

Eighth Semester B.E. Degree Examination, June/July 2016

Renewable Energy Sources

Time: 3 hrs.

Max. Marks: 100

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

PART - A

- 1 a. List the difference between renewable and nonrenewable energy sources (08 Marks)
b. What are the advantages and limitations of renewable energy sources? (06 Marks)
c. Explain briefly the Indian Energy Scenario. (06 Marks)
- 2 a. What is difference between pyr heliometer and pyranometer? Describe the principle of Angstrom type pyr heliometer. (10 Marks)
b. Define the terms: i) Altitude angle, ii) Zenith angle and iii) Declination angle. (06 Marks)
c. Calculate the day length on a horizontal surface at New Delhi (28°35'N, 77°12'E) on December 1st. (04 Marks)
- 3 a. With a neat diagram, explain the working principle of solar water heater. (06 Marks)
b. State the advantages and disadvantages of concentrated collector over flat plate collector. (04 Marks)
c. Classify the different methods of storing solar energy. Describe thermal energy storage systems. (10 Marks)
- 4 a. With a neat diagram, explain solar water pumping systems. (08 Marks)
b. What are the major advantages and disadvantages of solar PV systems? (04 Marks)
c. With the help of neat diagrams, describe the principle and working of central receiver system. (08 Marks)

PART - B

- 5 a. What is basic principle of wind energy conversion system? Classify the wind energy conversion system. (04 Marks)
b. With a neat block diagram, explain the basic components of WECS. (08 Marks)
c. With usual notations, derive an expression for the maximum power output of wind turbine. (08 Marks)
- 6 a. What are the factors affecting biogas generation? (04 Marks)
b. With a neat diagram, explain KVIC biogas plant. (10 Marks)
c. What are the advantages and disadvantages of floating drum type plant? (06 Marks)
- 7 a. Explain the working of single basin Tidal plant. (06 Marks)
b. With a suitable diagram, explain the working of open cycle OTEC for ocean thermal energy. (10 Marks)
c. What are the advantages and limitations of wave energy conversion systems? (04 Marks)
- 8 a. Describe the classification of fuel cell. With a neat sketch, explain the working of fuel cell. (08 Marks)
b. Explain various methods of production of hydrogen for the use of energy carrier. (06 Marks)
c. What are the advantages and disadvantages of small hydropower plants? (06 Marks)

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