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Question Paper Code : 50467

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Eighth Semester
Electrical and Electronics Engineering
EE 6009 – POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Write down the current equation of solar array.
2. Define specific rated capacity of wind turbine.
3. What is reference frame transformation ?
4. Compare SCIG and DFIG.
5. Draw the block diagram of solar photovoltaic system.
6. What are the advantages of matrix converter ?
7. What are the advantages of variable speed wind turbine conversion system ?
8. Draw the equivalent circuit of a non salient pole synchronous machine.
9. List out the need for hybrid renewable energy system.
10. What is the concept of MPPT ?



PART – B

(5×16=80 Marks)

11. a) Explain the construction, working and different characteristics of solar array in detail. (16)
- (OR)
- b) i) With the neat diagram explain the energy generation using hydrogen energy system. (8)
- ii) Describe the concept of electric power generation from Biomass. (8)
12. a) Explain the steady state equivalent circuit model and performance characteristics of squirrel cage induction generator in detail. (16)
- (OR)
- b) Explain the construction and working of PMSG and analyze the system using steady state equation with phasor diagram. (16)
13. a) Write short notes on :
- i) Current regulated PWM inverters. (8)
- ii) Selection of inverter. (4)
- iii) Selection of battery sizing. (4)
- (OR)
- b) Explain the different modes of operation of PV fed Buck-Boost converter in detail. (16)
14. a) Explain the operation of fixed speed and semi variable mode of wind energy conversion system with neat sketch. (16)
- (OR)
- b) Explain the circuit model of grid integrated solar system. (16)
15. a) Explain the operation of autonomous PV system with an MPPT converter and battery backup with neat sketch. (16)
- (OR)
- b) Explain any three different configuration of Hybrid renewable energy system in detail. (16)
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