Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech.(EE) (2015 & Onwards E-I) (Sem.–2)

RENEWABLE ENERGY RESOURCES

Subject Code : MTEE-204C

M.Code : 71361

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries EQUAL marks.**
3. **Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.**

1. Explain the following :

   a) Global warming and green house emission

   b) Distributed energy system

   c) Solar photovoltaic system

   d) Electromagnetic radiations and extra high voltage lines

2. a) Explain different thermal energy conversion systems with merits and demerits of each system.

   b) Find the angle subtended by the beam radiations with the normal to flat plate collector at 10.00 AM for the day on 30th july 2019. The collector is placed at Bathinda (location is 20° 07' N, 73° 51' E) inclined at an angle of 38° and is facing south.

3. a) Name the various sub-systems of a horizontal axis wind turbine and explain different modes of wind power generation.

   b) Wind at one standard atmospheric pressure and 150c has a speed of 8m/s. A 10m diameter wind turbine is operating at 10 rpm with maximum efficiency of 40%. Calculate :

      i) Total power density in wind stream,

      ii) The maximum power density,

      iii) The actual power density

      iv) The power output of the turbine

      v) The axial thrust on the turbine structure.

4. a) How is geo thermal power generation extracted from geothermal electric power plant?

   b) Wind power source is highly volatile. Discuss the control strategy for wind farm.

5. Discuss the principle of fuel cell. Discuss different types of fuel cell.

6. Explain different types of electric vehicles. Briefly explain Vehicle to grid and grid to vehicle operation.

7. Explain the various solar point collectors. Discuss merits and demerits of concentrating collectors over line collectors.

8. Discuss-about the following :

   a) Double basin arrangement in tidal power generation

   b) Integration of Renewable generation in conventional grid

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.