

**B.Tech. - VIEP - MECHANICAL ENGINEERING  
(BTMEVI)**

**Term-End Examination**

**June, 2017**

**00304**

**BIMEE-003 : NON-CONVENTIONAL ENERGY  
RESOURCES**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Answer any **five** questions. All questions carry equal marks.*

1. (a) State the various sources of energy which are being exploited globally. Explain how water power is used to convert its energy into electricity. 7
- (b) Explain solar constant and solar radiations on earth. How are measurement of solar radiations carried out ? Describe. 7
2. (a) What is a pyranometer ? How is it used to measure solar radiation ? Explain. 7
- (b) State the photovoltaic effect and discuss the application of a photovoltaic system. 7

3. (a) Explain the working of a paraboloid concentrating solar collector with a neat sketch. 7
- (b) What are the main parts of a liquid flat-plate collector ? What are its advantages and disadvantages over the other types of solar collectors ? 7
4. (a) How is biogas transported ? What are its applications ? 7
- (b) Differentiate between the aerobic and anaerobic bio-conversion processes. 7
5. (a) What are the basic design principles of a windmill ? Discuss the aerodynamic considerations for a windmill. 7
- (b) Explain the working principle of an acidic fuel cell with the help of a neat sketch. 7
6. (a) What is meant by geothermal energy ? What are the problems associated with the conversion of geothermal energy into electrical energy ? 7
- (b) Discuss the physico-chemical properties of hydrogen. What are the problems associated with the use of hydrogen as a fuel ? 7

7. Write short notes on any **four** of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Producer Gas
  - (b) Fusion Plasma Generation
  - (c) Greenhouse Effect
  - (d) Selection of Windmill
  - (e) Efficiency and EMF of Fuel Cells
  - (f) Storage and Transportation of Hydrogen
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