|  |  |  |  |
| --- | --- | --- | --- |
| **S NO** | **QUESTION** | **KNOWLEDGE****LEVEL** | **CO** |
| **UNIT I** |
| **1** | Describe the energy conservation principle with example?  | K2 | CO1 |
| **2** | Explain the solar radiation at the Earth’s surface?  | K3 | CO1 |
| **3** | Illustrate the equation for Local Solar time?  | K2 | CO1 |
| **4** | Describe the solar radiation Geometry | K2 | CO1 |
| **5** | Explain the solar radiation on tilted surface and their components? | K3 | CO1 |
| **UNIT 2** |
| 1 |  Explain the Liquid Flat Plate collectors with neat sketch?  | K3 | CO1 |
| 2 | Analyze the Transmissivity of the cover system based on reflection and absorption?  | K4 | CO1 |
| 3 | Describe the solar pond with neat sketch? | K2 | CO1 |
| 4 | Illustrate the working principle of solar air heater?  | K2 | CO1 |
| **UNIT 3** |
| **1** | Define solar photovoltaic effect? | K1 | CO1 |
| **2** | Explain the solar PV Balance of Systems? | K2 | CO1 |
| **3** | Explain IV characteristics of solar PV system with neat sketch?  | K3 | CO1 |
| **4** | Explain the solar photovoltaic system design and sizing? | K3 | CO1 |
| **UNIT 4** |
| **1** | Explain the advantages and limitations of wind energy conversion systems. | K2 | CO2 |
| **2** | A HAWT having the rotor diameter as 80 m is rotating at 40rpm.The wind speed is 20m/s at 1 atm and 270 C. Calculate the torque produced at the shaft for maximum output of the turbine.  | K4 | CO2 |
| **3** | Explain the various types of wind turbines. | K2 | CO2 |
| **4** | Describe the equation for Power output of wind turbine | K2 | CO2 |
| **UNIT 5** |
| **1** | Explain about single basin arrangement in tidal power generation. | K2 | CO3 |
| **2** | Explain the closed cycle OTEC plant and list out the major problems associated OTEC.  | K3 | CO3 |
| **3** | Write the source of tidal energy? What is the minimum tidal range required for the working of a tidal plant? How much is the potential in tides? | K3 | CO3 |
|  | Explain the working principle and classification of hydro systems | K3 | CO3 |
| **UNIT 6** |
| **1** | List the various types of Fuel cell and explain any one type and also its applications. | K1 | CO4 |
| **2** | Explain the various the biomass and biogas energy sources. | K3 | CO4 |
| **3** | Explain various types of geothermal resources? How are geothermal sides earthquakes & volcanoes related? | K3 | CO4 |
| **4** | List out various types of Geothermal resources.  | K1 | CO4 |