- 1. Energy Audit Report
- 2. Bill
- 3. Mechanism

# **Energy Audit Report**

# **ENERGY AUDIT REPORT**



# Shri Ram College Parikrama Marg

**MUZAFFARNAGAR 251001** 

Co-ordinator IOAC, Shri Ram College, Muzaffarnagar CHairman CHairman IQAC, Shri Ram College, Muzaffarnagar

## **ENERGY AUDIT**

#### **CERTIFICATE**

This is to certify that an "Energy Audit" for the Shri Ram College, Parikrama Marg, Muzaffarnagar 251001, has been conducted in June 2023 to assess energy costs, availability and reliability of supply of energy, energy conservation technologies, ways to reduce energy consumption and wheeling of electricity generated through solar panels.

Place: Muzaffarnagar

Date: 27th June 2023

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## Shri Ram College, Muzaffarnagar

## **ENERGY AUDITING COMMITTEE**

S. No.	Name	Designation	Committee Role
1.	Dr. Navneet Kumar,	Associate Professor, Deptt of Electrical Engineering, Govt. Engineering College Bijnor	Convener
2.	Engr. Rohitash Singh	Head, Dept of Electrical Engineering Shri Ram Group of Colleges Muzaffarnagar	Coordinator
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5.	Engr. Sanchit Kulshreshtha	Shri Ram Technologies, Parikrama Marg Muzaffarnagar	Member
6.	Engr. Sangeet Grover	Shri Ram Technologies, Parikrama Marg Muzaffarnagar	Member

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#### **Executive Summary**

Natural resources on earth are limited and consuming very sharply. It can be saved by employing energy efficiency and it is very necessary to prevent depletion of natural resources. The Electrical audit of any organization shows that the load of electrical equipment's is significant and some necessary step for reducing energy conservation should be taken. Today energy conservation plays a very important role for energy conserving because energy consumption is increasing day by day but the natural resources are not increasing and also generation is not match with consumption People should aware about energy conservation and reduce energy consumption by adopting modern technologies.

Energy Audit attempts to balance the total energy inputs with its use and serves to identity all the energy streams in the systems and quantifies energy usage's according to its discrete functions. Energy Audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating & maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation equipment's Instrumentations and technology.

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.

The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in the energy costs availability and reliability of supply of energy, decide on appropriate energy mix, identity energy conservation technologies, retrofit for energy conservation equipment etc. The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. The present report shows the energy audit of Shri Ram College campus in terms of pre-audit phase, audit phase and

post audit phase.

Co-ordinator

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ENERGY AUDITING REPORT Shri Ram College, Muzaffarnagar

#### 1. Introduction

In broad sense, Energy Efficiency means economizing on the use of energy without adversely affecting economic growth and development. It includes improving the efficiency of energy extraction, transmission and distribution and increasing the productivity of energy use.

#### **Designated consumers**

Central Govt. specify the following criteria for energy Intensive Industries and other establishment. (As per EC Act 2001, Section 14(e), for Industries Electrical connected load 5000 KW and above Designated Consumes to get energy audit by Accredited energy audit firms.

#### **Bureau of Energy Efficiency (BEE)**

The Bureau of Energy Efficiency is an agency of the Government of India, under the Ministry of Power created in March 2002 under the provisions of the nation's 2001 Energy Conservations Act. The agency's functions is to develop programs which will increase the conservation and efficient use of the energy in India.

#### 2. Energy Audit

As per the Energy conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiently with cost benefit analysis and an action plan to reduce energy consumption".

There are three phase of Energy Audit

- 1. Pre audit phase
- 2. Audit phase
- 3. Post audit phase

Above phase include following stages

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- 1. **Data Collection** In preliminary data collection phase, exhaustive data Collection was performed using different tools such as observation survey communication with responsible persons and measurement. Following steps were taken for data collection:
  - The tam went to each department, center, library, cafe etc.
  - Data about the general information was collected by observation and interview.
  - The power consumption of appliances was recorded by taking an average value in some cases.
- 2. **Data Analysis** Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus understanding the tariff plan provided by the PachimanchalVidyutVitran Nigam. Data related to water usages were also analysed using appropriate methodology.
- 3. **Recommendation** On the basis of results of data analysis and observation, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of diesel in generator has to be reduced for the sake of good environment. The above target areas particular to the college was evaluated through a schedule for the collection. The formats of these are given below:-

#### 3.1. Pre audit Phase

- 3.1.1. Survey Form for data collection
- a. List ways that you use fuel in your college. (electric stove, kettle, microwave,
   LPG, firewood, diesel and others).
- b. Electricity bill amount for the last five years.
- c. Amount paid for LPG cylinders for last one year.
- d. Weight of firewood used per month and amount of money spent? Also mention the amount spent for petrol/diesel/others for generations?
- e. Are there any energy saving methods employed in your college? If yes, please specify. If no, suggest some.
- f. How much money does your college spend on energy such as electricity, gas, firewood, etc. in a month.
- g. How many LED tube lights and lumps has your college installed? Mention use (Hours used/day for how many days in a month).

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- h. Energy used by each bulb per month? (for example- 60 watt bulb x 4 hours x number of bulbs = kwh).
- i. How many LED bulbs are used in your college? Mention the use (Hours used/day for how many days in a month).
- j. Energy used by each bulb per month? (kwh).
- k. How many fans are installed in your college? Mention use (Hours used/day for how many days in a month).
- 1. Energy used by each fan per month? (kwh).
- m. How many air conditioners are installed in your college? Mention use (Hours used/day, for how many days in a month).
- n. Energy used by each air conditioner per month? (kwh).
- o. How may electrical equipments are installed your college?
- p. Mention the use (Hours used/day for how many days in a month).
- q. Energy used by each electrical equipment per month? (kwh).
- r. How many computers are there in your college? Mentioned the use (Hours used/day for how many days in a month)
- s. Energy used by each computer per month? (kwh)
- t. How many photocopiers are installed by your college? Mention use (Hours used/day for how many days in a month).
- u. How many inverters your college installed? Mentions use (Hours used/day for how many days in a month)
- v. How many cooling apparatuses are in installed in your college? Mention use (Hours used/day for how many days in a month)
- w. Energy used by each cooling apparatus per month? (kwh) Mention use (Hours used/day for how many days in a month)
- x. Energy used by each photocopier per month? (kwh) Mention the use (Hours used/day for how many days in a month).
- y. Energy used by each inverter per month? (kwh)
- z. How many electrical equipment are used in different labs of your college?

  Mention the use (Hours used/day for how many days in a month)
- aa. Energy used by each equipment per month (kwh)
- bb. How many heater are used in the canteen of your college? Mention the use (Hours used/day for how many days in a month)
- cc. Energy used by each heater per month? (kwh)

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- dd. No of street lights in your college?
- ee. Energy used by each street light per month? (kwh)
- ff. No of TV in your college and hostels?
- gg. Energy used by each TV per month? (kwh)
- hh. Any other item that uses energy (Please write the energy used per month)

  Mention the use (Hours used/day for how many days in a month)
- ii. Are any alternative energy sources/nonconventional energy sources in photovoltaic cells in your college? specify
- jj. Do you run "switch off" drills at college?
- kk. Are your computers and other equipment put on power-saving mode?
- 11. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby mode most of the time? If yes, how many hours?
- mm. What are the energy conservation methods adapted by your college?
- nn. How many boards displayed for saving energy awareness?
- oo. How much ash is collected after burning fire wood per day in the canteen?
- pp. Write a note on the methods/practices/adaptations by which you can reduce the energy use in your college campus in future.

#### 3.2 Audit Phase

In Shri Ram College energy auditing was done with the help of engineers Shri Ram Technologies. The energy audit began with the teams walking through all the different facilities at the college, determining the different types of appliances (lights, taps, fridges, etc.) and utilities (Buildings, Toilets, Parks, & Open Areas) as well as measuring the usage per item (Watts indicated on the appliance) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and students were interviewed to get details of usage, frequency or general characteristics of certain appliances.

#### 3.2.1 Data collection

Data collection was done in the sectors such as source of quergy and energy consumption pattern. College records and documents were verified several times to clarify the data received through survey and discussions. Although whole process was completed within five months from 2019 January to July, 2019 previous energy patterns were also observed.

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#### 3.2.2 Site Tour

Site inspection was done along with students and staff Schedules were answered during the site tour and relevant documents were collected.

#### 3.2.3 Review of Documents and Records

Documents such as electrically bills, registers of electricity, fuel consumption were collected and reviewed.

#### 3.2.4 Site inspection

College and its premises were visited and analyzed by the audit-teams several times to gather information. All the buildings inflations infrastructures using electricity ie. canteen, library, office rooms and parking grounds were visited to collect data Number and type of vehicles used by the stakeholders were counted and fuel consumptions for each vehicle was verified with the user. Number of LPG cylinders used in labs, canteen and hostel kitchen mess were also counted. Leakage of a few water taps were noticed during the site inspection.

Total Area	31704 M <sup>2</sup>
Total Cover Area	13657.90 M <sup>2</sup>
Road and Open Area	5336.72 M <sup>2</sup>
Ground Coverage	3613.25 M <sup>2</sup>
Open Area	28090.75 M <sup>2</sup>

Table 1: Total Campus Area & College Building Spread Area

3.2.5 Energy Sources and Consumption Areas There were 2 hostels, 5 academic blocks, cafe, stores, generator room and supporting infrastructures like library, labs auditorium and cafeteria.

To accommodate the increased infrastructural development and growing academic activities, one new block is constructed in Shri Ram College for accommodate the extensive strength of students. The building is designed to support modern educational and administrative functions, which require a reliable and

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Chalrman QAC, Shfi Ram College Muzaffarnagar enhanced power supply. Now we have a total of 6 academic blocks in Shri Ram College.

The electrical load extension involved a detailed assessment of the anticipated power requirements based on the installed equipment, lighting, HVAC systems, lift system, computer labs, and other utilities. The infrastructure upgrade included installation of a new distribution transformer, enhancement of the main LT panel, laying of underground armored cables, and provision of dedicated earthing pits to ensure safety and stability. Necessary approvals and clearances were obtained from the concerned authorities, and the work was executed following standard electrical safety norms and Indian Electricity Rules. The details of load extension is mentioned in the observation section of energy usage.

#### 3.2.5.1 Energy Sources

To promote sustainable energy usage, a **160 KW solar power system** has also been installed. This solar panel setup is the primary source of electricity during normal conditions, significantly reducing dependence on conventional energy sources.

However, in adverse conditions such as cloudy weather or during nighttime when the solar panels are not generating electricity, the campus switches to conventional power backup systems. In the event of a power outage, electricity is supplied using **diesel-powered generators** to meet the increased demand.

To fulfill the power requirements during such situations, the backup system is capable of supplying up to three times the usual load.

#### **Installed Generators:**

- Generator 1: 160 KVA
- Generator 2: 82.5 KVA
- Combined Capacity: 242.5 KVA

The power efficiency of the generators is 85%, providing an effective usable output of approximately 206.13 KVA. This backup system ensures uninterrupted power supply to essential campus units when solar and grid power are unavailable.

#### 3.2.6 Key Finding and Observations of Energy Usages

The base of energy audit is that its findings are supported by documents and verifiable information. The audit process seeks, on a sampled basis, to track past actions,

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Chairman IQAC, Shri Ram College, Muzaffarnagar activities, events, information. The audit process seeks, on a sampled basis, to track past actions events and procedures to ensure that they are carried out according to systems requirements and in the correct manner. Energy audits form a part of a process. Although they are individual events, the real value of energy audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time.

Although audits are carried out using policies, procedures, documented system and objectives as a test, there is always an element of subjectivity in an audit. The essence of any energy audit is to find out how well energy management equipment is performing. Each of the three components are crucial in ensuring that the organization's energy performance meet the goals set in its energy policy.

	Consolidate Shri Ram College, Muzaffarnagar Details of Unit, & Bill Amount, July 2022-june 2023								
S. No.	Month	Units Bi							
1 .	July	12137.322	352824						
2	August	12860.104	310506						
3	September	14257.114	352248						
4	October	11321.953	357462						
5	November	6669.910	303915						
6	December	11271.712	302293						
7	January	8989.529	276318						
8	February	17151.858	2432.16						
9	March	19825.953	210115						
10	April	22934.768	169989						
11 .	May	16969.619	250742						
12.	June	15627.199	343826						
•	Total	170017.041	3473454						

Table 2: Details of Unit & Bill Amount

• Electricity Charges Rs. 289454.00 /month

Number of Generators = 2 (163KVA & 83 KVA)

Cost of generator fuel = Rs 25000/month

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- ❖ Total cost of energy = Rs 314454.00/month
- ❖ Number of LED Tube = 859
- ❖ Number of LED ceiling lights = 201
- Number of fans = 534
- Number of Air conditioners = 74 (132 kW)
- ❖ Number LED fours lights = 112
- ❖ Total Electrical Equipment's in Lab = 130
- Number of Photocopiers = 4
- Number of Televisions = 9
- ❖ Number of Printers = 42
- Energy generation by solar panels 180 kW

#### 3.2.7 Already Exiting Power Saving Measures

- We already have Solar Geysers Installed in hostels and Mess
- Turn off electrical equipment's when not in use.
- ❖ False ceilings in class rooms and offices for maintaining optimum room temperature.
- \* Resistance regulators Being replaced with electronic regulators.
- Master switches installed outside rooms in hostels.
- CFLs are being replaced by more efficient LEDs.
- ❖ Use computers and electronic equipment's in power saving mode

#### 3.2.8 Recommendations for Better Energy Efficiency

Based on the analysis of the power consumption data, certain steps have been recommended for improving energy efficiency of the campus. Complete cost analysis of implementation of recommended measure has been performed wherever necessary. Also, a number of general measures for energy efficiency have been listed. Described below are some important recommendations for better energy efficiency.

#### 3.2.8.1 Low/No investment (Immediate Replacements)

#### a. Housekeeping

Curtains - Always keep curtains on windows to prevent direct sunlight inside the room to avoid heating of cooled air. This reduces AC load significantly.

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#### b. Better Practices for AC

The institute has in total 57 window type ACs and 17 split type ACs which make a very large part of total energy consumption of the campus. But, at many places it was found that Ac is not used with best recommended practices. Even simple things, such as insulation, are not taken care of Window panes were found broken at many places. Also, at certain places ACs were found to be used without keeping curtains. These poor practices account for increase in AC load and thus consumption.

Summarized below are some guidelines for most efficient use of ACs:

- ❖ Proper Insulation Good quality insulation must be maintained in the air conditioned rooms by keeping all doors and windows closed property so as to prevent cool air go out and hot air come in.
- ❖ Operating The ACs should be switched on 15 minutes before actual use and should be switched off before leaving the room.

#### c. Replacing 3 star rated Air Conditioner to 5 star rated Air Conditioner

In an effort to enhance energy efficiency and reduce operational costs, it is proposed to replace the existing 1 Ton, 3-Star rated Air Conditioner (AC) with a 1 Ton, 5-Star rated AC in the designated area.

Parameter	3-Star Rated AC	5-Star Rated AC
Cooling Capacity	1 Ton (12,000 BTU/hr)	1 Ton (12,000 BTU/hr)
Energy Efficiency Ratio (EER)	~3.2	~3.8 – 4.0
Power Consumption	~1.1 – 1.2 kW	~0.9 – 1.05 kW
Daily Energy Use (8 hrs/day)	~8.8 - 9.6 kWh/day	~7.2 8.4 kWh/day
Monthly Energy Use (8 hrs/day)	~264 – 288 kWh/month	~216 – 252 kWh/month

**Table 3: Technical Comparison** 

#### **Expected Benefits:**

Reduced Power Load: The 5-star AC will reduce the electrical load by approximately 0.15

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**Energy Savings:** Estimated monthly energy savings of 40 - 70 kWh, translating into noticeable reductions in electricity bills.

**Environmental Impact:** Lower energy usage contributes to reduced carbon emissions and supports green campus initiatives.

**Long-term Cost Efficiency**: Though initial investment may be higher, operational cost savings will offset the expense within 1.5 - 2 years.

#### 3.2.8.2 High Investment/Long Term Replacement

#### 1. Energy substitution (Electrical Energy to Solar Energy)

As we know in our campus there is a huge consumption of electrical energy which is not economical so instead of using electrical energy we switch to alternate energy source which is solar energy.

The major energy consumption units are main building and management block, so we have shown the calculation for the no of solar panels for these buildings only.

Cost analysis of solar panel for

• Total Capacity		160 kWp
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Production Output
 465 Units/ Day

Life of Solar Panels
 25 years

• Life of Inverters - 5 years

• Total Cost of Installation - Rs. 85,70,000.00

• Subsidy Amount - Rs. 25,70,000.00

• Net Cost - Rs. 60,00,000.00

• Cost per Watt - Rs. 37.50

• Total Generation per month - 13974

• Generation Value - Rs. 142534.80

Annual Saving
 Rs. 17,10,417.60

Payback Period
 5 Years

#### 2.2.9 Consolidation of Audit Findings

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- The communication process for awareness in relation to energy conservation is found adequate.
- Average power factor of 1.0 is maintained
- Assessment of electrical load calculation has been done by the college.
- Monthly use of electricity in the college is not very high.
- Objectives for reducing energy, water and fuel consumption are sufficient.
- Energy efficient equipments are being used by replacing the old non-energy efficient fans.
- Regular monitoring of equipment's and immediate rectification of any problems in being done.

#### 2.3 Post audit phase

Follow Up and Action Plans

Energy audits form a part of an on-going process. Innovative energy saving initiatives has to be designed and implemented every year to make the college environmentally sustainable. Follow up programs of energy auditing recommendations should be done meticulously before the next audit.

Already the college has started replacing the CFL lamps with LED lamps. 5-star rating fans are purchased for newly constructed buildings. Biogas plant already working in the campus. All the rooms are provided with curtains to reduce temperatures. Solar Energy of 160 KW is in working mode. Street light sensor already provided. Water level controller are installed on all the pumps. Low rated efficiency 10 Air conditioners are replaced and the rest will be replaced soon. This report clearly shows that Shri Ram College authorities and management is committed to save energy and to generate green energy not only for campus consumptions but to wheel it to main grid of electricity board.

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# **Bill**

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**AVN TRADING CORPORATION** 

Chairman IQAC. Shri Ram College, Muzaffar nagar

(ORIGINAL FOR RECIPIENT) TAX INVOICE(GST) e-Way Bill No. Dated Invoice No. Agarwal Enterprises (22-23) AG/22-23/1691 401288433481 30-Oct-22 167/3-3A, SOUTH CIVIL LINES ,GALI AJAY HOTEL Mode/Terms of Payment **Delivery Note** Court Road Muzaffarnagar 251001 Other References 251091 Mobile -09634030333 GSTIN/UIN: 09AGNPA6405E1ZN State Name: Uttar Pradesh, Code: 09 E-Mail: monu3in@gmail.com Reference No. & Date. 1691 dt. 30-Oct-22 Dated Buyer's Order No. Consignee (Ship to) Shree Ram Charitable Trust Delivery Note Date Dispatch Doc No. Reshu Vihar, Muzaffarnagar : Uttar Pradesh, Code: 09 State Name Dispatched through Destination Terms of Delivery Buyer (Bill to) Shree Ram Charitable Trust Reshu Vihar, Muzaffarnagar : Uttar Pradesh, Code: 09 State Name Amount per Disc. % Disc 2 HSN/SAC Part No. Quantity Rate Description of Goods SI No. 9,600.00 85365020 RV501001 DARK GREY 400 nos. 24.00 nos. CRYSTA 10 AX 1 WAY SWITCH (1M) DARK GREY 22,557.15 161.70 PCS 53.50 % 85366910 RV302041 DARK GREY 300 PCS 6AMP INLET SKT (2M) DARK GREY 2 2.187.36 53.50 % 117.60 nos 85365020 RV501003 DARK GREY 40 nos. CRYSTA 20AMP 2 WAY SWITCH (1M) DARK GREY 3 53.50 % 7,427.91 159.74 nos. CRYSTA 20AMP 1 WAY SWITCH (1M) DARK GREY 85365020 RV501020 DARK GREY 100 nos. 53.50 % 12,121.62 100 nos. 260 68 nos 85366910 RV302044 DARK GREY 6 AMP UNL. SOCKET (2M) DARK GREY 463.54 PCS 53.50 % 21.554.61 RV301051 DARK GREY 100 PCS ELECTRONIC 4 STEP REGULATOR (2M) 84149030 DARK GREY 493.92 PCS 53.50 % 22,967.28 84149030 RV302052 DARK GREY 100 PCS **ELECTRONIC 5 STEP REGULATOR (2M)** DARK GREY 179.34 PCS 53.50 % 5.003.59 60 PCS 85365020 RV501022 DARK GREY CRYSTA 20 AMP 2WAY SWTICH (1M) DARK GREY 3,116.99 60 PCS 111.72 PCS 53.50 % 85366910 RV301040 DARK GREY CONVERSION WALL OUTLET (1M) DARK GREY 9 29.40 PCS 53.50 % 4,101.30 RV301067 DARK GREY 300 PCS 10 BLANK PLATE (1M) DARK GREY 85389000 8,722.10 312.62 PCS 53.50 % 85362030 RV301085 DARK GREY 60 PCS C32 SP MCB (1M) DARK GREY 11 8,886.15 53.50 % 637.00 nos. RV302090 DARK GREY 30 nos. 85362030 12 C32 DP MCB (2M) DARK GREY 658.56 PCS 53.50 % 6,124.61 RV302081 DARK GREY 20 PCS 85369010 25AMP MOTOR STARTER SWITCH (2M) 13 DARK GREY 141.12 PCS 53.50 % 1,312.42 85367000 | RV301061 DARK GREY TELEPHONE SINGLE JACK (1M) DARK GREY 20 PCS 1.279.88 PCS 53.50 % 11,902.88 85366910 RV301091 DARK GREY 20 PCS USB CHARGER (1M) DARK GREY 15 5,878.53 126.42 PCS 53 50 % RV301066 DARK GREY 100 PCS 85318000 INDICATOR WITH NEON TUBE (1M) DARK GREY 16 1,285.07 138.18 PCS 53.50 % 85366910 RV301060 DARK GREY **20 PCS** TV SOCKET (1M) DARK GREY 17 3,609.14 129.36 PCS 53.50 % 60 PCS 85389000 RC50002 BLACK 18 RECLINO 2 MOD PLATE BLACK 169.54 PCS 53.50 % 4.730.17 RECLINO 3 MOD PLATE BLACK 85389000 RC50003 BLACK 60 PCS 7,619.30 204.82 PCS 53.50 % 85389000 RC50005 BLACK **80 PCS** RECLINO 4 MOD PLATE BLACK 20 10,608.70 285.18 PCS 53.50 % 85389000 80 PCS RC50006 BLACK RECLINO 6 MOD PLATE BLACK 21 367.50 PCS 53.50 % 13.671.00 RC50008 BLACK 80 PCS 85389000 RECLINO 8 MOD (H) PLATE BLACK 16,514.57 443.94 PCS 53.50 % 85389000 RC50012 BLACK **80 PCS RECLINO 12 MOD PLATE BLACK** 23 4.557.00 490.00 PCS 53.50 % RC50018 BLACK **20 PCS** 85389000 24 RECLINO 18 MOD PLATE BLACK 124.46 PCS 2,314.96 53.50 % 85365020 RV501004 DARK GREY 40 PCS CRYSTA 10AX BELL PUSH SWITCH (1M) ARK GREY 15,255.00 180.00 nos. 15.25 % **₹TRATO 20 WATT LED TUBE LIGHT 6500k** GM 0397-6500K 100 nos. 94054090 14,509.20 214.00 nos. 15.25 % PBTM01207 80 nos. 940540 27 Pana - Tube Set Led 20 Watt 27,120.00 160.00 nos. 15 25 % 940540 LED-005003-DL 200 nos. 28 5W LED DOWN LIGHT DL 160.00 nos. 15.25 % 21,696.00 LED005002DL 94054090 160 nos. 29 5W LED DOWN LIGHT WDL 15.25 % 20.34 8.00 nos. 8546 3 nos 30 Tape 2,96,974.95 600.00

reight Outward (GST) SGST C GST **Found Off** Less otal

Amount Chargeable (in words INR Three Lakh Fifty One Thousand One Hundred Thirty Eight Only AGNPA6405E

Company's PAN

Declaration 1. We declare that this invoice shows the actual price of the 1. We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct. 2. All disputes subject to muzaffar age Turisdiction of S. 3. Goods once sold will not be replaced or layer pack.

4. Our risk and responsibility ceases on delivery of goods to the carrier.

5. In case of any complaints in product call directly to the company Toll Free No.

SUBJECT TO MUZAFFR.

IQAC. Shri Ram Cornego Enterprise Muzaffarnagar

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SUBJECT TO MUZAFFRANAGAR JURISDICTION

This is a Computer Generated Invoice

26,781.73

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#### TAX INVOICE(GST)

Invoice No. e-Way Bill No. Dated Agarwal Enterprises (22-23) 167/3-3A, SOUTH CIVIL LINES ,GALI AJAY HOTEL Court Road AG/22-23/2266 461308261278 23-Jan-23 Mode/Terms of Payment **Delivery Note** Court Road Muzaffarnagar 251001 Mobile -09634030333 GSTIN/UIN: 09AGNPA6405E1ZN State Name: Uttar Pradesh, Code: 09 E-Mail: monu3in@gmail.com Other References Reference No. & Date. 2266 dt. 23-Jan-23 Buyer's Order No. Dated Consignee (Ship to) Shree Ram Charitable Trust Delivery Note Date Dispatch Doc No. Reshu Vihar, Muzaffarnagar : Uttar Pradesh, Code: 09 State Name Destination Dispatched through Terms of Delivery Buyer (Bill to) Shree Ram Charitable Trust Reshu Vihar, Muzaffarnagar : Uttar Pradesh, Code: 09 State Name

Des	cription of Goods	HSN/SAC	Part No.	Quantity	Rate	per	Disc. %	Disc 2	Amount
		REFN 94054090	LED005005DL	250 200	150.00	nos	15 25 %		44,493.75
LED 5W DOWN L	IGHTER DELIGHT-GF			314 nos.	150.00	nos.	15.25 %		39,917.2
LED 5W DOWN	LIGHTER DELIGHT-R NSULATED TAPE 6M-G		TAPE-6M GR	2 nos.	8.00				16.0
FR-ELECT. PVC II	NSULATED TAPE ONI-G	KLLN							84,427.0
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Amount Chargeable (in words)

INR Ninety Nine Thousand Eight Hundred Twenty Four Only

Central Tax State Tax Total HSN/SAC Taxable Rate Tax Amount Rate Amount Value Amount 7,612.29 84,580.97 7,612.29 9% 15,224.58 9% 94054090 1.44 9% 16.03 9% 85469090 Total 84,597.00 7,613.73 7,613.73 15,227.46

Tax Amount (in words): INR Fifteen Thousand Two Hundred Twenty Seven and Forty Six paise Only

Company's PAN

: AGNPA6405E

Declaration

1. We declare that this invoice shows the lactual price of the goods described and that all particulars are lower and correct. 2. All disputes subject to muzaffer lagar jurisdictor only 3. Goods once sold will not be replaced with taken back. 4. Our risk and responsibility ceases and delivery of applies to the carrier.

5. In case of any complaints in product call directly to the company Toll Free No.

Darik Name

A/c No.

3812560008590

Branch & IFS Code: Jansath Road (Muzaffar nagae & MDF Boods & December 1980)

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Branch & IFS Code: Jansath Road (Muzaffar nagae & MDF Boods & December 1980)

Branch & IFS Code: Jansath Road

Company's Bank Details

A/c Holder's Name: Agarwal Enterprises

HDFC Bank C/a: 03812560008590 (464785,47)31.3 Bank Name

SUBJECT TO MUZAFFRANAGAR JURISDICTION

This is a Computer Generated Invoice



#### **AVN TRADING CORPORATION**

Office Address: Pocket K-204, Ground Floor, Sarita Vihar, New Delhi - 110076, New Delhi - 110044, ., Godown Address: B-12, Badarpur Extension, New Delhi - 110044,

Mob:07683047057, E-Mail:avn.oberoi@gmail.com

GST No: 07AASPO1576D1ZG PAN No: AASPO1576D



Buyer (Bill to) Shri Ram Group of Colleges Parikrama Marg, Laxman Vihar Colony, Civil Lines South, Muzaffarnagar, Uttar Pradesh Uttar Pradesh - 251001, India State Name Uttar Pradesh, Code: 09 Place of Supply Uttar Pradesh Contact 0131-3291354, 09927749900 Invoice No. e-Way Bill No. Dated LR-RR No. Terms of Delivery AVN/0352/2022-23 781295461559 1-Nov-22 Dated LR-RR Date. Buyer's Order No. SI Description of Goods HSN/SAC Quantity Rate per Disc. % Amount No. ROPELIGHT DRUM - AMBER > 94054090 50 Mtr 68.64 Mtr 3,432,00 ROPELIGHT DRUM - WHITE~ 94054090 50 Mtr 68.64 Mtr 3,432.00 ROPELIGHT DRUM - GREEN. 94054090 50 Mtr 68.64 Mtr 3,432.00 ROPELIGHT DRUM - WARMWHITE 94054090 500 Mtr 68.64 Mtr 34,320.00 Rope Light Connector 8amp Opulus, 9405 84.82 No. 15 No. 1,272.30 SSK-4FT-BATTEN-20W-6500K 94054090 800 No. 135.59 No. 1,08,472.00 LINO-4FT-20W-BATTEN-3000K 200 No. 94054090 144.06 No. 28,812.00 LUKER 9W B22 WW LAMP 85395000 300 No. 55.08 16,524.00 1,99,696.30 IGST 35,945.33 ROUNDED OFF 0.37 Total 2,35,642.00 ...ount Chargeable (in words) E. & O.E Two Lakh Thirty Five Thousand Six Hundred Forty Two INR Only HSN/SAC Taxable Integrated Tax Total Value Rate Amount Tax Amount 94054090 1,81,900.00 32,742.00 18% 32,742.00 9405 1,272.30 18% 229.01 229 01 85395000 16.524.00 18% 2,974.32 2,974.32 Total 1,99,696.30 35,945.33 35,945.33 Tax Amount (in words): Thirty Five Thousand Nine Hundred Forty Five INR and Thirty Three Only for AVN TRADING CORPORATION

Company's Bank Details

Bank Name : IDFC FIRST BANK LTD.

A/c No. : 10023554062

Branch & IFS Code: NEW FRIENDS COLONY & IDFB0020102

Declaration

1.Bills not paid under due date will attract 24% interest.

2.Each cheque bounce will be charged Rs.300,

3. Warranty is on behalf of manufacturers of the products.

SUBJECT TO DELHI JURISDICTION

This is a Computer Generated Invoice

IQAC. Shri Ram College, Muzaffarnagar

Authorised Signatory

Co-damator IQAC. Shri Ram College, Muzaffar nagar DING CORPORATION

darpur Extension elhi-110044

(N/UIN: 07AASPO1576D1ZG ate Name: Delhi, Code: 07

Jontact: 07683047057 E-Mail: avn.oberoi@gmail.com

Buyer (Bill to)

Shri Ram Group of Colleges

Parikrama Marg, Laxman Vihar Colony, Civil Lines

South, Muzaffarnagar, Uttar Pradesh

State Name Place of Supply

: Uttar Pradesh, Code : 09 : Uttar Pradesh

Contact

: 0131-3291354, 09927749900

	(ONIGHVALI ON NEOH ILIVI)
Invoice No.	Dated
AVN/0017/2022-23	9-Apr-22
Delivery Note	Mode/Terms of Payment
	Cash
Reference No. & Date.	Other References
Buyer's Order No.	Dated
Dispatch Doc No.	Delivery Note Date
Dispatched through	Destination

Terms of Delivery

SI lo.	Description of Goods	HSN/SAC	GST Rate	Quantity	Rate	per	Disc. %	Amount	
1	50mtr Ropelight Opulus - Red	94054090	12 %	300 Mtr	73.21	Mtr		21,963	3.00
2	Rope Light Connector 8amp Opulus	9405	18 %	97 No.	84.82	No.		8,227	
3	100w Flood Light Opulus - 3000k	9405	12 %	5 No.	1,830.35	No.		9,151	1.75
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rty Four Thousand Five Hundred Fifty Seven INR Only

	HSN/SAC		· Taxable	Integ	rated Tax	Total	
			Value	Rate	Amount	Tax Amount	
94054090			21,963.00	12%	2,635.56	2,635.56	
9405		A manage	8,227.54	18%	1,480.96	1,480.96	
9405			9,151.75	12%	1,098.21	1,098.21	
		Total	39,342.29		5,214.73	5,214.73	

Tax Amount (in words): Five Thousand Two Hundred Fourteen INR and Seventy Three Only

Company's PAN

: AASPO1576D

Declaration

**TERMS & CONDITIONS** 

1.Goods sold once will not be taken back or exchanged. 2.Bills not paid under due date will attract 24% interest.

3.Each cheque bounce will be charged Rs.300,

4. Warranty is on behalf of manufacturers of the products.

Customer's Seal and Signature

Company's Bank Details

Bank Name : IDFC CURRENT BANK ACCOUNT

: 10023554062 A/c No.

Branch & IFS Code: NFC & IDFB0020102

for AVN TRADING CORPORATION

Authorised Signatory

SUBJECT TO DELHI JURISDICTION

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TAX INVOICE(GST) (ORIGINAL FOR RECIPIENT) wal Enterprises (22-23) Invoice No. e-Way Bill No. Dated 167/3-3A, SOUTH CIVIL LINES ,GALI AJAY HOTEL Court Road AG/22-23/1269 451275333045 2-Sep-22 Muzaffarnagar Muzaffarnagar 251001 Mobile -09634030333 GSTIN/UIN: 09AGNPA6405E1ZN State Name: Uttar Pradesh, Code: 09 E-Mail: monu3in@gmail.com **Delivery Note** Mode/Terms of Payment Reference No. & Date. Other References 1269 dt. 2-Sep-22 Consignee (Ship to) Buyer's Order No. Dated Shree Ram Charitable Trust Reshu Vihar, Muzaffarnagar Dispatch Doc No. Delivery Note Date State Name : Uttar Pradesh, Code: 09 Dispatched through Destination Buyer (Bill to) Terms of Delivery Shree Ram Charitable Trust Reshu Vihar, Muzaffarnagar State Name : Uttar Pradesh, Code: 09 SI Description of Goods HSN/SAC Part No. Quantity Rate per Disc. % Disc 2 No. Amount 1 **RAYON - ROPE LIGHT 3014 IP65** 940540 RAY65-3014-7LM- B-BLUE 5 nos. 7,761.00 nos. RAYON - ROPE LIGHT 3014 IP65 3000K 2 38,805.00 940540 RAY65-3014-7LH-14VV-3000K 3 4 nos. 7,742.00 nos. RAYON - ROPE LIGHT 3014 IP65 6500K 30,968.00 940540 RAY65-3014-7LJA-WH-6500K 3 nos. 6,920.00 nos ÝON - ROPE LIGHT 3014 IP65 GREEN 20,760.00 940540 RAY65-3014-7LM-G-GREEN 3 nos. 6,920.00 nos. YON - ROPE LIGHT 3014 IP65 PINK 20,760.00 940540 RAY65-3014-7LM-P-PINK 2 nos. 6,920.00 nos OTIS-7 WATT LED DOWN LIGHT-ROUND 13,840.00 940540 G11-7-4K-N-4000K 11 nos. 182.00 nos. Tape 2,002.00 8546 5 nos. 8.00 nos. 40.00 1,27,175.00

Total nount Chargeable (in words)

33 nos.

₹ 1,50,067.00 E. & O.E

11,445.75

11,445.75

0.50

IR One Lakh Fifty Thousand Sixty Seven Only

HSN/SAC Taxable Central Tax State Tax e Amount 0540 Total Value Rate Amount Rate 46 Tax Amount 1,27,135.00 9% 11,442.15 9% 11,442.15 22,884.30 40.00 9% 3.60 Total 1,27,175.00 3.60 Amount (in words): INR Twenty Two Thousand Eight Hundred Ninety One and Fifty paise Only 11,445.75 11,445.75

C GST

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mpany's PAN

: AGNPA6405E

laration Ve declare that this invoice shows the actual price of the ods described and that all particulars are true and correct.2.All putes subject to muzaffamagar jurisdiction only 3. Goods a sold will not be replaced or taken back and 4. Our risk and ponsibility ceases of any complaints in product that directly to the carrier. case of any complaints in product call directly to the company Toll Free No.

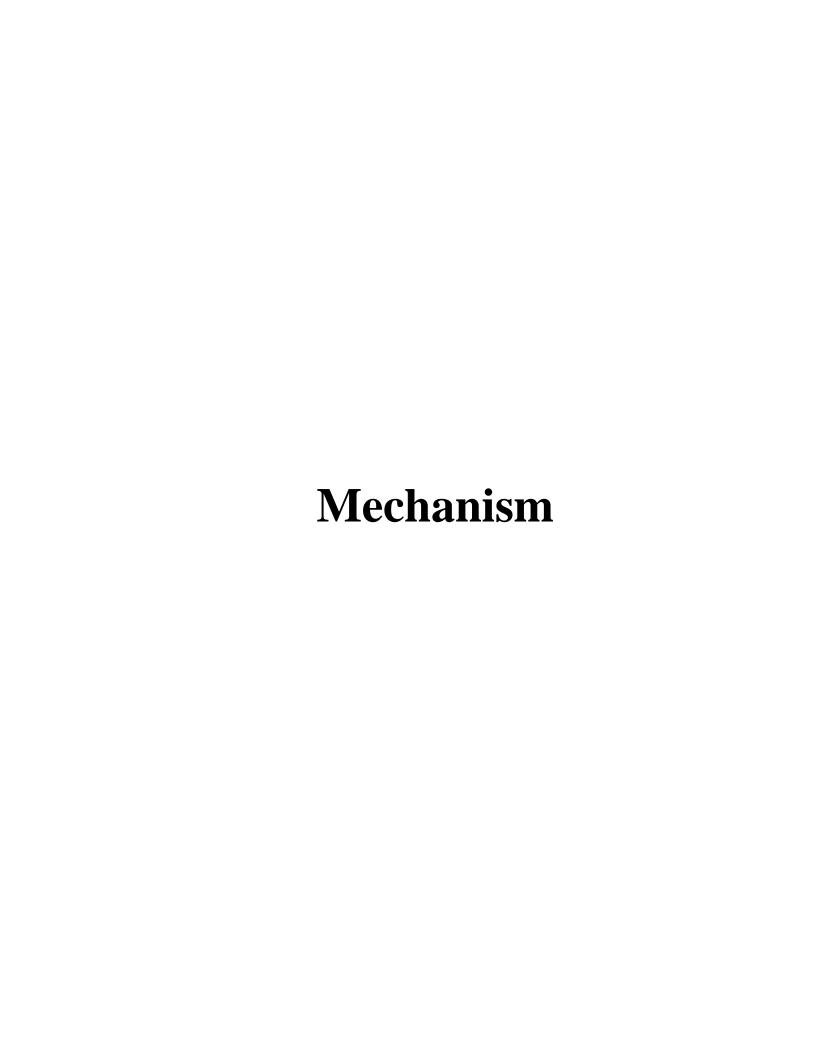
Company's Bank Details

A/c Holder's Name: Agarwal Enterprises

Bank Name : HDFC Bank C/a : 03812560008590 (30.06.22)
A/c No. : 03812560008590
Branch & IFS Code : Jansath Road Mi Zarragar & HDFC0000381 Muzaffar nagar AgarwaL

SUBJECT TO MUZAFFRANAGAR JURISDICTION

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#### 7.1.2: The institution has facilities for

- 1. Alternate source of energy and energy conservation measure
- 2. Management of the various type of degradable and non degradable waste
- 3. Water conservation
- 4. Green Campus initiatives
- 5. Disabled friendly, Barrier free environment

Shri Ram College, Muzaffarnagar which was established in 2004 with the aim to provide quality education to all section irrespective of caste, religion, gender having a campus equipped with all modern technology and art of living. Some facilities are described as below

#### 1. Alternate Sources of Energy and Energy Conservation Measures

In recent years, the importance of transitioning to alternate sources of energy has become increasingly apparent as the world seeks to address climate change and reduce reliance on fossil fuels. Solar energy is one of the most promising alternatives, harnessing sunlight through photovoltaic (PV) panels or solar thermal systems to generate electricity or heat water. Solar energy is abundant, renewable, and can significantly reduce energy costs over time, making it an ideal choice for institutions.

#### **Solar Energy Systems:**

Institutions can implement solar energy systems in various ways, such as installing rooftop solar panels, utilizing solar carports, or investing in solar farms. By generating their own electricity, institutions can lower their utility bills, decrease their carbon footprint, and contribute to energy independence. In regions with ample sunlight, the payback period for solar installations can be relatively short, making it a financially viable option. Furthermore, incorporating solar energy can also enhance a school's or organization's sustainability profile and attract eco-conscious stakeholders.

#### LED Lighting:

In addition to solar energy, switching to LED lighting is one of the most effective energy conservation measures that institutions can adopt. LED lights consume significantly less electricity compared to traditional incandescent or fluorescent bulbs and have a much longer lifespan. This not only results in reduced energy bills but also lowers maintenance costs due to less frequent replacements. Implementing LED lighting solutions in classrooms, hallways, and common areas can lead to substantial energy savings and create a brighter, more inviting environment.

Co-ordinator IQAC, Shri Ram College, Muzaffarnagar Chairman IQAC, Shri Ram College, Muzaffarnagar

#### Additional Energy Conservation Measures:

Energy Audits: Conducting regular energy audits can help identify areas of waste and opportunities for improvement.

Smart Thermostats: Installing programmable or smart thermostats can help optimize heating and cooling systems, reducing energy consumption without sacrificing comfort.

Insulation and Weatherproofing: Improving insulation and sealing leaks in buildings can minimize heating and cooling needs, further conserving energy.

Promoting Behavioral Changes: Educating staff and students about energy-saving practices, such as turning off lights and unplugging devices when not in use, can foster a culture of energy conservation.

Renewable Energy Credits (RECs): Institutions can purchase RECs to offset their energy usage, supporting the growth of renewable energy sources.

By integrating solar energy systems and adopting LED lighting along with other energy conservation measures, institutions can significantly reduce their energy consumption, cut costs, and contribute to a more sustainable future. These initiatives not only benefit the environment but also promote awareness and responsibility among students and staff, setting a powerful example for the community.

#### 2. Management of Degradable and Non-Degradable Waste in Institutions

Effective waste management is crucial for sustainability and public health in institutional settings, such as schools, hospitals, and offices. Waste can broadly be categorized into degradable (biodegradable) and non-degradable (non-biodegradable) waste, each requiring specific management strategies.

#### Degradable (Biodegradable) Waste

**Definition:** This type includes organic matter that can be broken down by microorganisms, such as food scraps, paper products, and garden waste.

Management Strategies:

**Segregation:** College has established separate bins for biodegradable waste to avoid contamination with non-degradable items.

Composting: College has established vermicompost unit and compost unit in the campus for onsite composting to convert organic waste into nutrient-rich compost. This is being used for landscaping or gardening within the college campus and if some time is not using, a desk for selling to Nursery holder.

Co-ordinator IQAC, Shri Ram College, Muzaffar nagar

Clairman IOAC, Shri Ram College, Muzaffarnagar Anaerobic Digestion: College has also installed a biogas unit near the vermicompost unit for generating the bio-gas which is being used in laboratory and sometime in mass, a renewable energy source.

Training and Awareness center has been started in the campus for educating the students and their parents as our 70 % rural area where farming is a main occupation to raise awareness among staff and students about the importance of composting and reducing food waste.

#### Non-Degradable (Non-Biodegradable) Waste

**Definition:** This includes materials that do not break down naturally, such as plastics, metals, and certain electronics.

#### Management Strátegies:

**Segregation:** Like degradable waste, non-degradable items are also categorized and stored separately to facilitate recycling.

**Recycling Programs:** The College has developed a partnership with local vender for recycling to ensure proper disposal of materials like plastics, paper, glass, and metals. This reduces landfill burden and promotes resource recovery.

**E-waste Management:** The College has also developed a safe disposal method for electronic waste, partnering with certified e-waste recyclers to handle devices like computers and mobile phones.

**Reduction and Reuse:** College have prioritized the waste reduction strategies by encouraging the use of reusable items (e.g., water bottles, containers) and minimizing single-use products.

#### The Education and Awareness

A critical component of waste management in institutions is ongoing education and training for all stakeholders. The college have organized workshops, seminars, and informational campaigns to promote best practices in waste segregation, recycling, and reduction.

Proper management of degradable and non-degradable waste in college not only promoted environmental sustainability but also fosters a culture of responsibility among students and staff. By adopting effective strategies and encouraging participation, college have significantly minimized their environmental impact.

#### 3. Water Conservation Practices Implemented in College

Our college has taken significant strides in promoting water conservation through various innovative practices aimed at reducing waste and fostering sustainability among students and staff.

C Minator IQAC, S ri Ram College, Muzaffarnagar

IQAC. Muzaffarnagar

**Smart Irrigation Systems:** We have installed smart irrigation systems that use moisture sensors to optimize watering schedules for campus gardens and landscaping. This technology ensures that water is only used when necessary, minimizing overwatering.

Rainwater Harvesting: The college has implemented rainwater harvesting systems to collect and store rainwater for use in irrigation and non-potable applications, such as flushing toilets. This helps reduce reliance on municipal water supply.

Awareness Campaigns: Regular workshops and campaigns are held to educate students and staff about the importance of water conservation. These initiatives encourage behavioral changes, such as turning off taps while brushing teeth and reporting leaks promptly.

Water-Efficient Fixtures: The installation of low-flow faucets, showerheads, and dual-flush toilets in restrooms has significantly reduced water consumption throughout the campus.

Water Audits: Periodic audits are conducted to assess water usage across the campus, identifying areas for further reduction and monitoring the effectiveness of existing conservation measures. Through these initiatives, our college not only minimizes water wastage but also instills a culture of sustainability among its community, contributing to a greener and more responsible campus environment.

#### 4. Green Campus Initiatives at Shri Ram College

At Shri Ram College, we are committed to creating a sustainable and eco-friendly environment through a series of impactful green campus initiatives. These efforts aim to reduce our ecological footprint and promote environmental awareness among students and faculty.

Waste Management and Recycling: Our college has implemented a comprehensive waste segregation system that encourages recycling and composting. We have designated bins across campus to properly sort plastics, papers, and organic waste, significantly reducing landfill contribution.

**Energy Efficiency:** We have upgraded our lighting systems to energy-efficient LED lights and installed motion sensors in classrooms and common areas to minimize energy consumption. Additionally, our campus buildings are designed with sustainability in mind, utilizing natural ventilation and daylighting to reduce reliance on artificial heating and cooling.

**Sustainable Transportation:** To promote eco-friendly commuting, we encourage students and staff to use bicycles and public transport. The college has established designated bike parking areas and is actively exploring partnerships with local transit services to enhance accessibility.

Co-ordinator IQAC, ShriRam College, Muzaffar nagar IQAC, Siri Ram College, Muzaffarnagar We have fixed a day especially on this day campus has allowed to only bicycle in the campus. We are promoting electric scooter among the staff and students.

**Green Spaces:** We are enhancing our campus greenery by planting trees and creating community gardens. This not only helps to improve air quality but also provides students with a peaceful environment for relaxation and study.

**Awareness Campaigns and Workshops:** Regular workshops and events are organized to educate our community about sustainability practices. From tree planting drives to guest lectures on environmental issues, we aim to foster a culture of environmental stewardship.

Through these initiatives Shri Ram College strives to act as a model for other institutions, demonstrating the importance of sustainability and inspiring future generations to prioritize environmental responsibility.

#### 5 Disabled-Friendly, Barrier-Free Environment

Shri Ram College, we are committed to fostering an inclusive and supportive educational environment for all students, including those with disabilities. Our goal is to ensure that every member of our college community has equal access to resources, facilities, and opportunities. Below are the key features and initiatives that contribute to our disabled-friendly, barrier-free environment:

#### 1. Accessible Campus Design

**Mobility Access:** All buildings are equipped with wheelchair ramps, elevators to ensure easy access for individuals with mobility challenges.

Clear Pathways: Wide, clear pathways are maintained throughout the campus to facilitate smooth navigation for wheelchair users and individuals with other mobility aids.

Accessible Parking: Designated accessible parking spaces are available close to all building entrances, ensuring convenience for students and staff with disabilities.

#### 2. Inclusive Facilities

**Restrooms:** All restrooms on campus are fully accessible and equipped with features such as grab bars, accessible sinks, and emergency alarms.

Classrooms and Laboratories: Classrooms are designed with adjustable desks and seating arrangements that accommodate students with different mobility needs. Specialized equipment is available in laboratories for students requiring adaptive technology.

Library Services: Our library offers assistive technology stations, such as screen readers, and has staff trained to assist students with disabilities in accessing resources.

Conminator IQAC. Shr Ram College. Muzaffarnagar Chairman JQAC, Shri Ram College, Muzaffarnagar

#### 3. Assistive Technology

**Educational Technology:** The college provides a variety of assistive technologies, including speech-to-text software, notetaking assistance, and adaptive learning tools to support students with different learning needs.

Online Learning Access: Online platforms are designed to be fully accessible, featuring captioned videos, screen reader compatibility, and alternative text for images.

#### 4. Support Services

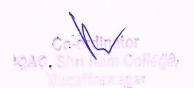
**Disability Services Office:** Our dedicated Disability Services Office offers individualized support and accommodation tailored to each student's needs, including academic advising, tutoring, and counseling services.

Awareness and Training: Regular training sessions are conducted for faculty and staff on disability awareness, inclusion strategies, and the importance of creating a supportive learning environment.

**5.Feedback Mechanism:** We actively seek feedback from students with disabilities to continuously improve our facilities and services. Surveys and suggestion boxes are available to hear their voices and address their concerns.

#### 6. Emergency Preparedness

Accessible Evacuation Plans: All emergency procedures consider the needs of individuals with disabilities. Clear evacuation routes are established, and designated aides are trained to assist those requiring help during an emergency.



IQAC, Shri Ram Collegi Muzaffarnagar