Exam.		**Regular**	
Level	BE	**Full Marks**	80
Programme	BEL	**Pass Marks**	32
Year / Part	IV / II	**Time**	3 hrs.

Subject: - Wind Energy Conversion System *(Elective III) (EE78502)*

✓ Candidates are required to give their answers in their own words as far as practicable.
✓ *Attempt **All** questions.*
✓ *The figures in the margin indicate **Full Marks**.*
✓ *Assume suitable data if necessary.*

1. Discuss changes in size and output of wind turbines with time. (6)

2. How can the effects of wind fluctuations be reduced for smooth power production? (6)

3. An anemometer mounted at a height of 10 m above a surface with tall grass on level ground shows a windspeed of 5m/s. Estimate the windspeed and the specific power in the wind at height of 50 m. The friction coefficient for level ground with tall grass is 0.15. Assume 15°C and 1 atm of pressure. (6)

4. Explain idealized wind turbine power curve. How does the shape of curve vary with change in rotor diameter and generator rated power? (8)

5. Discuss about capital cost and annual cost of wind turbines. What is annualized cost of electricity? (6)

6. Compare horizontal and vertical axis wind turbines. (7)

7. Why is 3 bladed HAWT most used turbines today? (3)

8. Explain doubly fed induction generator wind turbine control. (8)

9. What are the advantages of hybrid off grid wind system? Present an example of hybrid off grid system. (7)

10. What are the fundamental requirements for wind turbine to be connected to a grid. (4)

11. Explain fault ride through in wind generator. (5)

12. Explain pool market and bilateral trading market. (8)

13. What are the possible risk with the investment in wind energy? (6)

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