M.E. DEGREE EXAMINATIONS: JANUARY 2011
First Semester
POWER ELECTRONICS AND DRIVES
PED569: Renewable Energy Resources

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions: -
PART A (10 x 2 = 20 Marks)

1. What do you understand by sustainable development?
2. What are the primary sources of energy?
3. Define Solar Constant.
4. What is photovoltaic effect?
5. How do you classify the circulation of winds on the earth's surface?
6. What is Betz limit?
7. What are the different schemes of ocean tidal energy conversion?
8. What are the different technologies available for ocean thermal energy conversion?
9. What are the properties of hydrogen that make it a potential energy carrier in future?
10. What are the major advantages of a MHD generator?

PART B (5 x 16 = 80 Marks)

11. (a) Explain in detail about the scientific principles of renewable energy.
(OR)
  (b) What are the technical implications of renewable energy resources?

12. (a) With neat sketches, explain the operation of different types of flat plate and concentrating type of solar collectors.
(OR)
  (b) What is the principle of solar photovoltaic power generation? Explain a basic PV system integrated with the utility grid, with necessary block diagrams.

13. (a) Derive an expression for power extracted from wind using the Betz model, and explain what is Betz limit?
(OR)
  (b) What are the different types of wind turbines? Explain the operation of a horizontal axis wind turbine (HAWT) with neat diagrams.

14. (a) With block diagrams, explain the operation of both open and closed type Ocean Thermal energy conversion (OTEC) technology.
(OR)
  (b) Discuss about the ocean tidal energy conversion schemes.

15. (a) Explain the various methods of production of hydrogen for use as energy carrier.
(OR)
  (b) With neat sketches, discuss about the operation of open cycle and closed cycle MHD systems.

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