

Code No: RT41021

R13**Set No. 1****IV B.Tech I Semester Supplementary Examinations, February/March - 2018****RENEWABLE ENERGY SOURCES AND SYSTEMS****(Electrical and Electronics Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

PART-A (22 Marks)

1. a) Write a note on terrestrial solar radiation. [4]
- b) List out some of the advantages of solar thermal energy. [4]
- c) Explain the various aspects that need to be considered for PV System design. [4]
- d) Discuss some of the limitations of synchronous generator used in wind turbine system. [4]
- e) Compare wave energy with tidal energy. [3]
- f) What is the significance of a fuel cell? [3]

PART-B (3x16 = 48 Marks)

2. a) Discuss the renewable energy scenario in India and list its advantages over other Renewable Sources. [8]
- b) Explain about solar radiation on tilted surface and give its advantages over concentrating surfaces. [8]
3. a) Draw a neat sketch of solar flat plate collector and explain its working principle. [8]
- b) Discuss the advantages and disadvantages of flat plate collector. [8]
4. a) Draw and explain the P-V and I-V characteristics of the PV System for different Input quantities of irradiance and temperature. [8]
- b) Explain the significance of MPPT methods with respect to the PV System performance and illustrate any one MPPT method. [8]
5. a) Explain the operation wind energy system with a neat sketch [8]
- b) Discuss the merits and demerits associated with wind energy systems. [8]
6. a) Explain the principle of operation of wave power generation with a neat sketch. [8]
- b) Derive the kinetic energy equation associated with wave power. [8]
7. a) Explain the process of power generation from a geothermal power plant. [8]
- b) Discuss about various applications of geothermal energy systems, and its usage. [8]