

Exam.Code:0938  
Sub. Code: 6695

2014  
B.E. (Electrical and Electronics Engineering)  
Eighth Semester  
EE-801: Non-Conventional Energy Sources (NCES)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

- a) What is the need of alternative energy sources.
- b) How seeding helps in power generation through MHDs?
- c) Draw a plane receiver with plane collector type of solar collector.
- d) Write the chemical reactions occurring in Alkaline fuel cells.
- e) List the major requirements of electrolyte in fuel cells. (5x2)

**UNIT - I**

- II. With the help of labeled diagrams, discuss the differences between open and closed type of MHDs? (10)
- III. a) How TEGs are different from conventional generators. What are the properties essential for materials to be used in TEGs. Explain its principle of operation.  
b) Calculate the sun declination for 1<sup>st</sup> Jan 2012 and calculate hour angle at the surface located at latitude of 80 degree South. (2x5)
- IV. Calculate the monthly average of daily extra terrestrial radiation on 21<sup>st</sup> April 2004 for the surface located at a latitude of 60 degree east. (10)

**UNIT - II**

- V. Derive the absolute Gibbs free energy. Discuss in detail, the principle and working of PEMFC. Define enthalpy and entropy? (10)

P.T.O.

(2)

VI. Write short notes on any two of the following:-

- a) Kaplan turbine
- b) Francis turbine
- c) Gibbs free energy (2x5)

VII. What is geothermal energy? What is the plate tectonic theory and how it is linked with the geothermal power plant. List the sites for having good potential of energy generation through this source. (10)

x-x-x