

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. I Year (EEE) I-Semester (Make Up) Examinations, May-2015
(Power Systems & Power Electronics)

Renewable Energy Sources

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE questions from Part-B

Part-A (10 X 2=20 Marks)

1. Mention the advantages of fuel cell.
2. Define (a) hour angle (b) zenith angle.
3. Write the advantages of concentrating collectors over flat-plate collectors.
4. Illustrate the significance of the Tip Speed Ratio (TSR) in WECS.
5. Write the advantages of the vertical axis wind mill.
6. Briefly explain how biomass conversion takes place.
7. With the help of graph show how temperature affects biogas generation.
8. List the advantages of wave energy conversion system.
9. List out the limitations of renewable energy sources.
10. Define a geothermal source.

Part-B (5 X 10 = 50 Marks)

(All bits carry equal marks)

11. a) With the help of a figure and chemical equations involved explain the principle of operation of Molten carbonate fuel cell.
b) Discuss briefly about the polarization in fuel cells and also explain briefly about concentration polarization.
12. a) Enumerate the different main applications of a solar energy. Describe a hot water supply system.
b) Write short notes on solar distillation.
13. a) Describe with a neat sketch the working of WECS with main components.
b) Derive an expression for maximum power available from horizontal axis propeller type wind machine.
14. a) What are the main types of OTEC power plants? Describe their working in brief.
b) Describe a liquid dominated double flash steam system. List the advantages of double flash system?
15. a) What is meant by anaerobic digestion? List the factors which affect bio-digestion? Explain them briefly.
b) What are advantages and disadvantages of floating drum biogas plant?
16. a) Explain the process of photosynthesis with chemical reactions. List the conditions that are necessary for it.
b) Discuss advantages and disadvantages of horizontal axis wind mill.
17. a) What is difference between pyrheliometer and a pyranometer? Describe the principle of Angstrom type pyrheliometer.
b) Derive an expression for energy and power in a simple single basin tidal system.