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Question Paper Code : 82123

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Elective

Power Electronics and Drives

PE 9272/ PE 972/ 10233 PEE 51/ 10233 PSE 62 — POWER ELECTRONICS FOR
RENEWABLE ENERGY SYSTEMS

(Common to M.E. — Electrical Drives and Embedded Control/ M.E. — Power
Management/ M.E. — Power Systems Engineering)

(Regulation 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the various renewable energy resources.
2. Give any two environmental aspects of electric energy conversion.
3. Define reference theory.
4. What is meant by DFIG.
5. What are the advantages of Boost and buck converter?
6. What is meant by matrix converters?
7. List out the grid connection issues?
8. Define grid integrated solar system.
9. What is the need of hybrid systems?
10. Give the range of hybrid systems.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the qualitative study of different renewable energy resources. (16)

Or

- (b) Explain the impacts of renewable energy generation on environment. (16)

12. (a) With neat diagram, explain the principle of PMSG and analyze in detail. (16)

Or

- (b) Explain the operation of SCIG in details with proper analysis. (16)

13. (a) Explain the principle and operation of line commutated converters in inverse mode. (16)

Or

- (b) (i) Explain the three phase uncontrolled rectifiers in detail. (8)
(ii) Write short note on PWM inverters. (8)

14. (a) Explain in detail of the stand alone operation of fixed and variable speed energy conversion system. (16)

Or

- (b) Write short note on
(i) Grid integrated PMSG. (8)
(ii) SCIG based WECS. (8)

15. (a) Explain the case studies of wind. (16)

Or

- (b) Briefly explain the maximum power point tracking system. (16)