Unit-1

| Q. No | Question |
|---|---|
| | **PART-A (5 x 2 = 10 Marks)** |
| **1** | Calculate the declination angle and hour angle on August 16$^{th}$ ,2023 at 11 A.M in Kattankulathur. |
| **2** | List the instruments used for solar radiation measurement and mention the significance of Pyrheliometer. |
| **3** | Compare Diffuse and Beam Solar Radiation |
| **4** | In which situation will net metering benefit and comment on the battery requirement? |
| **5** | How solar passive heating beneficial compared to active heating for buildings? |
| | **PART-B (15 x 1 = 15 Marks)** |
| **6** | Discuss with neat diagram the working of Solar Pond Thermal electric conversion system. |
| **7** | Explain I-V, P-V Characteristics and working principle of Solar PV. |

| Q. No | Question |
|---|---|
| | **PART-A** |
| **1** | Calculate the declination angle and hour angle of the sun in Delhi on 28$^{th}$ February 2023 at 10 AM. |
| **2** | Define the constant value used for estimating solar radiation. |
| **3** | How to calculate day length? |
| **4** | Compare gross and net metering. |
| **5** | Comment on the need for MPPT tracker. |
| | **PART-B** |
| **6** | (a)With a help of neat sketch, explain any one type of solar water heating system.<br>(b)Comment on the suitability of non-pressurized system. |
| **7** | (a)Discuss about Concentrated type solar thermal collectors.<br>(b) Comment on the significance of concentrated solar collectors |

| Q. No | Question |
|---|---|
| | **PART-A** |
| **1** | Calculate the declination angle and hour angle of the sun at Chennai 2.30 p.m.20 February 2019. |
| **2** | Write the expression which is used to determine solar time and local civil time. |
| **3** | Describe in brief, thermal storage system used in solar. |
| **4** | Explain mode of operation of solar space heating. |
| **5** | Discuss on the maximum power point using Perturb and observation method. |
| | **PART-B** |
| **6** | With a help of neat sketch, explain the pressurized and non- pressurized solar water heating system. |
| **7** | Discuss in detail about parabolic trough collector and Fresnel lens concentrating collectors. |