

8E4049

Roll No. : _____

Total Printed Pages : 3

8E4049

B. Tech. (Sem. VIII) (Main/Back) Examination, April/May -2012

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 carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be 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 advantages and limitation of renewable energy sources ? 4
- (b) What are the conclusions on alternate Energy Strategies ? 4
- (c) Which instruments are used for measuring normal incident beam radiation ? Describe with neat diagram. 8
- 2 (a) What is the significance of solar collectors ? Give classification of solar collector. Also explain Typical Liquid Collector with neat sketches. 8
- (b) Explain following :
- (i) Solar water heaters
- (ii) Solar cells and its fabrication. 8

8E4049]



1

[Contd...

UNIT - II

- 3 (a) What is the principle of solar photovoltaic power generation ?
What are the main elements of a P-V system ? 8
- (b) Describe the main consideration in selecting site for wind
generators. What is the principle of wind energy conversion ? 8
- 4 (a) How WEC systems are classified with neat sketch of working of
wind energy systems with main components ? 8
- (b) Explain following :
(i) Wind Speed Monitoring
(ii) Betz Limit
(iii) Advantages and disadvantages of WECS system. 8

UNIT - III

- 5 (a) What is the principle of ocean thermal energy conversion
system ? What will be the Site Selection requirement ? 6
- (b) Describe the methods of ocean thermal power generation with
neat diagram. 10
- 6 (a) Explain with sketches the various methods of tidal power
generation. What are the limitation of each method? 10
- (b) What is the principle of tidal energy conversion ? What are the
difficulties in Tidal power developments ? 6

UNIT - IV

- 7 (a) Give brief introduction of geothermal energy. What are the
categories of geothermal resources ? Explain hydrothermal
(convective) resources with neat diagram. 8
- (b) Write short notes on :
(i) Magneto - Hydro - dynamic Energy Conversion.
(ii) Site selection for geo-thermal energy. 8



- 8 (a) How biomass conversion takes place ? Differentiate between biomass and biogas. List out the biomass conversion technologies. 6
- (b) Write short notes on :
(i) Biochemical conversion
(ii) Dry processes. 10

UNIT - V

- 9 (a) Give classification of biogas plants. Explain contineaus and batch type plant with neat diagram. 8
- (b) What is fuel cell and describe its application briefly. What are the desired properties of an ideal Ion-Exchange membrane electrolyte. 8
- 10 (a) Classify the fuel cell and describe design and principle of working of fuel cell with reference to H_2-O_2 cell. Also give advantages and disadvantages. 8
- (b) Write short notes on :
(i) Economics of hydrogen
(ii) Production methods of hydrogen. 8

