

GUJARAT TECHNOLOGICAL UNIVERSITY
M.E. – SEMESTER – IV EXAMINATION – OCTOBER 2012

Subject code: 742101**Date: 25-10-2012****Subject Name: Non-Conventional Energy Conversion Systems****Time: 2:30 pm – 5:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Define the following term: **07**
(1) Solar Constant
(2) Declination
(3) Altitude Angle
(4) Hour Angle
(5) Zenith Angle
(6) Beam Radiation
(7) Global Radiation
- (b)** Explain with neat sketch working of Pyranometer? **07**
- Q.2 (a)** State the main component of flat plate collector? Explain the working of a liquid flat plate collector? **07**
- (b)** Write a short note on Photo Voltaic Cell? **07**
- OR**
- (b)** Explain Focusing on concentrating collectors, their advantages and disadvantages over flat plate collector. **07**
- Q.3 (a)** Discuss the factor affecting the Biogas Production in Detail. **07**
- (b)** Discuss the factors affecting site selection of wind mills. **07**
- OR**
- Q.3 (a)** Explain the working of floating dome type biogas plant with neat sketch. **07**
- (b)** Derive an expression for maximum power for wind mill. **07**
- Q.4 (a)** Explain MHD power Generation. State design problems, advantages and disadvantages associated with MHD. **07**
- (b)** Explain principle of operation and design consideration of fuel cells **07**
- OR**
- Q.4 (a)** Explain advantages, disadvantages and application of fuel cell. **07**
- (b)** Explain hydrogen as alternative fuel. **07**
- Q.5 (a)** Explain storage and transportation of Hydrogen Fuel. **07**
- (b)** Discuss advantages and disadvantages of biological conversion of solar energy. **07**
- OR**
- Q.5 (a)** Discuss Recent trends in direct energy conversion systems. **07**
- (b)** Explain the basic principles of wind energy conversion. Compare horizontal axis wind mill and vertical axis wind mill. **07**
