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**Intern’s Details**

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| **Smart Task No.** | 3 |
| **Project Topic** | PV syst report and loss analysis |

**Smart Task (Solution)**

| **Task Q1 :**  **Details of Solar Resource Assessment and Analysis** |
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| **Task Q1 Solution :**  **Solar resource assessment is a system which involves the assessment of that particular place is suitable or not for the installation of solar pv cells because all place is not suitable as the radiation at places is not of that level . Solar resource assessment is a necessary step in PV plant design that allows understanding the feasibility of a plant in a given location**.  **In our PV syst report the place we have choosen is Delhi , India . The details of the place are as follows :**  Geographical Site Delhi/Safdarjung India Situation Latitude Longitude Altitude Time zone 28.58 77.20 212 UTC+6 °N °E m |

500 Words (Max.)

| **Task Q2 :**  **Data Sheet analysis of modules and inverter** |
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| **Task Q3 Solution :**  **PV modules : Inverter :**  Manufacturer – Generic Manufacturer – Generic  Model – Mono 300wp 60 cells Model – 60kwac string inverter  Unit Nom. Power – 300 wp Unit Nom. Power – 60.0 k wac  No. of PV modules – 330 units No. of inverters – 10\*MPPT 13% 1.3 units  Nominal – 99.0 kwp  Modules – 10strings \* 33 in series Total power – 75.0 kwac  Unit Nom. Power – 300 wp  No. of PV modules – 330 units Operating voltage – 500-1450 V  Nominal – 99.0 kwp  Modules – 10strings \* 33 in series Phom ratio – 1:32  At operating condition of 50 degree cent.  Pmpp – 89.1kwp  U mpp – 938v  I mpp – 95 A  Total PV power : Total inverter power :  Nominal (STC): 99kwp Total Power – 75 kwac  Total : 330 modules  Module area : 537 m^2 No. of inverters – 0.8 unused  Cell area : 469 m^2 |

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| **Task Q4 :**  **Understanding the basic terms such as, GHI, AEP, GIR, Tilt Factor, PR, System Sizing, AC/DC Ration, Specific Energy Production, Plant Efficiency, CSS, Tracking, Azimuth Angles etc.** |
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| **Task Q4 Solution :**  **GHI :** Global Horizontal Irradiance (GHI) is the total solar radiation incident on a horizontal surface. It is the sum of Direct Normal Irradiance (DNI), Diffuse Horizontal Irradiance, and ground-reflected radiation. HOMER uses Solar GHI to compute flat-panel PV output.  **AEP :** AEP Renewables develops, owns and operates large wind and **solar** renewable energy generation assets that can help you meet your green energy goals. Years of industry experience With backing from parent company AEP, AEP Renewables draws upon the technical, engineering, operating and market expertise of our commercial affiliates, as well as the expertise of the AEP Service Corporation.  **GIR :** Global irradiance Radiation  **Tilt Factor :** The factor at which the solar pannels are placed in a way to get the maximum solar radiation is known as tilt factor .  **PR :** Performance Ratio is a very important value to evaluate the quality of a photovoltaic installation because it gives the performance of the installation independently of the orientation, inclination of the panel. It includes all losses.    **System Sizing :** In the solar industry, the term ‘solar system size’ is used to describe a solar panel system’s**capacity to produce electricity**. A solar panel system sized 300 watts is one that can produce 300 watts of electricity, while a system sized 6 kilowatt (6000 watts) solar system will produce 6000 watts - under standard conditions.  **AC/DC Ration:**  The ratio of how much DC capacity (the quantity and wattage of solar panels) is installed to the inverter’s AC power rating is called the DC-to-AC ratio  **Specific Energy Production :** The production of energy by a particular solar pannel over a fixed duration of time is called the specific energy production of that solar pannel  **Plant Efficiency:** Solar plant efficiency is the term used to determine how much solar energy can be gained from that plant and how much got exhausted . |

500 Words (Max.)

| **Task Q5 :** |
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| **Task Q5 Solution :** |

500 Words (Max.)

| **Task Q6 :** |
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| **Task Q6 Solution :** |

500 Words (Max.)

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