

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

00096

Term-End Examination

June, 2015

**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 various sources of energy which are being exploited globally. Explain how water power is used to convert its energy into electricity. 7
- (b) Define the terms (i) direct or beam radiation (ii) diffused radiation and (iii) global or total radiation. Explain the procedure of measurement of solar radiation. 7

2. (a) What is meant by declination angle and surface azimuth angle ? Show the variations in declination angle at a given location over the year. 7
- (b) Describe in detail the apparent motion of the Sun. 7
3. (a) Name the various devices used as solar collectors. Explain the construction and working of a cylindrical parabolic concentrating collector. 7
- (b) What is meant by solar pond ? Explain the working of a solar pond with the help of a schematic diagram. 7
4. (a) What is a solar cell ? Explain the principle of working of a solar cell. 7
- (b) Explain the principle of working of an acidic fuel cell with the help of a neat sketch. 7
5. (a) Name the constituents of producer gas. Explain the process of bio-mass gasification with the help of a neat diagram. 7
- (b) Discuss the various problems that are involved in the production of bio-gas. 7
6. (a) What are the basic design principles of a windmill ? Discuss the aerodynamic considerations for a windmill design. 7
- (b) Explain how tidal energy can be converted into electrical energy. 7

7. (a) What is meant by geo-thermal energy ?
What are the problems associated with the
conversion of geo-thermal energy into
electrical energy ? 7
- (b) Briefly describe the properties of
thermoelectric materials. 7
8. Write short notes on any *two* of the
following : 2×7=14
- (a) Solar photo voltaic cells
- (b) Hydrogen as a source of renewable energy
- (c) Cost of electricity production from different
energy sources
- (d) Energy option for Indian economy
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