2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice. important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.

Eighth Semester B.E. Degree Examination, June/July 2011

Renewable Energy Sources

Time: 3 hrs. Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART-A

- a. What is meant by renewable energy sources? Explain in brief these energy sources with special reference to Indian context. (10 Marks)
 - b. Explain the significance of energy consumption as a measure of prosperity. (05 Marks)
 - c. What are the advantages and limitations of renewable energy sources? (05 Marks)
- 2 a. Define the following with respect to solar radiation:
 - i) Latitude angle
- ii) Altitude angle
- iii) Hour angle

- iv) Zenith angle
- v) Azimuth angle.

- (10 Marks)
- b. What are the two basic types of instruments employed for the measurement of solar radiation? Give an example for each and describe them with neat diagrams. (10 Marks)
- a. Explain the principle of conversion of solar energy into heat. Explain with a neat diagram, how this is employed in flat plate collectors. (10 Marks)
 - b. Classify the different methods of storing solar energy. Describe thermal energy storage system. (10 Marks)
- 4 a. Explain the property of the power generation. What are the main elements of PV system? (10 Marks)
 - b. With the help of neat diagrams, describe the principle and working of a central receiver system.

 (10 Marks)

PART-B

- a. With the help of neat diagrams, explain the working of a wind energy conversion system for generation of electricity. (10 Marks)
 - b. With usual notations, derive an expression for the maximum power output of a horizontal axis wind turbine. (10 Marks)
- 6 a. How are biogas plants classified? Explain them briefly.

(10 Marks)

b. What are the factors affecting biogas generation?

- (04 Marks)
- c. What are the different models of biogas plants in India? Explain briefly any one model.

(06 Marks)

- 7 a. Discuss the basic principle of OTEC plants. Explain in brief the main types of OTEC systems.

 (10 Marks)
 - b. With a simple diagram, explain the working of a tidal power plant.

(06 Marks)

c. List the advantages and limitations of OTEC plants.

(04 Marks)

Write short notes on:

(20 Marks)

a. Wave energy

b. Applications of wind power

c. Fuel cell

d. Stand-alone solar PV systems