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

Question Paper Code: 55015

M.E. DEGREE EXAMINATION, MAY 2018

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. The relationship between power available from wind 'P' and wind velocity 'V' is CO1- R

   (a) P α V (b) P α V^2 (c) P α V^3 (d) P =V

2. Wind machine with Darrious type of rotor is a CO2 -R

   (a) Vertical axis machine (b) Horizontal axis machine

   (c) Machine that can spin in one direction only (d) None of the above

3. Which generator operated in fixed speed generation system? CO3- R

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

4. Induction generator operated, if rotor is driven CO4 -R

   (a) below the synchronous speed (b) equal to synchronous speed

   (c) above the synchronous speed (d) none of the above

5. Center for wind energy technology (C-WET) is located in? CO5- R

   (a) Ahmadabad (b) Mumbai (c) Chennai (d) New Delhi

PART – B (5 x 3= 15Marks)

6.	Define Power Coefficient.	CO1-U
7.	Define Tip Speed Ratio.	CO2-U
8.	Define transient stability.	CO3-U
9.	Draw the modeling structure of variable speed system.	CO4-U
10.	Write short notes on wind generation ramp rate limitation.	CO5-U

PART – C (5 x 16= 80 Marks)

11.	(a)	Describe with neat sketch the working of wind energy system with main components.	CO1- U	(16)
		Or		
	(b)	Derive the expression for power developed due to wind.	CO1- U	(16)
12.	(a)	Briefly describe the horizontal axis type wind turbine.	CO2- U	(16)
		Or		
	(b)	Briefly describe the vertical axis type wind turbine.	CO2- U	(16)
13.	(a)	Explain the generator model for steady state and transient stability.	CO3-U	(16)
		Or		
	(b)	Briefly describe the modeling of wind turbine rotor of SCIG.	CO3-U	(16)
14.	(a)	Draw the schematic diagram of doubly fed induction generator and briefly describe the modeling of DFIG.	CO4 -Ana	(16)
		Or		
	(b)	Draw the schematic diagram of doubly fed induction generator and briefly describe the modeling of PMSG.	CO4 -Ana	(16)
15.	(a)	Explain the major requirements of wind interconnection.	CO5- U	(16)
		Or		
	(b)	Write short notes on wind generation ramp rate limitation.	CO5-U	(16)