

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VI • EXAMINATION – WINTER 2013**

**Subject Code: 161904****Date: 06-12-2013****Subject Name: Alternate Energy Sources****Time: 02:30 pm to 05:00 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 terms with necessary sketch. **07**  
 1.Solar declination angle 2.Hour angle 3.solar Zenith angle 4.Solar incident angle.
- (b)** Define Sun rise hour angle, also calculate the day length in Ahmedabad ( $23^{\circ}$  N) on 22<sup>nd</sup> December and 22<sup>nd</sup> March. **07**
- Q.2 (a)** What is Solar still? Explain Solar still with neat sketch. **07**  
**(b)** List different types of concentrating collector. Explain any one with figure. **07**
- OR**
- (b)** Discuss the working of compound parabolic concentrator (CPC) and state its advantages and disadvantages. **07**
- Q.3 (a)** Classify wind mills and explain horizontal axis wind mill. **07**  
**(b)** Discuss various factors for site selection to establish wind power plant. **07**
- OR**
- Q.3 (a)** Explain fixed dome type domestic biogas plan with neat sketch. **07**  
**(b)** What is MHD? What are the various types of it? Explain any one of them. **07**
- Q.4 (a)** Explain principle open cycle OTEC system with suitable diagram. **07**  
**(b)** What are the advantages and disadvantages of Geothermal energy forms? **07**
- OR**
- Q.4 (a)** Write short note on : Tidal power plant with double basin system. **07**  
**(b)** Explain briefly construction and working of sun shine recorder. **07**
- Q.5 (a)** What are the co-general plants? Explain the different between bottoming and topping cycle **07**  
**(b)** Describe with neat sketch 'solar water heater. **07**
- OR**
- Q.5 (a)** Explain about Phosphoric Acid Fuel Cell(PAFC). **07**  
**(b)** Discuss Hydrogen as alternative fuel for motor vehicle. **07**

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