

B.E. Seventh Semester (Electrical & Electronics Engineering) (CGS)
10406 : Elective - I : Wind Electrical System : 7 EX 05

P. Pages : 2

Time : Three Hours



AU - 2917

Max. Marks : 80

- Notes :
1. Answer **Three** question from Section A and **Three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) Explain the wind turbine control system with pitch angle control. 7
- b) Explain the torque-speed characteristics of Wind Rotor. 6

OR

2. a) Explain with an equation an efficiency limit for Wind Energy conversion. 6
- b) Explain the Aerodynamics of rotor with neat vector diagrams. 7
3. Explain the following wind speed measurement devices. 13
 - i) Hot wire Anemometer.
 - ii) Robinson cup Anemometer.
 - iii) Pressure tube Anemometer.

OR

4. Explain the parameters affecting the wind site and turbine selection. 13
5. a) Explain the dynamic d-q axis model of Induction Machine. 7
- b) Explain the wound-field synchronous machine with its constructional features. 7

OR

6. a) Explain the effect of injecting emf in rotor of Induction motor. 7
- b) Explain the steady state model of synchronous machine with rectifier load. 7
7. a) Explain with neat diagram the construction and working of self-excited Induction generator. 7
- b) Explain the need of excitation for Induction generator. 6

OR

8. a) Draw and explain the circuit model for self excited Induction generator. 7
- b) Explain the terms Reactive power and Harmonics in context to Double output system. 6

9. a) Explain the permanent magnet generator and its operation. 7
b) Explain wound-field synchronous generator. 6

OR

10. a) Explain the doubly fed Induction generator. 7
b) Discuss the different generation schemes with variable speed turbine in brief. 6
11. a) Compare wind-photovoltaic systems with and without battery Backup. 7
b) Explain the need and advantages of hybrid energy system. 7

OR

12. Explain the following : 14
i) Wind-Diesel Hybrid system.
ii) Wind-Solar Hybrid system.
