

Exam.Code:0938  
Sub. Code: 6997

1059

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

Max. Marks: 50

Time allowed: 3 Hours

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

x-x-x

I. Attempt the following:-

- What are energy resources and how they are classified?
- List the primary energy sources for direct energy conversion.
- What are properties of thermoelectric materials? Give example.
- Define Gibbs free energy, enthalpy and entropy. (5x2)
- What are the future prospects of solar energy use?

UNIT - I

II. Explain the basic principle of MHD generator. Further, discuss the practical problems associated with MHD power generation? (10)

III. Describe with a neat sketch the construction of thermoelectric generators. Give their application and comment on its economic aspect? (10)

IV. Discuss the principle of solar collector? If the maximum current is  $4 \text{ mA/cm}^2$  and efficiency is 50% for a solar cell of area  $2.4 \text{ cm}^2$  which receives sun rays having energy of  $4\text{eV}$  with an intensity of  $1.8\text{mW/cm}^2$ , then calculate the maximum voltage and the fill factor if the open circuit voltage is about  $1 \text{ V/cm}$  and the short circuit current of  $4\text{mA/cm}^2$ . (10)

UNIT - II

V. Discuss the performance and limitations of various fuel cells available. Describe with a diagram and a brief theory. (10)

VI. Discuss the binary cycle geothermal power plant. What are its limitations and applications? (10)

VII. Explain the method of utilization of a double basin arrangement for tidal energy. What are the requirements for generating power from the energy of tides? Give the potential resources of tidal energy in INDIA? (10)

x-x-x