

Code: EE8T1

**IV B.Tech - II Semester – Regular Examinations – April 2016**

**NONCONVENTIONAL ENERGY SOURCES  
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) Explain extraterrestrial and terrestrial solar radiation with neat sketch. 5 M
  
- b) Estimate the monthly average of the daily global radiation on a horizontal surface at agra ( $27^{\circ} 10' N$ ,  $78^{\circ} 05' E$ ) during the month of January 17, if the average sunshine hour per day is 7 h. (Assume:  $a = 0.25$ ,  $b = 0.57$ ) 9 M
  
2. a) Write comparison between concentrating type and flat plate type collectors. 6 M
  
- b) Classify non concentrating collectors with neat sketch. 8 M
  
3. a) Explain the working of solar pond electric power plant. 7 M
  
- b) Write short notes on solar distillation. 7 M

4. a) Explain construction of poly crystalline cell and amorphous silicon cell. 7 M
- b) Explain charge controller working with neat circuit. 7 M
5. a) Prove that in case of horizontal axis wind turbine maximum power can be Obtained when, exit velocity =  $1/3$ , wind velocity  $P_{\max} = 8/27 \int AV^3$  . 7 M
- b) Classify wind mills. 7 M
6. a) What is the origin of biomass energy? What is its global potential? 7 M
- b) Compare the relative performances of a floating drum and fixed drum type bio-gas plants. 7 M
7. a) Explain in detail about OTEC. 7 M
- b) Explain Hot Dry rocks (petrothermal) resources of geothermal energy and how they can be exploited as a source of energy. 7 M
8. a) Explain the principle of MHD power generation. 7 M
- b) Discuss fuel cell types. 7 M