of the wastage of water and they make sure that the tap remains properly closed after every use.

Recommendations

1. Install water efficient taps with an aerator or flow restrictor to use less water.
2. Regularly check for leaks and fix immediately. Even a slowly dripping tap can waste 10000 L of water over a year.
3. Create awareness about water efficiency to encourage water saving behaviours.
4. Waste water from the laboratories should be recycled in a proper manner.
5. Posters could be placed at the wash areas as well as toilets to make the students aware about the value of water resources.

WASTE MANAGEMENT AUDIT 2020-21

INTRODUCTION

Waste management is the collection, transport, processing, recycling or disposal, and monitoring of waste materials. The term usually relates to materials produced by human activity, and is generally undertaken to reduce their effect on health, the environment or aesthetics. Waste management is also carried out to recover resources from it. Waste management can involve solid, liquid, gaseous or radioactive substances, with different methods and fields of expertise for each. Waste management practices differ for developed and developing nations, for urban and rural areas, and for residential and industrial producers. Management for non-hazardous residential and institutional waste in metropolitan areas is usually the responsibility of local government authorities, while management for non-hazardous commercial and industrial waste is usually the responsibility of the generator.

Waste management is becoming one of the key problems of the modern world, an international issue that is intensified by the volume and complexity of domestic and industrial waste discarded by society.

Waste management is an important element of environmental protection. Its purpose is to provide hygienic, efficient and economic solid waste storage, collection, transportation and treatment or disposal of waste without polluting the atmosphere, soil or water system. There are eight major categories of waste management, and each of them can be divided into numerous sub-categories. The categories include source reduction and reuse, animal feeding, recycling, composting, fermentation, landfills, incineration, and land application. Waste can be classified into five types of waste which is all commonly found around the house. These include liquid waste, solid rubbish, organic waste, recyclable rubbish and hazardous waste.

Embedding the promotion of recycling and responsible waste management into college curriculums will ensure that all pupils are exposed to the topic and provides them with a way of exploring their personal response. Separating, reducing, reusing, recycling and composting are good options for managing college waste. Universities need to find ways to get rid of

college waste with the least negative effects on the environment. Incinerating and building waste pits on the grounds can only be done by colleges with no other options.

College waste can manage via different methods;

- **Separate waste**

Separating waste is the first step in managing your college's rubbish.

Set up bins for the different kinds of waste, and make sure the right bins are used. You should have clearly labelled bins for glass, paper, plastic, cans and for organic waste

- **Reduce waste**

Avoid sending waste to a landfill. Landfills cause environmental problems, such as unpleasant smells and contaminants and toxins leeching into water and the air.

Educate staff and students about using other ways of disposing of waste, such as recycling, reusing and composting.

- **Reuse waste**

Think about reusing waste around the college and the college community, including:

- taking lost property to your local opportunity shop
- using plastic bags as bin liners or as packaging, instead of bubble wrap
- Having students make recycled paper and use shredded paper as bedding for pets.

- **Recycle waste**

Contact your local council to find out what can be recycled in your area. Generally you can recycle:

- glass
- paper and cardboard
- cans
- Plastic.

Make sure recycle bins are used correctly and that the items are clean when they go in the bin.

For recycling to work, educating students and staff is essential.

- **Compost organic waste**

Separate organic waste like food scraps, plants, paper and lawn clippings from other rubbish.

Use organic waste for composting and teach students about how it works. You can use the compost on the college gardens, saving on the cost of fertiliser and other chemicals.

By various waste management methods, students can make their campus more eco friendly. A green campus can generate healthier citizens with responsibilities to nature.

OBJECTIVE

The main purpose of this study is to understand different kinds of wastes of our campus and to know the measures adopted by each department for the destruction of these wastes. From this study we will be able to understand the limits that is facing our college for the proper disposal of different kinds of wastes. And also we will be able to get the kinds of waste materials produced by various departments of our college. By understanding the limits of waste management of college, we will be able to provide proper recommendations to fix it.

METHODOLOGY

The goal of this project was to conduct a survey report on different types of waste management processes in our college. As a part of this survey methods we constructed. A questionnaire with 22 questions and 4 or 5 options for each questions. The questionnaire was given to 22 departments in our college.

This study was carried out at UG and PG levels. The actual data gathering started with an orientation regarding the purpose and the method of this study on the basis of this

discussion. We created a Google form and this form was given to each department through mail.

After few weeks each department answered the questionnaire and the responses were recorded.

The methodology adopted to conduct the green audit of the institution had the following components.

On site visit

One week field visit was conducted by the green audit team (waste management). The key focus of the visit was on accessing the status of the waste management process in the institution. The data about food waste disposal, washbasin usage and bathroom facilities were collected from students from all departments through Google forms and also the data about the campus cleaning, and other waste management etc... collected from the non-teaching staffs in the college through the face to face interview and questionnaire.

Focus group discussion

The focus group discussions were held with the members of the waste management team focusing on various aspects of green audit like field visit, questionnaire preparation, Google form creation, data analysis and report. Discussion was focused to identify the different types, amount and management of waste. Also we suggest different recommendations on the basis of the survey.

Waste management survey

With the help of teachers and students, the waste management (green audit) team has assessed the waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method. In this green audit survey we know that the amount of wastes and how to dispose or manage in our institution. The common wastes that are found in our institution are plastic, biological, food, e-waste, chemical, construction and paper wastes. And the information about the wastes and their management and the toilet and washroom facilities were collected from teachers, students and the non-teaching staffs in our college. In toilets plastic wastes like sanitary pads, newspapers etc.. are commonly found and these wastes are disposed in a proper manner by using metal waste bins. This information was collected from college staffs through

questionnaire and interviews. The food wastes were dump in proper waste bins. The paper waste was commonly found in all departmentsthesepaper wastes were managed by the selling waste papers scrapers and reuse or recycle the paper wastes. The chemical wastes were disposed in a proper way by selling chemical bottles to scrappers etc...The least production of waste in all department are the construction waste. These data give a approximate quantity of waste generated in our institution. The good responses from the teachers, students and nonteaching staffs were help to make a good report on the green audit.

DATA COLLECTION

FROM WHOLE CAMPUS (GROUND AND OTHER PUBLIC AREAS)

(Collected from ground staff)

TYPE OF WASTE	KG/YEAR	HANDLING METHOD
Plastic waste	30	Handed over for recycling
Biological waste	Not measured	Toilet, wash basin
Paper waste	10	Handed over for recycling
Food waste	5000	Used for animal feed
Construction waste	1 ton	Concrete wastes are used for land fill, cement bags etc. Are handed over for recycling.
Chemical waste	Not measured	Soakpit disposal
e- waste	640Kg	Sold to Clean Kerala Company Ltd.

WASTE MANGEMENT WITHIN STAFF

Method of waste disposal	percentage	Carry drinking water	How do you bring lunch	percentage
Bring it back to home	11	59%	Lunch box	89.8
Dispose in specific dust bin	84		Doesn't bring lunch	1.8
Throw away randomly	0.92		Canteen	1.8
other	3.70		Home	2.7
			Natural leaf	2.7
			plastic	0.92

CONCLUSION AND RECOMMENDATIONS

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audit 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).

Waste management can be defined as the collection, removal, processing and disposal of materials considered waste. Waste can put into landfills, incinerated, recycled or composted. The most sustainable way to manage waste is to recycle and compost.

Waste management is an essential factor in today's society. It requires proper disposal and techniques keeping in mind the environmental situation. The study of waste management became a crucial tool in the battle against minimizing the amount of waste that is accumulating each year. With this insight, we conducted a survey questionnaire with the help of a Google form on various waste that accumulated in this institution. From the above research result, we concluded paper waste accumulation positioned first succeeding by food waste and plastic waste respectively.

The college collect approximately 6300 kg wastes along with 1 ton of construction waste. Of this other than construction waste, the amount of food waste is alarming. Approximately 5000kg food waste is produced in this college. A proper awareness or strict measures should be taken to reduce food waste. One of the major crisis in this waste management that the college face is ineffective disposal and treatment of plastic waste. The institution lacks the E waste collection regularly. The lack of proper management of chemical waste is a major drawback for such an institution.

Proper sanitation and health structure is well developed in our college. Number of toilets and wash basins for students, teachers and staff can be shown as the proof. The number of toilets for women is approximately in 1:50 in ratio as per the Higher Education Council The disposal of sanitary napkins etc. are done by incineration.

Waste generator helps to segregate and store the waste generated by them in three separate streams namely bio –degradable and domestic hazardous wastes in suitable colored bins and handover segregated wastes to authorized rag – pickers or waste collectors. Implementation of this step in our college can be a great help.

The recommendations in this report highlight many ways in which the college can work to improve its actions and become a more sustainable institution

RECOMMENDATIONS

1. Conduct awareness programs in order to improve the knowledge about the importance of waste management.
2. Add educational signs at each recycling and waste bin with pictures of products frequently disposed.
3. Develop a short guide to distribute to staff and students and faculty on waste management practice such as recycling, composting and reusing.
4. Increase the number of recycling bins on campus to ensure a recycling bin is paired with every landfill bin.
5. Create a pledge to reduce waste and aim to increase diversion rates for students, staff and faculty to sign.
6. Implement a system to ensure recycling bins are in each classroom and office space.

7. Develop the Green Department Certification program and require each department to participate once every 3yrs.
8. Eliminate single use, non-recyclable products from being distributed on campus. Instead make the switch to recyclable, compostable and reversible products.
9. A combined effort with the local governing bodies to collect and manage plastic waste weekly will greatly help to reduce them.
10. Establishment of the coloured bins to segregate the waste.
11. A effort to collect waste from each department and then try to recycle them will be effective.

Specific for departments

1. Malayalam department face the problem of plastic waste .The best way to overcome this is by reducing the usage of plastics and choose reusables.
2. E-waste is the main waste management problem for B.Sc. Zoology and both PG and UG department of physics. To overcome this the electronic wastes can be given to a certified e-waste recycler or reuse the electronic device. It can also be disposed by landfilling.
3. B.sc. Botany finds the unavailability of big colour pattern bins as a limitation for waste management. By providing large bins with different colour pattern can solve the problem.
4. M.sc Zoology department has no facility to dispose biological waste. A biogas plant at the campus can help to clear the problem.
5. Economics department has no proper measures for managing waste. Methods like segregation, recycling, reusing and composting can be used for proper waste management.
6. Space limitation is the main problem faced by the departments of Statistics and Hindi. Methods like landfilling, incineration, recycle and reuse can be used.
7. Both PG departments of Botany and Zoology finds the disposal of chemical wastes as a major limitation for waste management. Adequate measures should be taken to hand over chemical wastes to agencies for proper disposal
8. The irregular collection of waste is the problem of English department. Regular collection should be maintained.

9. Departments of B.A Triple main and PG Maths (S.F) has no separate waste bins for different categories of waste. Different types of wastes must be segregated by using separate waste bins.
10. Maths department finds the unavailability of staff as a problem for waste management . Adequate number of staff must be provided for proper waste management.

BIODIVERSITY AUDIT 2020-2021

Plant Diversity

Devamatha College is Located at Kuravilangad, in Kottayam District on a lush green eco-friendly campus of 12.5 acres/ 56585sq.mts. The region coming under Meenachil Taluk and is near to MC Road. With very pleasant climate, the entire campus is ever green with a variety of trees, bushes and grass.

The region consists of cultivated plants and natural vegetation. Inside the campus various types of trees, medicinally important plants and ornamental plants are present. According to the local people the place was a dense forest in the past. There is a pond inside the campus in which many hydrophytic plants are growing in. The campus area is under the control of ST. Mary's Forane Church, Kuravilangad.

During biodiversity audit work, efforts were made to understand the current status and ongoing changes in the ecology of the campus as well as surrounding area.

Trees are a great way to improve the overall aesthetics of our college campus. Plants as a whole are renowned for improving the overall air quality. They have proven air-purification properties, which are capable of absorbing harmful gases such as volatile organic compounds (VOCs), along with the traditional carbon dioxide. Plants clean the air through a process that we are all more than aware of, photosynthesis. Through the leaves, they absorb carbon dioxide and any potentially harmful chemicals and breathe out fresh, pure oxygen. It promotes the circulation of clean, healthy air in the campus.

AIM AND OBJECTIVES

The aim of the Biodiversity Audit to survey existing vegetation and to understand the current status and ongoing changes in the ecology of the campus as well as surrounding area.

Objectives:

1. To analyze current status of floristic composition of the campus.
2. To suggest measures to make the institute campus biodiversity rich.
3. To deal with any other relevant environmental and ecological issues to the surrounding area in general.
5. To make recommendations for the conservation, protection and rejuvenation of the natural vegetation by involving students and faculty members.

METHODOLOGY

ACTIVITIES UNDERTAKEN:

In present survey, focus has been given on assessment of present status of plant diversity in the college campus.

The assessment includes understanding present vegetation composition which includes trees, shrubs, climbers and herbaceous elements in and around campus. The standard for the work is followed through the identification of plants (by regional floras) during the field visit in the campus. Primary survey of college campus was undertaken for assessment of floral diversity. The list of plants which includes trees, shrubs, climbers, herbs have been prepared and documented for its further ecological importance. The field activities in the College has been carried out during the period April 2021 to June 2021. The survey have been undertaken to understand the boundaries of the campus, vegetation pattern, existing floral components, various activities carried within the campus, etc.

The study was based on the specimens collected from the Deva Matha college campus at regular intervals, for three months, since April 2021.

Exploration were undertaken to different parts of the area, to have a clear understanding of the influence of seasonal changes in vegetation pattern and floristic composition. During the field visit every species were collected in flowering and fruiting stages, and detailed field notes were taken on the spot. Each specimen was carefully examined in fresh condition using hand lens, checked with descriptions given by J.S Gamble and Fisher in the Flora of Presidency of Madras.

OBSERVATIONS

List of Plants present in the Campus

SL No	Botanical Name	Common Name	Family	H/S/T/C	Uses	Status	No of Plants
1	<i>Abelmoschus esculentus</i>	Venda	Malvaceae	Shrub	Vegetable	Cultivated	8
2	<i>Abutilon indicum</i>	Mudra	Malvaceae	Shrub	Medicinal	Wild	4
3	<i>Adiantum</i>	Maiden Hair	Pteridaceae	Herb	Ornamental	Wild	20
4	<i>Aerva lanata</i>	Cheroola	Amaranthaceae	Herb	Medicinal, Dashapushpa	Wild	12
5	<i>Agave americana</i>	Century plant	Asparagaceae	Shrub	Ornamental	Cultivated	6
6	<i>Ageratum conyzoides</i>	Goat weed	Asteraceae	Herb	Medicinal	Wild	Numerous
7	<i>Allamanda cathartica</i>	Kolambi	Apocynaceae	Shrub	Ornamental	Cultivated	15
8	<i>Aloe vera</i>	Kattar Vazha	Asphodelaceae	Herb	Medicinal	Cultivated	6
9	<i>Alstonia scholaris</i>	Ezhilam Pala	Apocynaceae	Tree	Medicinal	Wild	2
10	<i>Alternanthera sessilis</i>	Ponnangani	Amaranthaceae	Herb		Wild	12
11	<i>Amorphophallus paeoniifolius</i>	Elephant Foot Yam	Araceae	Shrub	Vegetable	Cultivated	15
12	<i>Anacardium occidentale</i>	Kasumavu	Anacardiaceae	Tree	Economic	Cultivated	2
13	<i>Andrographis paniculata</i>	Kiriyath	Acanthaceae	Shrub	Medicinal	Wild	12
14	<i>Arachis pintoii</i>	Forrage peanut	Fabaceae	Herb	Ornamental	Ornamental	Numerous

15	<i>Araucaria columnaris</i>	Monkey puzzle	Auracariaceae	Tree	Garden plant	Cultivated	7
16	<i>Ardisia elliptica</i>	Kuzhimundan	Myrsinaceae	Shrub		Cultivated	2
17	<i>Asclepias curosanica</i>	Cup and saucer	Asclepiadaceae	shrub	Garden plant	Cultivated	4
18	<i>Asparagus officinalis</i>	Shathavari	Asparagaceae	Climber	Medicinal	Cultivated	6
19	<i>Azadirachta indica</i>	Aryaveppu	Meliaceae	Tree	Medicinal	Indigenou s	3
20	<i>Bauhinia variegata</i>	Mandaram	Caesalpiniaceae	Shrub	Ornamental	Cultivated	7
21	<i>Bignonia binata</i>	Veluthullichedi	Bignoniaceae	Climber	Ornamental	Cultivated	3
22	<i>Biophytum sensitivum</i>	Mukkutty	Oxalidaceae	Herb	Dashapuhpam	Wild	15
23	<i>Blainvillea acmella</i>	Cress flower	Asteraceae	Herb	Weed	Wild	Numerous
24	<i>Bogainvillea spectabilis</i>	Kadalasurosa	Nyctaginaceae	Shrub	Ornamental	Cultivated	8
25	<i>Brachiaria mutica</i>	Paragrass	Poaceae	Herb	Weed	Weed	Numerous
26	<i>Caesalpinia pulcherrima</i>	Rajamalli	Caesalpiniaceae	Tree	Ornamental	Cultivated	4
27	<i>Calycoptreis floribunda</i>	Pullanthi	Combrytaceae	Climber		Wild	3
28	<i>Capsicum frutescens</i>	Kantharimulaku	Solanaceae	Shrub	Spice	Cultivated	8
29	<i>Cardiospermum halicacabum</i>	Valliuzhinja	Sapindaceae	Climber	Medicinal	Wild	13
30	<i>Carica papaya</i>	Pappaya	Caricaceae	Tree	Edible	Cultivated	6
31	<i>Cassia alata</i>	Candle Stick plant	Caesalpiniaceae	Shrub	Medicinal	Wild	8

32	<i>Cassia fistula</i>	Kanikonna	Caesalpiaceae	Tree	Ornamental	Indigenous	3
33	<i>Cassia tora</i>	Thakara	Caesalpiaceae	Shrub	Medicinal	Wild	6
34	<i>Chrysophyllum cainito</i>	Star Apple	Sapotaceae	Tree		Indigenous	8
35	<i>Cissus Quandragularis</i>	Changalam paranda	Vitaceae	Climber	Medicinal	Cultivated	2
36	<i>Cleome rutidosperma</i>	Neelavela	Capparidaceae	Herb	Medicinal	Wild	14
37	<i>Cleome viscosa</i>	Kattukaduku	Capparidaceae	Herb	Medicinal	Wild	18
38	<i>Clerodendrum infortunatum</i>	Perukilam	Lamiaceae	shrub		Wild	8
39	<i>Clitoria ternatia</i>	Samkhupus hpam	Fabaceae	Climber	Medicinal	Wild	12
40	<i>Cocos nucifera</i>	Thengu	Arecaceae	Tree	Economic	Cultivated	15
41	<i>Colocasia esculenta</i>	Chembu	Araceae	Shrub	Vegetable	Cultivated	6
42	<i>Croton</i>	Elachedi	Euphorbiaceae	Shrub	Hedge Ornamental	Ornamental	15
43	<i>Cuphea hyssopifolia</i>		Lythraceae	shrub	Ornamental	ornamental	20
44	<i>Cyclea peltata</i>	Padavalli	Menispermaceae	Climber	Medicinal	Wild	10

45	<i>Cycas revoluta</i>	Eenthu	Cycadaceae	Tree	Ornamental	Cultivated	4
46	<i>Cyrtostachys renda</i>	Red Palm	Arecaceae	Tree	Ornamental	Ornamental	6
47	<i>Delonix regia</i>	Chuvappu Vaka	Caesalpiniaceae	Tree	Ornamental	Wild	3
48	<i>Dentella repens</i>	Cherumanali	Rubiaceae	Herb	Medicinal	Wild	12
49	<i>Desmodium gangeticum</i>	Orila	Fabaceae	Shrub	Medicinal	Wild	8
50	<i>Duranta repens</i>	Golden Dewdrops	Verbenaceae	Shrub	Ornamental	Ornamental	3
51	<i>Eclipta prostrata</i>	Kayunniam	Asteraceae	Herb	Medicinal	Wild	18
52	<i>Elaphantopsis scaber</i>	Anachuvadi	Asteraceae	Herb	Medicinal	Wild	19
53	<i>Emelia sonchifolia</i>	Muyalcheviyan	Asteraceae	Herb	Medicinal	Wild	17
54	<i>Eupatorium odoratum</i>	Kammunist pacha	Asteraceae	Shrub	Weed	Weed	6
55	<i>Euphorbia heterophylla</i>	Chithirapala	Euphorbiaceae	Herb	Medicinal	Wild	14
56	<i>Euphorbia hirta</i>	Kuzhinaghapala	Euphorbiaceae	Herb	Medicinal	Wild	10
57	<i>Evolvulus alsinoides</i>	Vishnukranthi	Convolvulaceae	Herb	medicinal	Wild	Numerous
58	<i>Equisetum debile</i>	Scouring rush	Equisetaceae	Herb		Cultivated	Pot full
59	<i>Fagraea obovata</i>	Omali	Loganiaceae	Shrub	Ornamental	Cultivated	1
60	<i>Ficus racemosa</i>	Athy	Moraceae	Tree	Shady	Cultivated	3
61	<i>Garcinia cambogia</i>	Kudampuli	Clusiaceae	Tree	Economic	Indigenou s	1

62	<i>Gliricida sepium</i>	Cheemakonna	Fabaceae	Tree	Biofertilizer	Indigenous	4
63	<i>Globe amaranth</i>	Vadamalli	Amarathaceae	Shrub		Ornamental	8
64	<i>Grewia hirsuta</i>	Chadachi	Tiliaceae	Shrub	Medicinal	Wild	6
65	<i>Hamelia patens</i>	Vidarapoovu	Rubiaceae	Shrub	Ornamental	Ornamental	5
66	<i>Helictres isora</i>	Valampiri Edampiri	Sterculiaceae	Shrub	Medicinal	Indigenous	2
67	<i>Hemidesmus indicus</i>	Naruneendi	Asclepiadaceae	Climber	Medicinal	Wild	14
68	<i>Hibiscus rosa-sinensis</i>	Chembarathy	Malvaceae	Shrub	Ornamental	Ornamental	6
69	<i>Hyptis suaveolens</i>	Naripoochi	Lamiaceae	Herb	Medicinal	Wild	8
70	<i>Impatiens balsamina</i>	Balsam	Balsaminaceae	Herb	Ornamental	Ornamental	6
71	<i>Ipomea cairica</i>	Veenda poovu	Convolvulaceae	Climber	Ornamental	Wild	18
72	<i>Ixora coccinia</i>	Chethy	Rubiaceae	Shrub	Ornamental	Cultivated	6
73	<i>Kleihovia hospita</i>	Guest Tree	Sterculiaceae	Tree	Ornamental	Indigenous	2
74	<i>Lagerstroemia parvifolia</i>	Manimaruthu	Lythraceae	Tree	Ornamental	Cultivated	2
75	<i>Lantana camera</i>	Kongini	Verbenaceae	Shrub	Ornamental	Wild	6
76	<i>Lawsonia inermis</i>	Mylanchi	Lythraceae	Shrub	Medicinal	Cultivated	2
77	<i>Lippia nodiflora</i>	Frog fruit	Verbenaceae	Herb		Cultivated	Pot full

78	<i>Mangifera indica</i>	Mavu	Anacardiaceae	Tree	Edible fruit	Indigenou s	6
79	<i>Madhuca sapota</i>	Sapota	Sapotaceae	Tree	Edible Fruit	Cultivate d	8
80	<i>Melastoma malabarthicum</i>	Kadali	Melastomaceae	Shrub	Ornamental	Wild	6
81	<i>Merremia hastata</i>	Chivaka	Convolvulacea e	Climb er	Ornamental	Weed	16
82	<i>Mikania micrantha</i>	Dritharashtra pacha	Asteraceae	Climb er	Weed	Weed	Numer ous
83	<i>Mimosa pudica</i>	Thottavadi	Mimosaceae	Herb	Weed	Weed	15
84	<i>Mimusops elangi</i>	Elangi	sapindaceae	Tree	Ornamental	Indigeno us	3
85	<i>Mollugo pentaphylla</i>	Parpadakap ullu	Aizoaceae	Herb	Weed	Weed	18
86	<i>Mukia maderaspatana</i>	Mukaperum	Cucurbitaceae	Climb er		Weed	15
87	<i>Murraya koenigii</i>	Kariveppu	Meliaceae	Shrub	Economic	Cultivate d	4
88	<i>Musa paradisiaca</i>	Vazha	Musaceae	Shrub	Economic	Cultivate d	20
89	<i>Naregamia alata</i>	Nilanaraka m	Meliaceae	Shrub	Medicinal	Wild	9
90	<i>Ophiorrhiza mungos</i>	Avilpori	Rubiaceae	Herb	Medicinal	Wild	8
91	<i>Opuntia dillenii</i>	Kallimul chedi	Cactaceae	Shrub		Cultivate d	3
92	<i>Passiflora edulis</i>	Passion fruit	Passifloraceae	Climb er	Edible fruit	Cultivate d	3
93	<i>Peltophorum pterocarpum</i>	Manjavaka	Caesalpiniacea e	Tree	Economic	Wild	20

94	<i>Pennisetum pedice</i>	Mission grass	Poaceae	Shrub	Weed	Ornamental	8
95	<i>Phyllanthus niruri</i>	Kallurukki	Euphorbiaceae	Herb	Medicinal	Wild	15
96	<i>Physalis minima</i>	Njottanjodion	Solanaceae	Herb	Medicinal	Wild	12
97	<i>Piper nigrum</i>	Kurumulaku	Piperaceae	Climber	Economic	Cultivated	2
98	<i>Pisum sativum</i>	Payar	Fabaceae	Climber	Vegetable	Cultivated	10
99	<i>Polyalthia longifolia</i>	Aranamaram	Annonaceae	Tree	Shady plant	Cultivated	20
100	<i>Polyscias scutellaria</i>	Plum aralia	Araliaceae	Shrub	Hedge ornamental	Ornamental	8
101	<i>Portulaca grandifolia</i>	Pathumani	Portulacaceae	Herb	Ornamental	Ornamental	15
102	<i>Psidium guajava</i>	Pera	Myrtaceae	Tree	Edible Fruit	Cultivated	6
103	<i>Quassia amara</i>	Bitter wood	Simarubaceae	Shrub	Medicinal	Cultivated	3
104	<i>Rauwolfia serpentina</i>	Sarpagandhi	Apocynaceae	Herb	Medicinal	Wild extinct	2
105	<i>Ruellia tuberosa</i>	Sivakarantana	Acanthaceae	Herb	Medicinal	Wild	Numerous
106	<i>Russelia equisetiformis</i>	Fire cracker	Scrophulariaceae	Shrub	Ornamental	Ornamental	6
107	<i>Saraca indica</i>	Asoka chethy	Caesalpiniaceae	Tree	Medicinal	Indigenous	3
108	<i>Scoparia dulcis</i>	Kallurukki	Scrophulariaceae	Herb	Medicinal	Wild	22

109	<i>Sida rhombifolia</i>	Kurunthotti	Malvaceae	Herb	Medicinal	Wild	14
110	<i>Solanum torvum</i>	Cheruchunda	Solanaceae	Shrub	Medicinal	Wild	6
111	<i>Stachytarpheta indica</i>	Neelakongini	Lamiaceae	Shrub		Wild	9
112	<i>Strichnos nux-vomica</i>	Kanjiram	Loganiaceae	Tree	Medicinal	Indigenous	2
113	<i>Switenia mahagoni</i>	Mahagoni	Meliaceae	Tree	Economic	Indigenous	8
114	<i>Synedrella nodiflora</i>	Venapacha	Asteraceae	Herb	Weed	Weed	Numerous
115	<i>Syzygium aqueum</i>	Chamba	Myrtaceae	Shrub	Edible Fruit	Cultivated	4
116	<i>Tabermontana coronaria</i>	Nanthiyarvattam	Apocynaceae	Shrub	Medicinal	Cultivated	8
117	<i>Talinum cuneifolium</i>	Sambarcheera	Portulacaceae	Shrub	Vegetable	Wild	12
118	<i>Tectona grandis</i>	Thekku	Verbenaceae	Tree	Economic	Indigenous	10
119	<i>Tephrosia purpurea</i>	Kattamari	Fabaceae	Shrub		Wild	6
120	<i>Terminalia catappa</i>	Badam	Combretaceae	Tree	Economic	Indigenous	6
121	<i>Tradescantia spathacea</i>	Rhoeo	Commelinaceae	Herb	Ornamental	Cultivated	15
122	<i>Tridax procumbens</i>	Chiravanakku	Asteraceae	Herb		Wild	Numerous
123	<i>Tylophora indica</i>	Vallippala	Asclepiadaceae	Climber	Medicinal	Wild	5
124	<i>Urena lobata</i>	Uram	Malvaceae	Shrub		Wild	8

125	<i>Vernonia cinerea</i>	Poovamkur unnila	Asteraceae	Herb	Medicinal	Wild	12
126	<i>Zornia diphylla</i>	Murikkotti	Fabaceae	Herb	Medicinal	Wild	10

A total of 126 species of plants have been recorded from college campus and adjoining area. Habit wise distribution shows dominating tree species which is with 46 species of Shrubs, 36 sp. of Herbs, 28 sp. of Trees, 16 sp. of climbers. They species cover an area as avenues and in semi-natural vegetation in the campus and in surrounding area. So far medicinal value is concern most of plant species have utilization in various traditional methods of medicine.

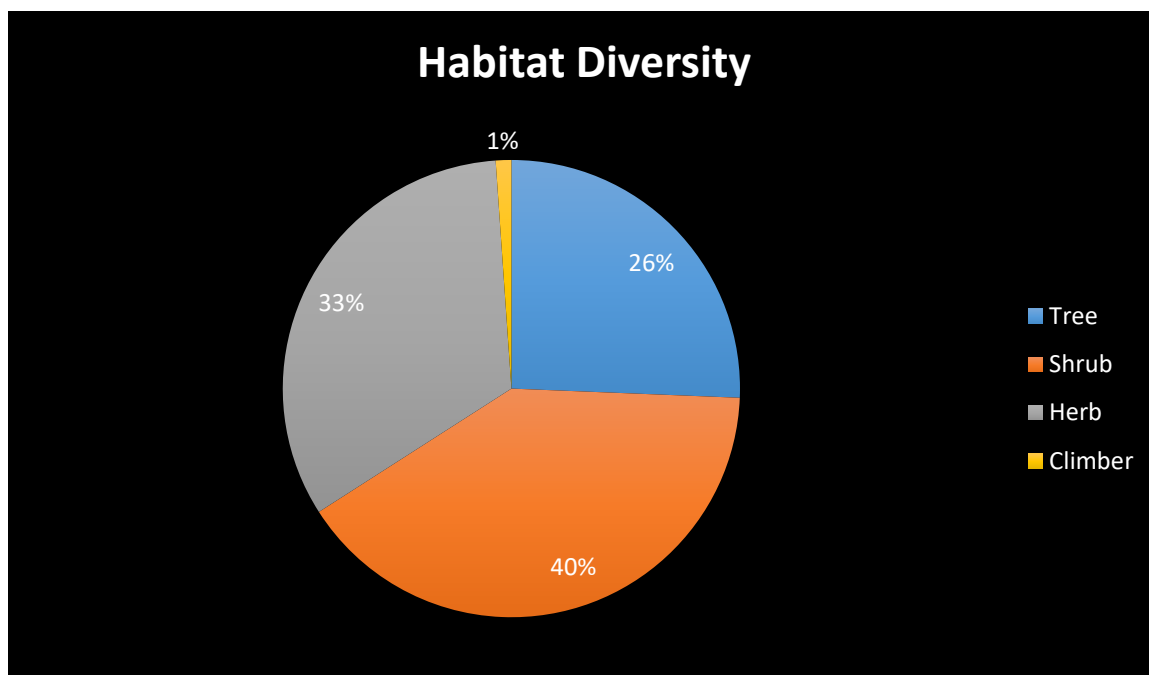


Fig 1: Habitat Diversity of the plants

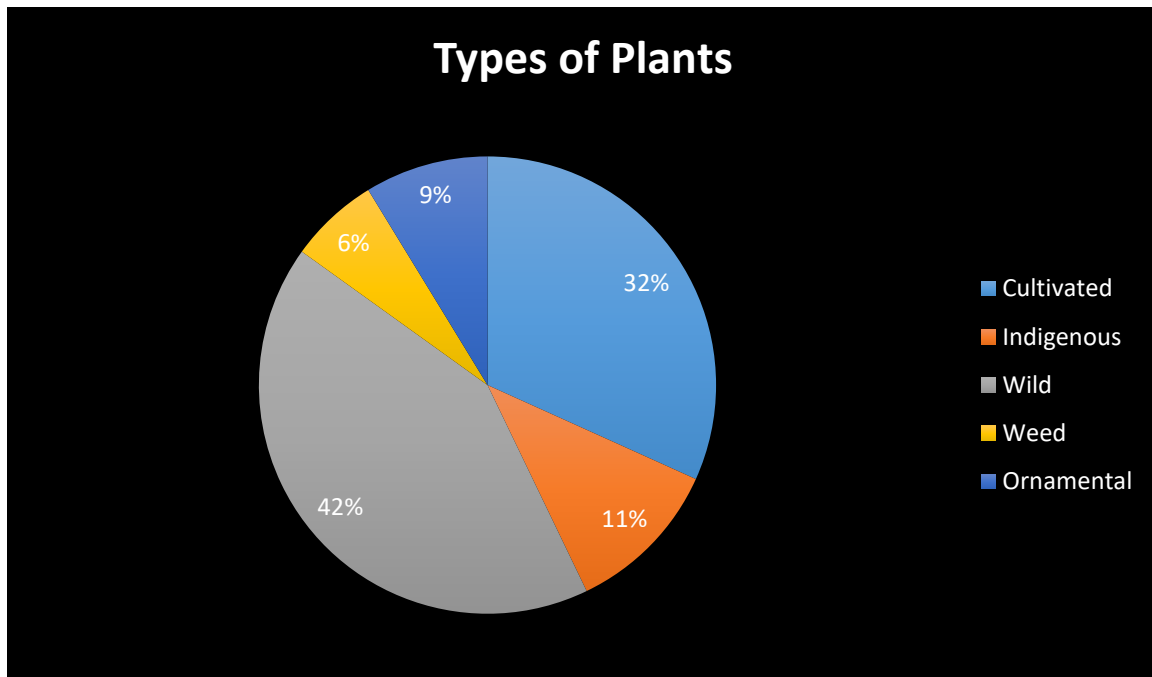


Fig 2 : Types of Plant Diversity in the Campus

The biodiversity of plants of any area is totally decided by the environmental components of an area. Overall distribution of species principally depends on the climatic conditions and presence of specific ecological parameters along with typical land-form and land-type. In the distribution of flora the topography, rainfall, soil type etc. play crucial role for their distribution.

Recommendations

Some recommendations to conserve and preserve the plant diversity of the college campus are given below.

1. It is recommended that a Nakshtra Udyanam is to be developed in the campus

2. It is suggested that a Plot may be identified and necessary steps done to grow Botanical Garden
3. The medicinal plants in the campus needs to be identified and conserved.
4. Indigenous flowering plants which flower for whole year and readily available for insects and birds may be planted in the campus
5. Name boards could be displayed on plants in the campus area.
6. Ban use of chemical pesticides within the campus.
7. Patches of wild-flower habitats have to be fenced and protected from reclamation.
8. Plant more Trees preferably indegenious ones in the Campus.

FIELD VISIT AND DATA COLLECTION



Front View Of the College



Some Plants of the Campus











STUDENT VOLUNTEERS

1. ENERGY AND ENVIRONMENT AUDIT

	STUDENT NAME	CLASS
1	SOORAJ K.S	I M.Sc. PHYSICS
2	FEBINA FATHIMA	I M.Sc. PHYSICS
3	DINTO JOY	I M.Sc. PHYSICS
4	ALEENA JOSE	I M.Sc. PHYSICS
5	DARVIN DEVASIA	I M.Sc. PHYSICS
6	ALEENA DOMINIC	I M.Sc. PHYSICS
7	SANDRA ANTONY	I M.Sc. PHYSICS
8	DINU TONY	I M.Sc. PHYSICS
9	VISHNUPRIYA R HEGDEN	I M.Sc. PHYSICS
10	RADHIKA .V	I M.Sc. PHYSICS

2. WATER AUDIT

	STUDENT NAME	CLASS
1	EBIN PETER	I M.Sc. CHEMISTRY
2	AJIN THOMAS	I M.Sc. CHEMISTRY
3	ASWIN RAJ	I M.Sc. CHEMISTRY
4	MARIYA JEBY	I M.Sc. CHEMISTRY
5	AMALA MATHEW	I M.Sc. CHEMISTRY
6	SIYA ROSE	I M.Sc. CHEMISTRY
7	AKSHAYA TOMY	I M.Sc. CHEMISTRY
8	ANCY V.T	I M.Sc. CHEMISTRY
9	ARCHANA U.K	I M.Sc. CHEMISTRY
10	ANUJA PREM	I M.Sc. CHEMISTRY
11	NEENU THOMAS	I M.Sc. CHEMISTRY

3. WASTE MANAGEMENT AUDIT

	STUDENT NAME	CLASS
1	JINCY M.S	I M.Sc. ZOOLOGY
2	ANJALI MANOJ	I M.Sc. ZOOLOGY
3	ALEENA EMMANUEL	I M.Sc. ZOOLOGY
4	PARVATHY RAJESH	I M.Sc. ZOOLOGY
5	ANJANA SURESH	I M.Sc. ZOOLOGY
6	GAYATHRI VISWANATHAN	I M.Sc. ZOOLOGY
7	LIDWIN MARIA GEORGE	I M.Sc. ZOOLOGY
8	JEWEL S KUMAR	I M.Sc. ZOOLOGY
9	ANILA SUBAIR	I M.Sc. ZOOLOGY
10	ALEKHEVA MERIN THOMAS	I M.Sc. ZOOLOGY
11	KRISHNENDU R	I M.Sc. ZOOLOGY

4. BIODIVERSITY AUDIT

	STUDENT NAME	CLASS
1	AKHILA S	II M.Sc. BOTANY
2	ANJITHA RAJEEV	II M.Sc. BOTANY
3	ARJUN K	II M.Sc. BOTANY
4	GOPIKA M DAS	II M.Sc. BOTANY
5	HELENA KURIAN	II M.Sc. BOTANY
6	JANET MARIA CYRIAC	II M.Sc. BOTANY
7	LEKSHMI SHAJI	II M.Sc. BOTANY
8	MAREENA JOSEPH	II M.Sc. BOTANY
9	PREETHI FRANCIS	II M.Sc. BOTANY
10	SINU K.M	II M.Sc. BOTANY
