Register Number: ……..

M.E DEGREE EXAMINATIONS: JUNE 2013

Second Semester

ENERGY ENGINEERING

EEG508:Wind Energy Conversion Systems

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. What are the sources for the wind data in India?
2. Define "power" and "energy" in the wind.
3. Define Betz's limit.
4. Define Apparent wind and the Angle of Attack
5. Define coning.
6. Define Aerodynamic stall.
7. Explain life expectancy of a wind turbine.
8. What is the single most maintenance intensive component, generally followed by the backup generator?
9. Explain any one of the fall protection system.
10. What are Lanyards?

PART B (5 x 16 = 80 Marks)

11. a) Give a detailed description on surveying a site for setting up a wind turbine farm.

(OR)

b) Explain the following

(i) Wind speed distributions and Frequency distributions (8)

(ii) Wind speed, power and height. (8)

12. a) Explain the following for a wind turbine blades

(i) Taper and Twist. (8)

(ii) Solidity and Betz's limit. (8)

(OR)

b) Explain in detail about

(i) Inverters and Batteries. (8)

(ii) Backup generators. (8)

13. a) Explain in detail about rotor controls used in wind turbines with relevant diagrams.

(OR)

b) Give a comprehensive account on 'tower height' and ‘tower types’ with neat sketches.

14. a) Give a comprehensive account on Wind turbine maintenance.

(OR)

b) Give a detailed description on physical and institutional restrictions in siting for a wind turbine farm.

15. a) Give a comprehensive account on Troubleshooting for at least five problems occurring in a wind turbine.

(OR)

b) Give a detailed description on Tower safety.

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