

Code: EE8T1

**IV B.Tech - II Semester – Regular / Supplementary Examinations  
March 2019**

**RENEWABLE SOURCES OF ENERGY  
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

**PART – A**

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) What are the instruments used for measuring solar radiation and sunshine.
- b) What are the important performance indices of a solar collector?
- c) List out any three solar applications.
- d) What is meant by solar pond?
- e) What are the various types of wind mills?
- f) Explain the Principle of Bio-Conversion.
- g) What are the types of OTEC Plants?
- h) Define Tidal range?
- i) List the advantages of using Fuel cells.
- j) What is the difference between MHD generators and conventional generators?
- k) Name two green house gases responsible for global warming.

## PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) What is solar power. Discuss the environmental impact of solar power in India. 8 M

b) Draw a neat sketch of solar flat plate collector and explain its working principle. Mention the advantages and disadvantages of flat plate collector. 8 M

3. a) Describe the solar water heating system with the help of a neat diagram. 8 M

b) Discuss the different methods of Solar Energy storage system. 8 M

4. a) Prove that in horizontal axis wind turbine maximum-power can be obtained when Exit velocity= 1/3 wind velocity.

$$P_{max} = \frac{8}{27} A V_i^3 \quad 8 M$$

b) Distinguish between Fixed and Float drum Bio-gas digesters. 8 M

5. a) Explain the principle of operation of open cycle OTEC system. 8 M

b) What is the source of tidal energy? What is the minimum tidal range required for the working of tidal plant. How much is the potential in tides. 8 M

6. a) Explain the principle of operation of a fuel cell. What are the electrochemical principles and thermodynamics involved in the working of a fuel cell. 8 M

b) Discuss about the mini- hydel power plant and their economics. 8 M