

**8E4112**

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**8E4112****B.Tech. VIII Semester (Old Back) Examination, April/May - 2017****Electrical and Electronics Engg.****8EX4.3 (O) Non Conventional Energy Sources****EE & EX****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates:**

Attempt any *five* questions, selecting *one* question from *each* unit. All Questions carry *equal* marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

**Unit-I**

1. a) What is role of renewable energy sources in present time for our country? (8)
- b) What are the advantages and limitations of "tidal power generation"? (8)

**OR**

1. a) Mention the various conventional energy sources. Also write a short note on each source. (2+6=8)
- b) Discuss the prospects of tidal energy in India. (8)

**Unit-II**

2. a) Explain the construction and working of a flat plate collector. Discuss the material used for different parts of flat plate collector. (6+2=8)
- b) Discuss different components of a basic solar power plant. What are its advantages over conventional power generation. (5+3=8)

**OR**

2. a) Enumerate the different types of concentrating type collectors. Describe a collector used in power plant for generation of electrical energy. (2+6=8)
- b) Explain the following terms related to solar radiation geometry :  
Declination, Hour angle, Attitude angle, Zenith angle, Surface Azimuth angle, Solar Azimuth angle, day length, Local Apparent time. (1×8=8)

### Unit-III

3. a) Describe with neat sketch working of a geothermal power plant. (8)  
b) What is the maximum efficiency of conversion of wind machine? Discuss its principle of conversion. (3+5=8)

OR

3. a) Describe basic components of a wind energy conversion system. Write their functions. (4+4=8)  
b) i) How geothermal energy is useful for application point of view. (4)  
ii) Write the advantages of geothermal energy. (4)

### Unit-IV

4. a) What is fusion reaction? What are the main fusion reactions? Which one is the most favourable reaction for power generation and why? (2+2+4=8)  
b) What are the advantages and disadvantages of using nuclear fusion for power generation? (8)

OR

4. a) Describe various methods of Plasma confinement. (8)  
b) Describe with neat sketch the working of laser fusion reactor. (8)

### Unit-V

5. a) Explain the construction details and working of floating gas holder type bio gas plant. (4+4=8)  
b) What is biomass? Explain the thermo-chemical conversion technologies of biomass. (2+6=8)

OR

5. a) Explain the construction and operation of Dean Bandhu biogas plant. (4+4=8)  
b) Write short note on : (4+4=8)  
i) Pyrolysis scheme  
ii) Ethanol production

