FAQ’s

1. **Elaborate on Solar energy system for lighting.**

   Solar energy is radiant light and heat from the Sun that is harnessed using a range of ever-evolving technologies. Solar energy, which is renewable, widely available and clean, provides enough energy to meet the world’s annual consumption needs every 50 minutes. Two major technologies have been developed to harness it:

   Photovoltaic solar technology, which directly converts sunlight into electricity using panels made of semiconductor cells.

   Solar thermal technology, which captures the sun’s heat. This heat is used directly or converted into mechanical energy and in turn electricity, known as concentrated solar power.

   A solar lamp also known as solar light or solar lantern, is a lighting system composed of an LED lamp, solar panels, battery, charge controller and there may also be an inverter. The lamp operates on electricity from batteries, charged through the use of solar photovoltaic panel.

2. **Explain the photovoltaic systems.**

   A photovoltaic system, also PV system or solar power system, is a power system designed to supply usable solar power by means of photovoltaic. It consists of an arrangement of several components, including solar panels to absorb and convert sunlight into electricity, a solar inverter to change the electric current from DC to AC, as well as mounting, cabling and other electrical accessories to set up a working system. It may also use a solar tracking system to improve the system's overall performance and include an integrated battery solution. Solar cells work by capturing the energy in solar photons and transferring it to electrons within the

semiconductor material of the cell. If the photons have sufficient energy, these electrons, which were previously bound to the atoms that make up the cell, become free to move around the cell. An internal electric field that exists within the cell provides the voltage needed to drive these freed electrons through an external circuit.

3. **Explain the application of photovoltaic systems for residential buildings.**

   Residential grid connected PV systems are relatively simple to design with easy to predict annual yields. Residential Self-Consumption of Solar PV Power will prioritize the self-consumption of stored battery and PV generated power over grid power, helping homeowners avoid high utility charges. Solar Backup Power Systems for Homes integrates into the residential electrical system and seamlessly converts power from battery reserves to power critical loads such as pumps, security systems, refrigerators and electronics, when utility grid power is unavailable. Off-Grid Residential Solar Power Systems becomes the primary power source and forms the grid, converting solar power and battery reserves to AC power for loads. Solar Rural Electrification for Communities is a large hybrid off-grid or micro grid systems offer a more sustainable and affordable AC power solution when compared to power supplied only from a diesel generator.

4. **What is LEED Certification? Why is it necessary?**

   Leadership in Energy and Environmental Design (LEED) is a rating system devised by the United States Green Building Council (USGBC) to evaluate the environmental performance of a building and encourage market transformation towards sustainable design. The system is credit-based, allowing projects to earn points for environmentally friendly

actions taken during construction and use of a building. LEED was launched in an effort to develop a "consensus-based, market-driven rating system to accelerate the development and implementation of green building practices." The program is not rigidly structured; not every project must meet identical requirements to qualify.

LEED is a voluntary program; however, obtaining a LEED certification projects a positive environmental image to the community. Additionally, using many green building practices can result in energy and cost savings over the life of the structure. Other advantages include better indoor air quality and plenty of daylight. Studies have shown that workers in these environments have increased labor productivity, job retention, and days worked. These benefits contribute directly to a company's profits because salaries—which are about ten times higher than rent, utilities, and maintenance combined—are the largest expense for most companies occupying office space. In addition, students in these environments have higher test scores and lower absenteeism. Retail sales are higher in day lit buildings.

5. Explain the available choices in energy efficient lighting?

The most popular light bulbs available are halogen incandescent, compact fluorescent lamps (CFLs), and light-emitting diodes (LEDs). Although they can initially cost more than traditional incandescent bulbs, during their lifetime they save you money, because they use less energy. Controls such as timers and photocells save electricity by turning lights off when not in use. Dimmers save electricity when used to lower light levels. Outdoor lighting that is left on for a long time, using CFLs or LEDs in these fixtures will save a lot of energy. Most bare spiral CFLs can be used in enclosed fixtures that protect them from the weather. CFLs and LEDs are available as flood lights. ENERGY STAR-

qualified fixtures that are designed for outdoor use and come with features like automatic daylight shut-off and motion sensors.