

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

**Term-End Examination**

**June, 2018**

**00993**

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

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. (a) State various sources of energy which are being exploited globally. Explain how hydropower is used to convert its energy into electrical energy. 7
- (b) What is meant by solar concentrating collector ? With the help of a schematic diagram, explain the working of a paraboloid concentrating solar collector. 7
2. (a) What is Pyranometer ? Describe its working principle with the help of diagram. 7

- (b) Define (i) Declination angle (ii) Surface azimuth. Show the variations in declination angle at a given location over the year. Also state the reason for variations. 7
3. (a) What is a solar cell ? Explain the working of a solar cell with the help of a block diagram. 7
- (b) Describe the solar photovoltaic system and its standards. 7
4. (a) Name the constituents of producer gas. Explain the process of bio-mass gasification with the help of a neat diagram. 7
- (b) Explain how power is generated from liquid waste. 7
5. (a) Explain the availability of wind energy in India and recent developments to make it useful. 7
- (b) Compare between acidic and alkaline hydrogen-oxygen fuel cells. 7

6. (a) Explain how tidal energy can be converted into electrical energy with a suitable sketch. 7
- (b) Discuss physico-chemical properties of hydrogen. What are the problems encountered with the use of hydrogen fuel? 7
7. (a) Discuss various factors affecting the selection of the site for geothermal power plants. 7
- (b) What is Thermoelectric OTEC? What are the advantages and limitations of OTEC? Discuss. 7
8. Write short notes on any *four* of the following :  $4 \times 3 \frac{1}{2} = 14$
- (a) Hydrogen Energy Systems
  - (b) Solar Radiation Geometry
  - (c) Tracking CPC and Solar Swing
  - (d) PV Hybrid System
  - (e) Community Biogas Plants
  - (f) Efficiency and EMF of Fuel Cells