

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

**Term-End Examination**

00521

**June, 2019**

**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) Differentiate between beam radiation and diffused radiation. List various types of instruments used to measure beam radiation. Explain any one of them with neat sketch.
- (b) Explain the concentrating type collector system with the help of a neat diagram. Discuss their advantages and disadvantages. 7+7
2. (a) Define biomass and biomass energy. Discuss various biomass resources with examples.
- (b) Explain the “photosynthesis” process. What are the conditions which are necessary for it? 7+7

3. (a) Describe a vertical axis wind turbine with a suitable diagram. What are their advantages over horizontal axis turbines ?
- (b) Describe hydrogen-oxygen fuel cell with the help of neat sketch. Also write the reactions involved. 7+7
4. (a) Analyse the working of thermoelectric generator. What is the basic difference between thermoelectric and thermionic conversion systems ?
- (b) What do you mean by dry, wet and hot water geothermal systems ? Discuss the field of application of these systems. 7+7
5. (a) Discuss the advantages and limitations of a hydroelectric power plant.
- (b) Explain the principle of working of an acid-fuel cell with the help of a neat sketch. 7+7
6. (a) Discuss how tidal energy can be converted into electrical energy.
- (b) Explain the solar passive space cooling system through ventilation, with the help of a schematic diagram. 7+7

7. (a) What is meant by anaerobic digestion ?  
What are the factors which affect bio-digestion ? Explain.
- (b) What is a pyranometer ? How is it used to measure solar radiation ? Explain. 7+7
8. Write short notes on any *two* of the following : 2×7=14
- (a) Storage and transportation of hydrogen
- (b) Declination angle and Surface azimuthal angle
- (c) Cost of electricity production from different energy sources
- (d) Solar photo-voltaic cells
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