

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI • EXAMINATION – SUMMER 2013****Subject Code: 161904****Date: 03-06-2013****Subject Name: Alternate Energy Sources****Time: 10.30 am - 01.00 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) Describe advantages and drawbacks of Solar Energy Utilization. **07**  
 (b) Explain the principle of working of a Pyrheliometer with a neat sketch. **07**
- Q.2** (a) Describe the working of a flat plate collector using air as working fluid with the help of a neat sketch. **07**  
 (b) Define the following terms **07**  
 Zenith angle (ii) Concentration ratio  
 (iii) Instantaneous collector efficiency  
 OR  
 (b) Explain the different heat losses in Flat plate Collector. **07**
- Q.3** (a) Describe the construction and working of a passive space heating system with a schematic diagram. **07**  
 (b) Explain construction and working of forced convection solar dryer with figure. **07**  
 OR
- Q.3** (a) Derive an expression for maximum power, maximum torque and maximum axial thrust available from a wind turbine from basic principles. **07**  
 (b) Explain working of horizontal axis wind generator with the help of a schematic diagram. **07**
- Q.4** (a) Describe biochemical conversion of biomass into liquid and gaseous fuels. **07**  
 (b) Describe the working of a floating dome type biogas plant with the help of neat figure. **07**  
 OR
- Q.4** (a) Describe the advantages and disadvantages of OTEC system **07**  
 (b) Describe the utilization of vapour dominated hydrothermal fluid for power generation with a neat sketch. **07**
- Q.5** (a) Enumerate the advantages and disadvantages of MHD systems. **07**  
 (b) Describe the energy audit of illumination system. How the energy can be conserved in such systems? **07**  
 OR
- Q.5** (a) Discuss about the basic principles of Energy Management **07**  
 (b) Explain with figure the single basin type tidal power plant. **07**

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