

Exam.Code:0938
Sub. Code: 6695

2053
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) List the direct and indirect energy conservation techniques.
- b) Derive the relation between seebeck, Peltier and Thompson effect.
- c) Show in drawing, the angle of zenith, azimuth and inclination?
- d) Write the cell reactions for SOFC? Where these cells are used.
- e) State the technology used for hydrogen production for a fuel cell. (5x2)

UNIT - I

II. Discuss the similarities and the differences between the two closed types of MHDs. Which is better and why? How it is a direct energy conversion system that also helps in energy conservation. (10)

III. a) Explain the principle of thermoelectric generators.
b) Find the hour angle for May 12, 2009 for surface inclined at angle 20 degrees facing West in Mumbai. (2x5)

IV. a) A solar cell of 1.2 cm^2 receives solar radiations of 1 eV energy having a solar intensity of 0.4 mW/cm^2 . The voltage across terminals is 0.3 V/cm and the short circuit current is of 4 mA/cm^2 . If the maximum current is 5 mA/cm^2 and efficiency is 60%, then calculate the maximum voltage and the fill factor?
b) State the Hd/Hg ideal values for a clear, hazy day. (8,2)

UNIT - II

V. Derive the expression for Gibbs free energy. Explain the working with chemical reactions for a MCFC? (10)

P.T.O.

(2)

- VI. Draw a general layout of a tidal power plant. List its components and explain the function of each one of them. (10)
- VII. What is the function of surge tank and pen stock in hydropower plant? Explain with diagrams. Why turbines with variable pitch blades are preferred? (10)

x-x-x