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Criterion VII – Institutional Values and Best Practices

7.1 Institutional Values and Social Responsibilities
7.1.2 Institution has facilities for alternate sources of energy

SOLAR POWER PLANT

&

LED BULBS

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SL.NO	NAME OF THE FACILITY	PAGE NO
1	SOLAR POWER PLANT	3
2	LED BULBS	8

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7.1.2 The Institution has facilities for alternate sources of energy and energy conservation measures

1. Solar power plant

MSEC installed an off grid 15 kW Photovoltaic (PV) system as a part of a grand initiated by the Ministry of New and Renewable Energy (MNRE) for renewable power source with solar power generation. This plant has been built with the approval of MNRE at a total cost of Rs. 23.51 lakhs and funded partially by GOVT. OF INDIA/MNRE/NEW DELHI. Institution has received Rs. 7,12,800 as CENTRAL FINANCIAL AID (CFA).

The PV system installed has three types of solar panels, namely, Monocrystalline (5kW), Polycrystalline (5kW) and thin film (5kW). The installed Polycrystalline PV of 5 kW, feed energy to the loads connected in the classrooms (lights and fans in six class rooms) located in the third floor of the Civil Engineering Block. The Monocrystalline of 5 kW installed in the roof of Civil Block supplies the Strength of Material laboratory in Civil Engineering Block.

Data on the energy produced by Poly and Mono crystalline Solar PV systems, each of 5kW nominal capacity, was examined. From Table I we observe that 4600 units were generated (fifteen-month period). Rs. 20000/- per annum is saved in electricity by the two PV systems.

Table I - the *energy meter readings* recorded during Feb'14 and May'15 by the Poly and Mono PV systems.

Date	Poly: Generated Units	Mono: Generated Units
Feb 14, 2014	441	68
Mar 1, 2014	542	293
Apr 1, 2014	780	0
May 2, 2014	1025	539
Jun 18, 2014	1173	642
Jul 2, 2014	1236	870
Aug 1, 2014	1296	903
Sep 2, 2014	1491	0
Oct 13, 2014	1691	1261
Nov 4, 2014	1766	1374
Dec 2, 2014	1802	1441
Jan 2, 2015	1892	1595
Feb 2, 2015	2040	1864

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Feb 27, 2015	2126	2133
Apr 2, 2015	2337	2453
May 1, 2015	2427	2683
Total in 15 months	**1986**	**2615**
Money equivalent	Rs. 9930	Rs. 13075

Table II - the *energy meter readings* recorded during June'15 and May'22.

Date	Poly: Generated Units	Mono: Generated Units
1-Jun-15	2441	2732
1-Jul-15	2454	2781
1-Aug-15	2466	2829
1-Sep-15	2480	2876
1-Oct-15	2492	2925
1-Nov-15	2505	2972
1-Dec-15	2519	3019
2-Jan-16	2533	3068
2-Feb-16	2546	3117
11-Mar-16	2552	3229
5-Apr-16	2778	3463
5-May-16	2827	3527
18-Jun-16	2837	3540
4-Jul-16	2837	3540
3-Aug-16	2920	3582
18-Sep-16	2943	3587
18-Oct-16	2964	3587
18-Nov-16	2986	3587
16-Dec-16	2986	3595
2-Jan-17	2996	3603
2-Feb-17	3006	3611
6-Mar-17	3008	3613
2-Apr-17	3012	3616

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2-May-17	3016	3619
2-Jun-17	3020	3622
2-Jul-17	3024	3625
2-Aug-17	3028	3628
2-Sep-17	3032	3631
26-Oct-17	3036	3632
2-Nov-17	3043	3641
5-Dec-17	3049	3645
15-Jan-18	3436	4046
4-Feb-18	3904	4024
5-Mar-18	4364	4615
11-Apr-18	4892	5228
19-May-18	5434	5854
21-Jun-18	5904	6425
20-Jul-18	6390	7027
8-Aug-18	6917	7632
14-Sep-18	7438	8203
3-Oct-18	7957	8831
3-Nov-18	8461	9412
4-Dec-18	8914	9992
17-Jan-19	9237	10559
13-Feb-19	9886	11156
5-Mar-19	10441	11803
13-Apr-19	11040	12438
4-May-19	11652	13025
2-Jun-19	12251	13582
22-Jul-19	12900	14182
15-Aug-19	13509	14753
24-Sep-19	14069	15384
18-Oct-19	14648	16020
15-Nov-19	15223	16641
21-Dec-19	15780	17265
22-Jan-20	16089	17890

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25-Feb-20	16653	18525
1-Mar-20	17207	19126
22-Apr-20	17848	19724
16-May-20	18465	20376
25-Jun-20	19049	20948
14-Jul-20	19697	21544
12-Aug-20	20304	22167
21-Sep-20	20882	22762
6-Oct-20	21487	23388
13-Nov-20	22115	24008
23-Dec-20	22710	24628
15-Jan-21	23059	25187
22-Feb-21	23658	25785
19-Mar-21	24302	26367
15-Apr-21	24901	26965
7-May-21	25466	27574
17-Jun-21	26032	28132
3-Jul-21	26642	28695
16-Aug-21	27245	29347
17-Sep-21	27839	29945
19-Oct-21	28462	30507
23-Nov-21	29025	31124
25-Dec-21	29579	31759
16-Jan-22	30150	32327
19-Feb-22	30721	32921
14-Mar-22	31342	33487
11-Apr-22	32001	34040
24-May-22	32066	36458
Total units generated	**29639**	**33726**

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Figure 1. Installed solar panels in Sri Vidhushekhara Bharathi Block (civil block)

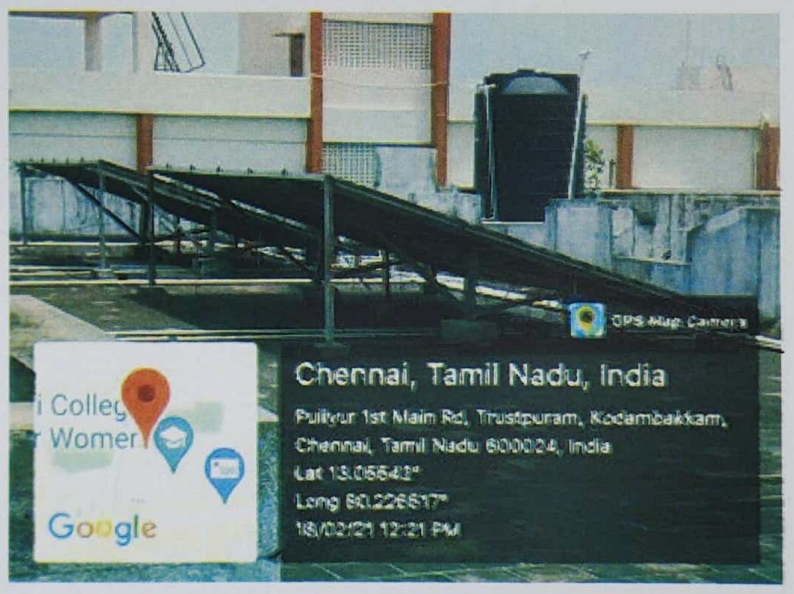

Figure 2. Installed solar panels in Sri Vidhushekhara Bharathi Block (civil block)

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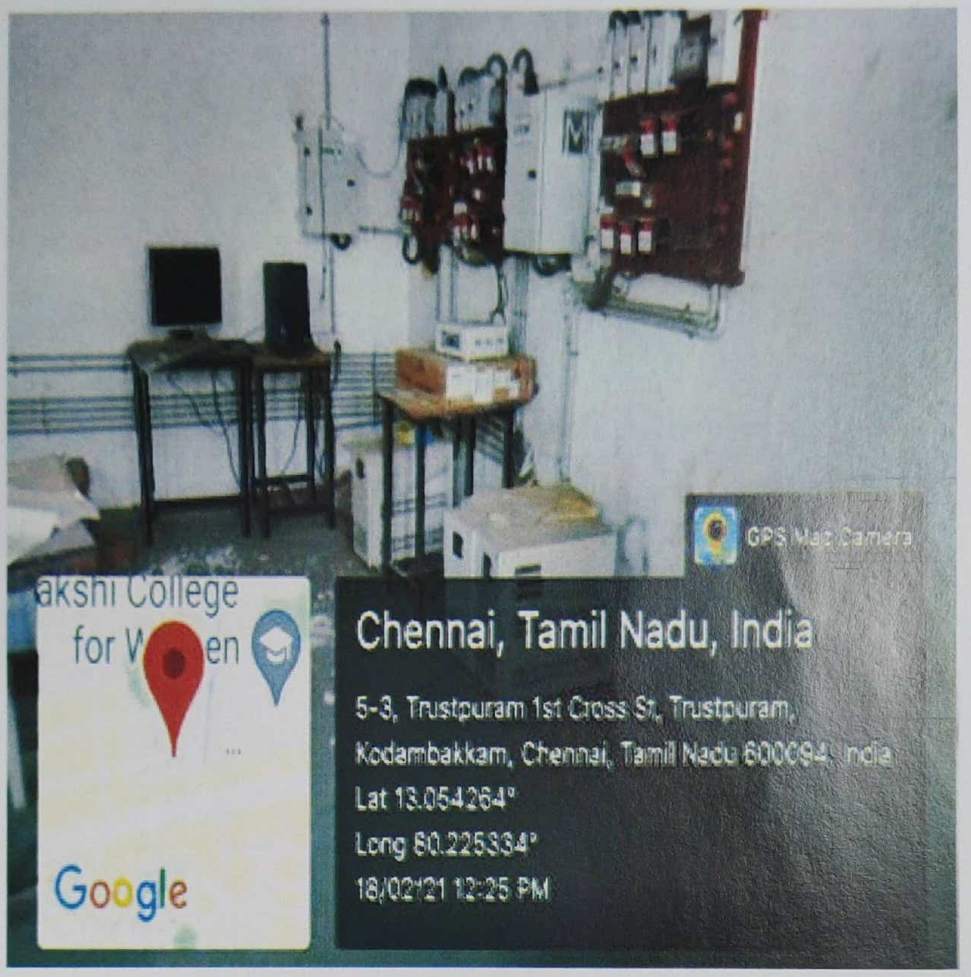

Figure 3. Load management system

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RENEWABLE ENERGY SOURCE FOR RES LAB (EEE) 2020-21

Renewable Energy Laboratory (REL)

Renewable Energy Laboratory (REL) at MSEC aims on training students in Renewable Energy Sources (RES) and to impart knowledge about the applications of RES in energy system. In this laboratory, students are taught to test, analyze and design Renewable energy systems. The most common type of renewable sources for RES are solar and wind energy.

In MSEC, a 1kw solar PV system is implemented for REL which operate at 11% efficiency. Students through various experiments are able to understand working of PV system and their capability to harness solar energy.

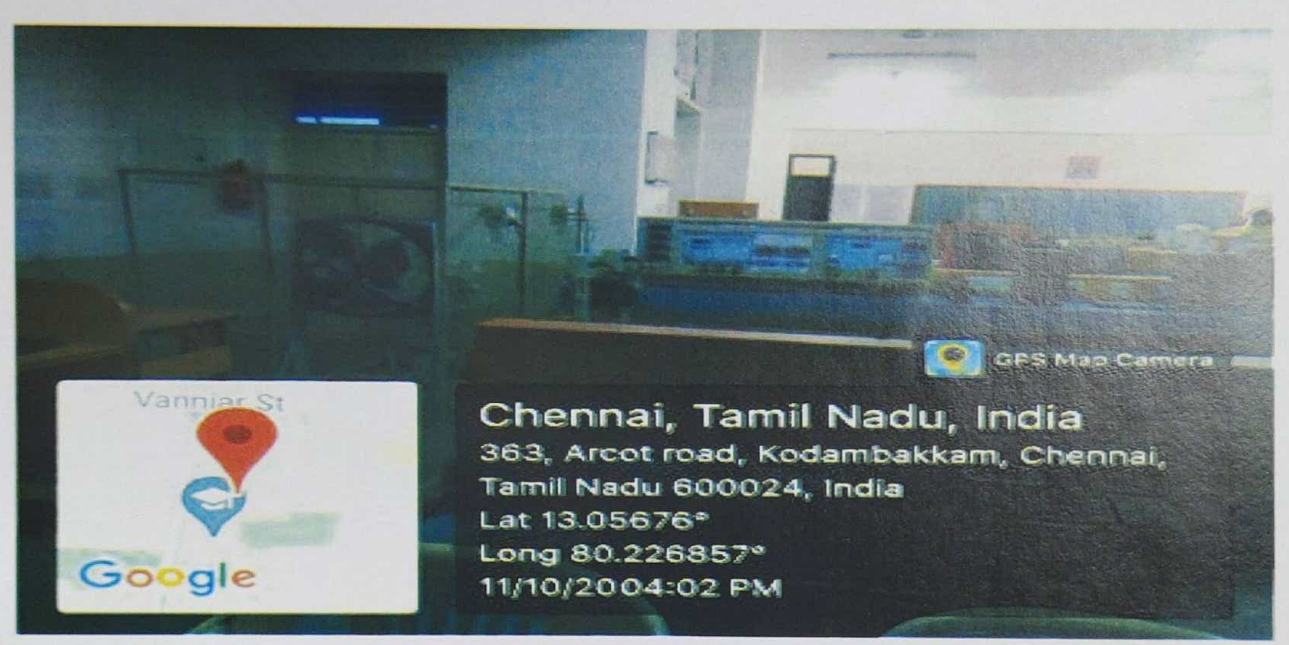

Figure 4. RES LAB (EEE)

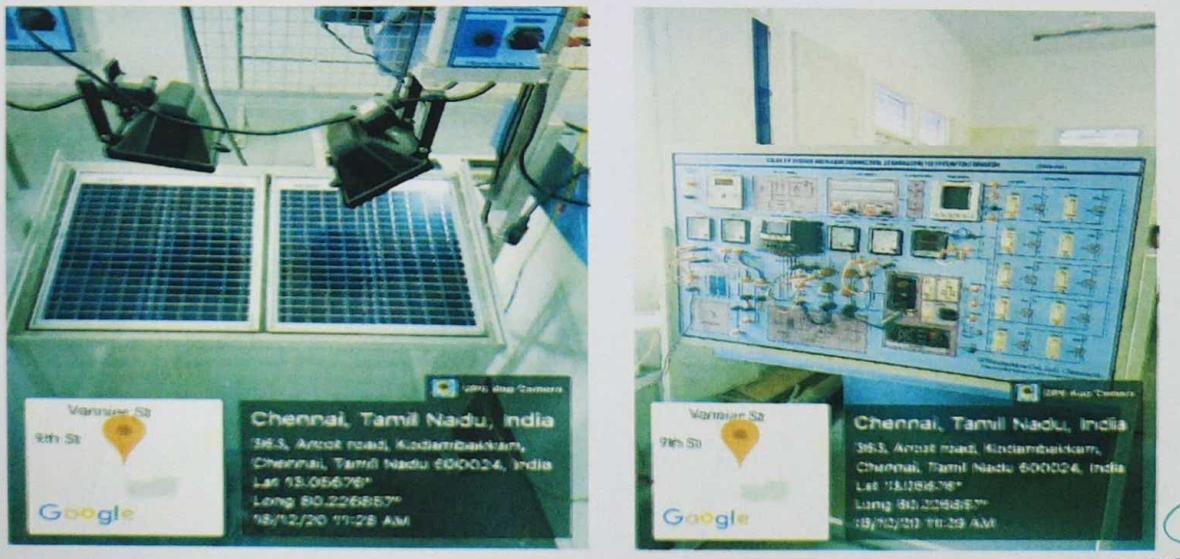

Figure 5. RES LAB (EEE)

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RENEWABLE ENERGY SOURCE FOR RES LAB (EEE) 2020-21

Vi Microsystems Pvt. Ltd.
Plot No. 75, Electronics Estate, Perungudi,
Chennai - 600 096.
Phone : 24961842,24961852 Fax :24961536
Email : sales@vimicrosystems.com

GSTIN : 33AAACV0909J1ZJ

ORIGINAL FOR BUYER

Name : THE PRINCIPAL

Address : MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE
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Our Ref.	: V19/QTN/ST/AGS/007	INVOICE NO.	: F/0334
Our Ref Date	: 22-09-2019	DATE	: 21-Mar-2020
DateOfPreparation	: 21-Mar-2020 , 11.00AM	DC. No.	: F/0334
Time & Date of Removal	: 21.03.2020	Dc Date	: 21-Mar-2020
Mode of Trasnport	: BY ROAD	PO. No	: -
RG 23A PII/PLA S.No	: -	Po Date	: 14-Oct-2019

SNO	ITEM DESCRIPTION	HSN	QTY	RATE	AMOUNT	SGST %	SGST AMT	CGST %	CGST AMT	TOTAL
1	SIMULATION STUDY ON SOLAR PV ENERGY SYSTEM	9023	1	5,084.00	5,084.00	9.0	457.56	9.0	457.56	5,999.12
2	SOLAR PV SYSTEM WITH GRID CONNECTED STANDALONE 1+/40 W INVERTER TRAINER (VREN - 02)	9023	1	1,90,678.00	190,678.00	9.0	17,161.02	9.0	17,161.02	225,000.04
3	SIMULATION STUDY ON WIND ENERGY GENERATOR	9023	1	10,594.00	10,594.00	9.0	953.46	9.0	953.46	12,500.92
4	HYBRID WIND SOLAR MODULE (24 WATTS PMSG BASED MICROWIND / SOLAR GENERATION TRAINER) VREN - 05	9023	1	2,16,102.00	216,102.00	9.0	19,449.18	9.0	19,449.18	255,000.36
5	SIMULATION STUDY ON HYBRID (SOLAR WIND) POWER SYSTEM	9023	1	10,593.00	10,593.00	9.0	953.37	9.0	953.37	12,499.74
6	FUEL CELL MODULE TRAINER KIT	9023	1	3,66,950.00	366,950.00	9.0	33,025.50	9.0	33,025.50	433,001.00
7	SIMULATION STUDY ON INTELIGENT CONTROLLERS FOR HYBRID SYSTEMS	9023	1	5,084.00	5,084.00	9.0	457.56	9.0	457.56	5,999.12
TAL			7	8,05,085.00	805,085.00		72,457.65		72,457.65	9,50,000.30

BASICVALUE	8,05,085.00
SGST @ 9 %	72,457.65
CGST @ 9 %	72,457.65
SUB TOTAL	9,50,000.30
ROUND OFF	- 0.30
TOTAL VALUE	9,50,000.00

Total Value (In Words)
Nine Lakhs Fifty Thousands only

Certificate that the particulars given above true and correct and the amount indicated represents the price actually charged and that there is no flow of additional consideration directly or indirectly from the buyer.
Subject to chennai Jurisdiction.

for Vi Microsystems Pvt. Ltd.

E.& O.E. Checked Authorised Signatory

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7.1.2 LED BULBS

To reduce the harmful effects of conventional lamps and to save the energy, Ministry of New and Renewable Energy (MNRE) insist the educational institutions to switch from conventional lamps to light emitting diode (LED) and compact fluorescent lamp.

LED lights can reduce energy consumption because it has much lower power level and less maintenance cost. Since LED bulbs emit low heat, they are much safer for environment than conventional incandescent lamps.

Table 1. Common lighting loads installed in each department

S. No.	Area installed	Fluorescent Lamp (FL) (36 watt)	Compact Fluorescent Lamp (CFL) (20 watt)	LED	
				(36 watt)	(15 watt)
Main building block					
KRS seminar hall					
1	KRS seminar hall	0	0	21	42
CSE					
1	Lab 1 & 2	0	0	18	21
2	Project and research lab	0	0	18	21
3	Lab 6	0	0	8	10
4	Lab 7	0	0	8	13
5	Lab 8	0	0	10	13
ECE					
6	Lab 1 & 2	20	0	0	0
7	Lab 3 & 4	34	0	0	0
8	Simulation lab	0	0	18	24
9	Digital signal processing and microprocessor lab	0	0	19	24
CSE & ECE SEMINAR HALL					
10	Seminar hall	0	18	21	0
EEE					
11	Lab 1 & 2 (Electrical machines lab 1&2)	72	0	0	0
12	Lab 3, 4 & 5	31	0	0	0

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13	Lab 7 (Power Electronics lab)	28	0	0	0
14	Lab 8 (Power System Simulation lab)	28	1	0	0
IT					
15	Lab 1 to 6	0	0	54	88
16	Lab 8	0	0	12	14
Mechanical & Civil building block					
MECHANICAL					
17	CAD lab	0	36	0	0
18	Lab 3, 4, 5	42	0	0	0
CIVIL					
19	CAD lab	0	20	0	0
20	Lab 1, 2, 3	30	0	0	0
21	Lab 4	8	0	0	0
22	Lab 5	48	0	0	0
23	Soil lab	8	0	0	0
24	Lab 7	8	0	0	0
25	Lab 8, 9 (Environment lab)	24	0	0	0
26	Lab 11	17	0	0	0
IIET building block					
27	Chemistry lab (Ground floor)	16	0	0	0
28	Physics lab (First floor)	10	0	0	0
29	Communication lab (Second floor)	6	0	0	0
Total no. of lighting loads in each type		**430**	**75**	**207**	**270**

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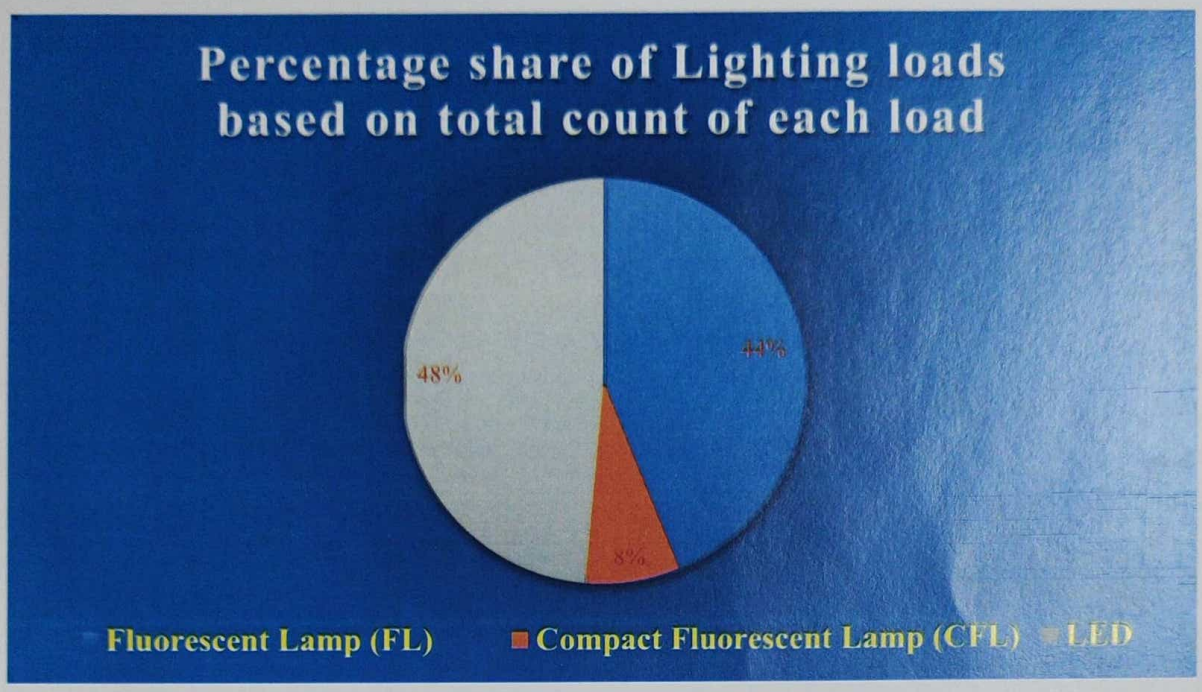

Figure 6: CFL, FL & LED bulb usage

Details of light loads in our campus:

Total Power requirement for 477 LED Lights = 11502 kW

$$\%\ of\ annual\ lighting\ power\ requirement\ through\ LED\ bulbs = \frac{Annual\ lighting\ power\ requirement\ met\ through\ LED\ bulbs}{Annual\ lighting\ power\ requirement} \times 100$$

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Table 2. Amount of Power consumption through LED

Year	Fluorescent lamps (36 watt) (a)	CFL (20 watt) (b)	LED Lights (36 watt) (c)	LED Lights (15 watt) (d)	Total No. of Lights (e)	Annual lighting power requirement for LED Lights (watt) (f)	Total power (Annual lighting power requirement) (watt) (g)	% of annual lighting power requirement through LED bulbs (f)/(g)
2015	270	0	0	0	270	0	9720	0
2016	270	0	0	0	270	0	9720	0
2017	270	0	0	0	270	0	9720	0
2018	430	75	207	270	982	11502	28482	40.3834
2019	430	75	207	270	982	11502	28482	40.3834
2020	430	75	207	270	982	11502	28482	40.3834

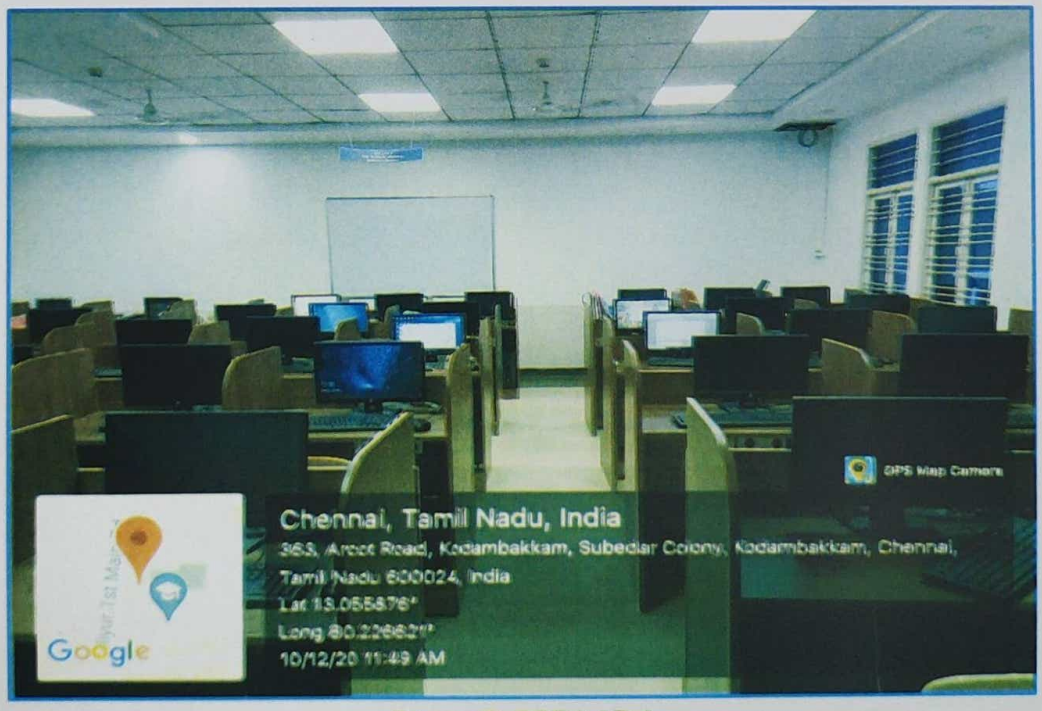

Figure 7: CSE LAB 1

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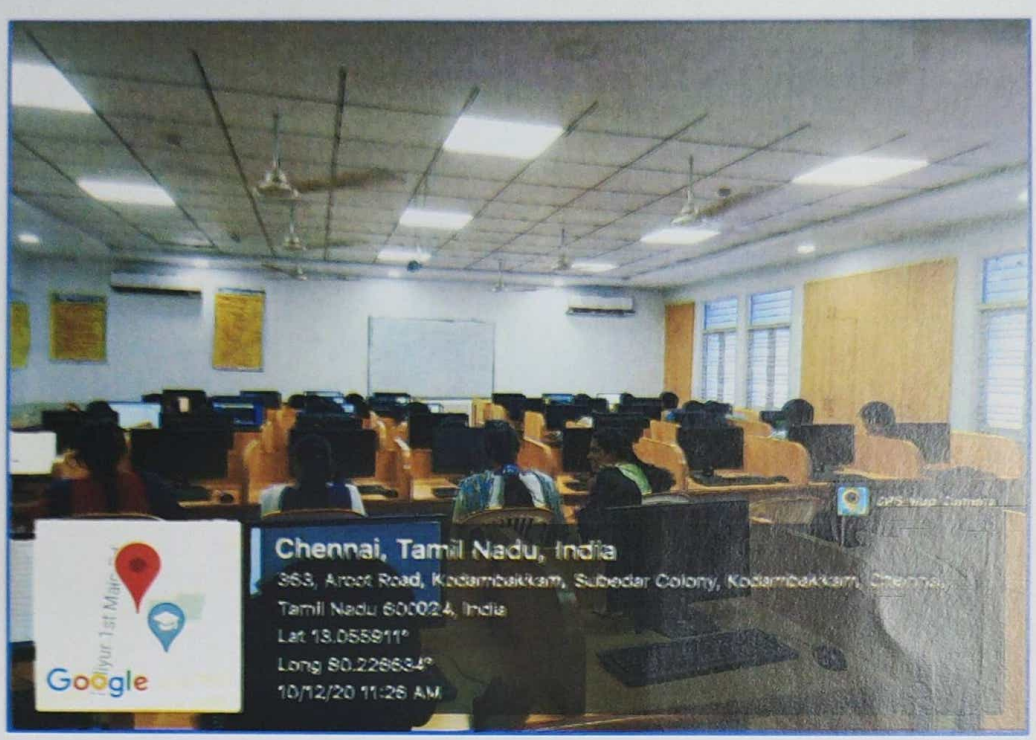

Figure 8: CSE LAB 2

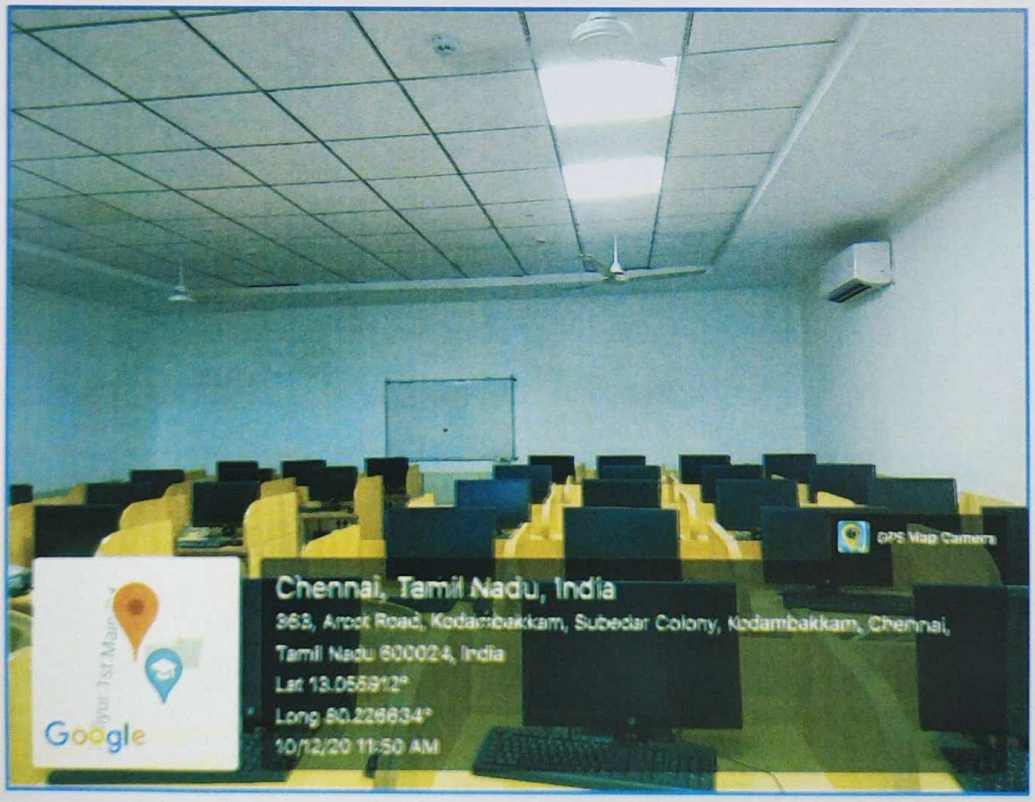

Figure 9: CSE LAB 8

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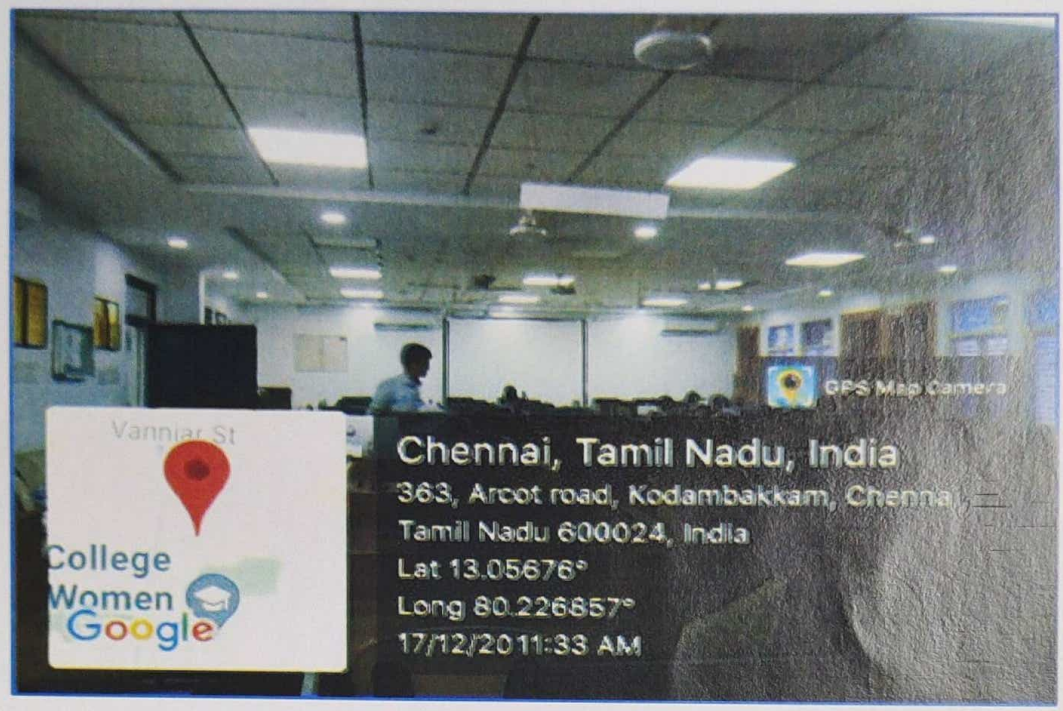

Figure 10: CSE LAB 6

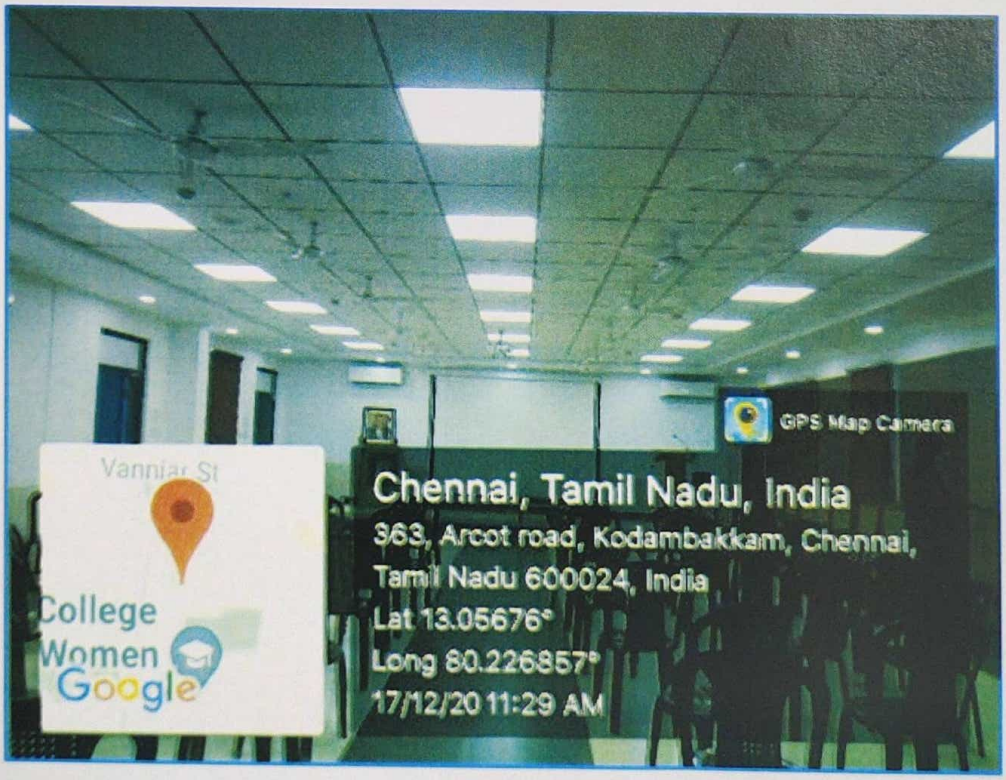

Figure 11: SEMINAR HALL (ECE)

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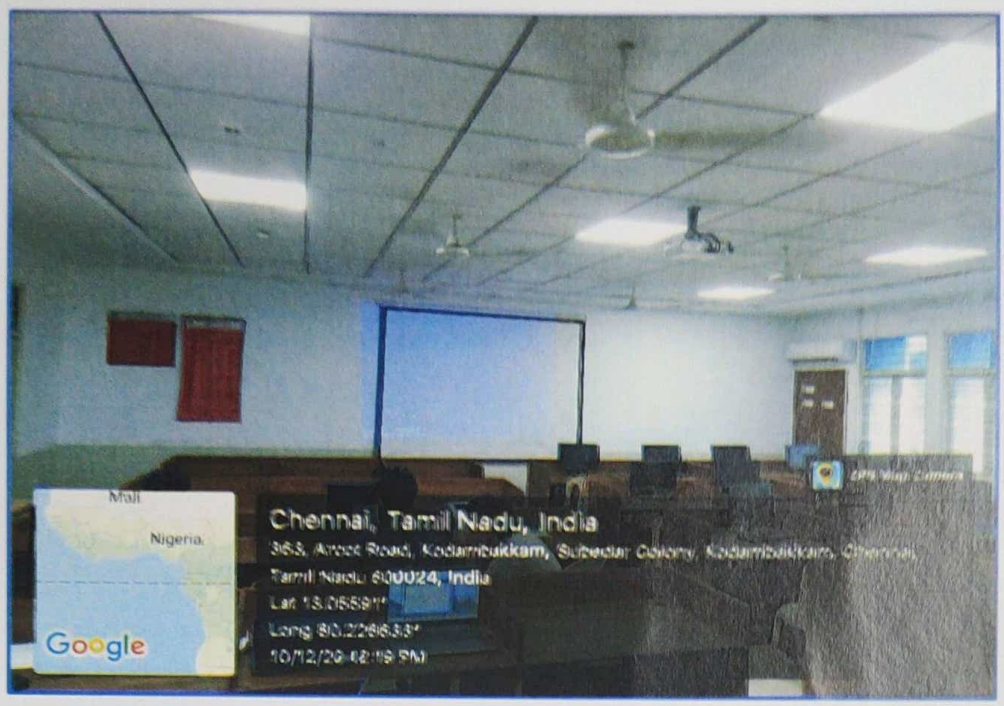

Figure 12: SIMULATION LAB (ECE)

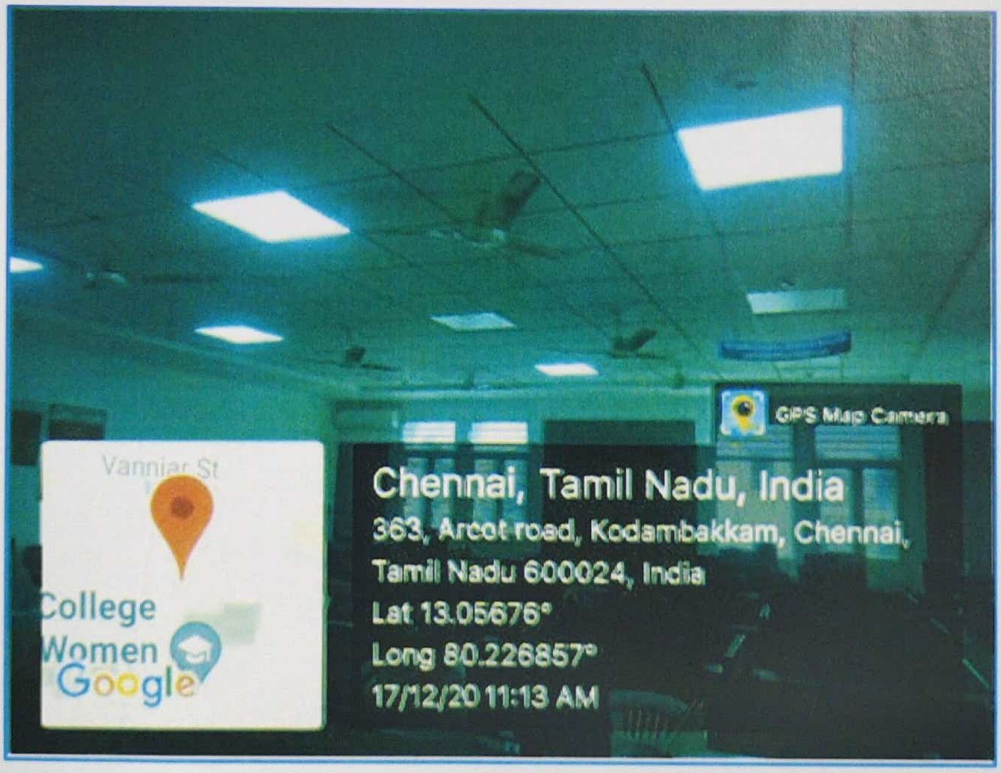

Figure 13: Microprocessor and Microcontroller LAB (ECE)

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