

**8E4049**

B. Tech. (Sem. VIII) (Back) Examination, February/March - 2011  
 Mechanical Engg.  
 8ME1 : Renewable Energy Technology

Time : 3 Hours]

[Total Marks : 80

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[Min. Passing Marks : 24

*Attempt any five questions. Selecting one question from each unit.*

*All questions are carrying equal marks.*

*(Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.)*

Use of following supporting material is permitted during examination.

*(Mentioned in form No. 205)*

1. \_\_\_\_\_ Nil

2. \_\_\_\_\_ Nil

**UNIT - I**

- 1 (a) What are the forms and sources of energy? List some reasons for why non conventional sources are preferred? 8
- (b) Give function and classification of solar energy collectors. Describe flat plate collectors. 8

OR

- 2 (a) What are the application of solar thermal energy? Describe following with diagram :  
 (i) Solar water heater  
 (ii) Solar drier. 8
- (b) What is the principle of photovoltaic conversion of solar energy. Give advantages, disadvantages and types of solar cells. 8

**UNIT - II**

- 3 (a) Briefly describe the solar thermal power generation system. 8
- (b) Describe Wind Energy and its characteristics. What are the factors that influence wind. 8

OR



- 4 (a) Describe following terms.  
Wind shear, Turbulence, Wind speed monitoring, Betz limit. 8
- (b) What is Wind Energy Conversion Systems (WECS), its classification, characteristic and applications. 8

### UNIT - III

- 5 (a) What are the sources of Ocean Energy? What is the principles of Ocean Thermal Energy Conversion system (OTEC) describe closed cycle OTEC system. 8
- (b) Explain with sketches the various method of tidal power generation. What are the limitation of each method. 8

OR

- 6 (a) Write short note on :  
(i) Ocean Wave Energy Conversion  
(ii) Tidal Energy Conversion. 8
- (b) List Wave Energy Conversion devices. Describe one of them. 8

### UNIT - IV

- 7 (a) What is geothermal energy? What are the sources of geothermal energy? What types of site selection for that? 8
- (b) How Biomass conversion takes place? Explain Biomass conversion processes briefly. 8

OR

- 8 (a) What is Principal of MHD power generation? How MHD system is classified? Describe MHD open cycle system. 8
- (b) Explain following :  
(i) Photosynthesis  
(ii) Chemical constituents and physicochemical characteristic of biomass. 8



## UNIT - V

- 9 (a) What are the production method of Hydrogen? Describe fitter press electrolyzer method with diagram. 8
- (b) What is thermodynamic and electrochemical principles of fuel cell. Describe basic design of fuel cell. 8

OR

- 10 Write short notes on :
- (a) Nuclear fusion and fission
- (b) Types and application of fuel cell
- (c) Biomass resources and its classification
- (d) Water pumping by Solar Energy.

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