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BIMEE-003

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

Term-End Examination

00473

December, 2018

BIMEE-003 : NON-CONVENTIONAL ENERGY RESOURCES

Time : 3 hours *Maximum Marks : 70*

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

1. (a) What is meant by renewable energy sources ? Explain the importance of these energy sources with special reference to the Indian context.

(b) Discuss the working principle of a solar power plant using solar pond with the help of a neat sketch. 7+7

2. (a) Explain photovoltaic effect. What are the advantages and disadvantages of photovoltaic solar energy conversion ?

(b) What is a fuel cell ? Explain the working principle and operation of alkaline fuel cell. 7+7

3. (a) Define fusion power and plasma. State the cycles which can be used practically for fusion plasma generator.

(b) Explain the working of horizontal axis wind generator with the help of a suitable diagram. 7+7

4. (a) State various sources of energy which are being exploited globally. Explain how water power is used to convert its energy into electricity.

(b) Define the following terms :

(i) Direct or beam radiation

(ii) Diffused radiation

(iii) Global or total radiation

Explain the procedure of measurement of solar radiation. 7+7

5. (a) Name the constituents of producer gas. Explain the process of bio-mass gasification with the help of a neat diagram.

(b) Discuss the various problems that are involved in the production of bio-gas. 7+7

6. (a) Explain the working of vapour dominated geothermal power plant.

(b) Describe the various criteria used in the selection of the site for wind energy conversion system. *7+7*

7. (a) Explain p-type and n-type semiconductors with simple sketches. How are p-n junctions formed ? What is their utility ?

(b) What is solar greenhouse ? Differentiate between the active and passive greenhouses. *7+7*

8. Write short notes on any ***two*** of the following : *2×7=14*

(a) Ocean Thermal Energy

(b) Hydrogen as a Source of Renewable Energy

(c) Energy Option for Indian Economy

(d) Nuclear Energy