Reg. No. : | | | | | | | | | | |

Question Paper Code: 52503

M.E. DEGREE EXAMINATION, MAY 2017

Elective

Power Electronics and Drives

15PPE515 - WIND ENERGY CONVERSION SYSTEMS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. What kind of energy does a wind turbine use?

   (a) Potential energy (b) Kinetic energy
   (c) Chemical energy (d) Thermal energy

2. Yaw control is related to

   (a) Vertical axis machine
   (b) Horizontal axis machine
   (c) Machine that can spin in one direction only
   (d) None of these

3. Which generator does not need to be taken into account of rotor?

   (a) SCIG (b) PMSG (c) DFIG (d) WRIG

4. Which instrument used for measurement of wind speed?

   (a) Pyrometer (b) Pyrheliometer
   (c) Anemometer (d) Ammeter

5. If the velocity of wind is doubled, then the power output will increase by _____times.

   (a) 10 (b) 8 (c) 2 (d) 6

PART - B (5 x 3 = 15 Marks)

6. List out advantages and limitation of WECS.

7. Draw the Power Curve.

8. Compare the fixed speed and variable speed system.

9. What is PMSG?

10. What is voltage control?

PART - C (5 x 16 = 80 Marks)

11. (a) Derive the expression for power developed due to wind. (16)

Or

(b) Explain the different generation schemes of wind energy conversion systems. (16)

12. (a) Briefly describe the vertical axis type wind turbine. (16)

Or

(b) Explain the scheme for maximum power extraction. (16)

13. (a) Explain the constant speed constant frequency system. (16)

Or

(b) Briefly describe the modeling of drive train of SCIG. (16)

14. (a) Draw the schematic diagram of doubly fed induction generator and briefly describe the modeling of PMSG. (16)

Or

(b) Explain the power wind speed characteristics with neat diagram. (16)

15. (a) What is ancillary service and how is related to wind energy conversion system? (16)

Or

(b) Explain the major function of LVRT in grid connected wind energy. (16)

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