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Question Paper Code: 31387

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Elective

Electrical and Electronics Engineering

01UEE921 - POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What are the environmental aspects of electric energy conversion?
2. Give the methods of ocean thermal electric power generation.
3. What is reference frame transformation?
4. What are the advantages of DFIG?
5. What are the guiding factors for selection of inverter?
6. List the limitations of matrix converter.
7. List out the major issues of grid integrated renewable systems.
8. What are the draw backs of stand-alone solar system.
9. List the factors influencing the control algorithm for MPPT.
10. Write about the types of hybrid renewable energy system.

PART - B (5 x 16 = 80 Marks)

11. (a) Write short notes on:

- (i) Impact of renewable energy on environment (8)
- (ii) Hybrid renewable energy system (8)

Or

- (b) (i) Explain the design and principle of operation of fuel cell in detail. (10)
(ii) List out the classification of fuel cell. (6)
12. (a) (i) Explain the theory of operation of a doubly fed induction generator. (8)
(ii) Explain the theory of operation of SCIG. (8)

Or

- (b) (i) Explain the theory of operation of a PMSG. (8)
(ii) Describe the construction of induction generator. (8)
13. (a) (i) Explain the principle of operation of Line commutated inverter. (8)
(ii) Explain the principle of operation of three phase ac voltage controller. (8)

Or

- (b) (i) Describe using a diagram the working of a matrix converter as an inverter. (10)
(ii) Explain about grid interactive inverters. (6)
14. (a) With neat sketches explain the fixed speed wind energy conversion system with relevant sketches. (16)

Or

- (b) (i) Discuss in detail about the grid integrated PMSG. (8)
(ii) Explain the effect of wind generator in the network. (8)
15. (a) Explain the different control algorithm of maximum power point tracking for solar system. (16)

Or

- (b) (i) Discuss about the need for hybrid system. (8)
(ii) Explain the wind-PV system and the related issues. (8)
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