Code No: 156DH

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, August - 2022
WIND AND SOLAR ENERGY SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max.Marks:75**

Answer any five questions
All questions carry equal marks
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1.a) Give statistics about wind power generation in India. Mention two important wind turbine generator installations in India.
b) What is Betz limit? Derive an expression for it. [8+7]

2.a) Draw the wind power duration characteristic curve and mention the applications of it.
b) Explain the terms i) Yaw control ii) Pitch control iii) Teethering control. [8+7]

3.a) Explain with a neat diagram the working of Doubly-Fed Induction.
b) Why a tall tower is essential for mounting a horizontal axis wind turbine? [8+7]

4. Explain various power electronic converters used in wind power generation. [15]

5.a) Explain the working of Sunshine recorder with a neat sketch.
b) What are the various parameters by which solar PV cell performance is calculated? [8+7]

6.a) Define Extraterrestrial and Terrestrial solar radiation and solar flux.
b) Explain the working of Pyrheliometer with a neat sketch. [8+7]

7. Discuss about real and reactive power regulation schemes clearly for hybrid operation of solar PV and wind systems. [15]

8.a) Explain the construction and working of a solar pond with neat sketch. What are its advantages and disadvantages?
b) With a neat sketch, explain the working principle of parabolic trough collector. [8+7]

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