8E4049

Roll No. : _____ Total Printed Pages : 3

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

Time : 3 Hours] [Total Marks : 80
[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 flate plate collectors. 8

OR

2 (a) What are the application of solar thermal energy? Describe following with diagram :
(i) Solar water heater
(i) 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. 16