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10EE836

Eighth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Renewable Energy Sources

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. List the differences between Renewable and Non – renewable energy sources. (08 Marks)
b. What are the advantages and limitations of renewable energy sources? (06 Marks)
c. Explain in brief the availability of energy sources. (06 Marks)
- 2 a. With a neat diagram, explain Pyranometer used for measuring global radiation. (08 Marks)
b. Define i) Solar constant ii) Declination and iii) Hour angle. (06 Marks)
c. Determine the local solar time and declination at a location latitude $23^{\circ} 15' N$, Longitude $77^{\circ} 30' E$ at 12.30 IST on June 19. Equation of time correction is given from a chart is $-(1' 0'')$. (06 Marks)
- 3 a. List the advantages and disadvantages of concentrating collector over flat plate collector. (08 Marks)
b. Write short notes on any two of the following : (12 Marks)
i) Solar water heater ii) Solar Drier iii) Solar furnaces iv) Solar cookers.
- 4 a. With a neat diagram, explain solar water pumping system. (06 Marks)
b. Explain the significance of solar energy storage. (06 Marks)
c. Write short notes on : i) Solar pond and ii) Solar photovoltaic. (08 Marks)

PART – B

- 5 a. Derive an expression for Power in the wind. (06 Marks)
b. With a block diagram, explain the basic components of wind energy conversion system. (08 Marks)
c. List the advantages and disadvantages of wind energy conversion system. (06 Marks)
- 6 a. List and explain the factors affecting biodigestion. (10 Marks)
b. With a neat diagram, explain the KVIC model biogas plant. (10 Marks)
- 7 a. With a neat diagram, explain the principle of ocean thermal energy conversion system. (10 Marks)
b. With a neat diagram, explain the principle of tidal power generation. (10 Marks)
- 8 a. Explain the principle of energy generation using fuel cells. (08 Marks)
b. Write short notes on : i) Hydrogen energy ii) Wave energy. (12 Marks)
