

R16

Code No: 135CZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, May/June - 2019

RENEWABLE ENERGY SOURCES

(Common to CE, EEE, ME, ECE, CSE)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Write the examples of renewable energy sources. [2]
- b) Illustrate Green house effect. [3]
- c) What are the applications of Solar PV Systems? [2]
- d) Describe Solar Thermal Conversion Devices. [3]
- e) What is Betz limit? [2]
- f) Define (i) cut-in speed (ii) Yaw control (iii) Coefficient of performance of a windmill. [3]
- g) Write any two properties of Biogas. [2]
- h) Illustrate the concept of pyrolysis and liquefaction. [3]
- i) What are the types of Geo-thermal plants? [2]
- j) What is the Importance of small hydro power plants? [3]

PART - B**(50 Marks)**

- 2.a) Illustrate the need and development of renewable energy sources.
- b) Differentiate Renewable and Non Renewable Energy Sources. [5+5]

OR

- 3.a) Describe the Potential of renewable energy sources.
- b) Illustrate the concept of Hybrid systems. [5+5]

- 4.a) Illustrate Solar Energy System with neat diagram.
- b) Explain any one type of collector in Solar Energy Systems. [5+5]

OR

5. With the help of schematic diagram explain the application of solar energy in distillation and drying. [10]

- 6.a) Illustrate vertical axis windmills with a neat circuit.
b) Derive an expression for energy available in the wind. [5+5]

OR

- 7.a) With the help of diagram, explain the terms (i) Free and relative wind velocities (ii) Drag and lift forces and (iii) Pitch angle and chord.
b) List the components of Wind Energy Conversion System and explain the function of each. [5+5]

8. What are biomass conversion processes? Draw a schematic diagram to explain various processes and products. [10]

OR

- 9.a) With a neat diagram, explain bio diesel production from Biomass.
b) How Urban waste will be converted to energy? [6+4]

- 10.a) Illustrate the principle of operation of Geothermal power plant.
b) What are the main advantages and disadvantages of ocean wave energy? [5+5]

OR

- 11.a) Explain the fundamental principle of tidal energy generation.
b) With neat diagram, describe ocean thermal power plants. [5+5]

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