

Code No: 156EA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech III Year II Semester Examinations, August - 2022****RENEWABLE ENERGY SOURCES****(Common to CE, ME, ECE)****Time: 3 Hours****Max.Marks:75****Answer any five questions
All questions carry equal marks**

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- 1.a) Discuss the prospects and status of wind energy in India.
- b) Show that a wind turbine cannot extract more than 59.3% of wind energy. [7+8]
- 2.a) Give an over view of conventional and non-conventional sources of energy sources with reference to India.
- b) Explain the modern electronic controls of power systems. [7+8]
- 3.a) What are the different materials used for fabrication of Solar cells and give their significance and relative advantages.
- b) Explain the effect of following parameters on the short circuit current, open circuit voltage and power generated by PV Cell: i) Radiation intensity, ii) Temperature. [7+8]
- 4.a) Describe the classification of fuel cell. With a neat sketch, explain the working of fuel cell.
- b) Explain the current – voltage characteristics of Fuel Cell and give its Significance.[7+8]
5. With a detailed mathematical model, explain the Self-Excitation Process of induction generator in Interconnected and Stand-alone operation. [15]
6. With merits and demerits, describe different battery type electrochemical energy storage systems. [15]
7. Explain about the principles of power injection, Instantaneous Active and Reactive Power Control Approach. [15]
- 8.a) Explain the principle of operation of Induction Generator.
- b) Discuss the speed and voltage control of Induction Generator. [7+8]

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