

Register number:

M.E. DEGREE EXAMINATIONS: APRIL/MAY 2010

Second Semester

ENERGY ENGINEERING

EEG508: Wind Energy Conversion Systems

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. List the sources of wind data in India.
2. What is meant by variation in wind speed over a ridge.
3. Define (i) Betz's limit
(ii) Tip speed ratio
4. Draw pumping head nomenclature.
5. List the blade materials used in wind system.
6. Write down the advantages of using induction generators over alternators in wind turbines.
7. What are the aesthetical restrictions in siting the wind turbines?
8. Explain wind farms interference with telecommunications.
9. What are the factors that accounts in determining the cost of energy?
10. State the two important purposes of using work belt in wind turbines.

PART B (5 x 16 =80 Marks)

11. (a) How the severity of the deformation is used as a rough gauge of wind speed measurement? Explain.

(OR)

- (b) Discuss wind shear.

12. (a) Evaluate aerodynamics in wind turbine technology.

(OR)

- (b) Give a detailed discussion on water pumping using wind turbines.

13. (a) Why does a wind turbine control the forces acting on the rotor? Explain horizontal furling and vertical furling.

(OR)

(b) What are the types of wind turbine towers available? Explain

14. (a) Explain the physical restrictions in siting the wind turbines

(OR)

(b) Write short notes on tower maintenance.

15. (a) Discuss the following

(i) Work belt, Snap hooks, Carbiners, Slings (8)

(ii) Fall protection systems, Sit harnesses (8)

(OR)

(b) What are the economic factors that affect the wind system? Explain cost of energy (CoE).
