

Code: EE8T1

**IV B.Tech - II Semester – Regular / Supplementary Examinations
March 2020**

**RENEWABLE SOURCES OF ENERGY
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) Define direct and diffuse radiation.
- b) What is hour angle and solar azimuth angle?
- c) Define terrestrial and extraterrestrial solar radiation.
- d) List out the pyr heliometers.
- e) Define radiation and convection.
- f) Classify horizontal axis wind mills.
- g) What is anaerobic digestion?
- h) What are the advantages of geo thermal energy?
- i) Define spring tides and neap tides.
- j) List out the fuel cells.
- k) Write basic operating principle of MHD system.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Estimate the monthly average of the daily global radiation on a horizontal surface at Agra ($27^{\circ} 10^1$ N, $78^{\circ} 05^1$ E) during the month of January 17, if the average sunshine hour per day is 7h. 8 M
- b) Explain compound parabolic concentrators and central receiver collector with neat sketch. 8 M
3. a) What is the solar pond? Discuss the principle of operation on which the solar pond works. 8 M
- b) Explain the V-I characteristics of a solar cell and define fill factor. 8 M
4. a) List out the advantages and disadvantages of Horizontal axis wind mills and Vertical axis wind mills. 8 M
- b) Discuss about constant pressure type and constant volume type biogas plants with neat sketch. 8 M
5. a) Explain the working of hot dry rock geothermal resource with neat sketch. 8 M

b) Illustrate the working of Ocean wave energy conversion system with neat sketch. 8 M

6. a) Describe the mini-hydel power plant with neat sketch. 8 M

b) List out merits and demerits of different types of fuel cells. 8 M