

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (OLD) EXAMINATION – WINTER 2018****Subject Code:161904****Date: 30/11/2018****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 different seven solar angles with neat sketch. **07**  
(b) Explain the principle of working of a Pyrheliometer with a neat sketch. **07**

- Q.2** (a) How are the concentrating collectors classified? With neat sketch explain construction and working of any one. **07**  
(b) Determine the number of day light hours in Shrinagar on 6th January and 6th July. Latitude : 36 degree 05 Minutes. **07**

**OR**

- (b) Explain the different heat losses in Flat plate Collector. **07**
- Q.3** (a) List advantages and disadvantages of Geothermal energy as compared to Wind and Solar energy. **07**  
(b) Explain working of horizontal axis wind generator with the help of a schematic diagram. **07**

**OR**

- Q.3** (a) Explain in detail site selection criteria for biogas plant and list digester design consideration. **07**  
(b) Explain open cycle MHD with neat sketch. **07**
- Q.4** (a) Discuss the factors which affect the bio gas production in detail **07**  
(b) What are the conventional and non conventional energy sources ? Describe briefly. **07**

**OR**

- Q.4** (a) Draw neat labeled sketch only of the following : **07**  
(i) Solar still (ii) Solar cooker  
(b) Explain following terms: - Energy conservation, Energy management, Energy audit, Energy efficiency, Energy security. **07**
- Q.5** (a) Discuss the advantages and disadvantages of OTEC system. **07**  
(b) Derive an expression of energy and power in simple single basin tidal power plant. **07**

**OR**

- Q.5** (a) Write a short note on Tidal power plant with double basin system. **07**  
(b) State the methods of waste heat utilization and explain any one. **07**

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