R13

Code No: 118ED

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, April - 2018

RENEWABLE ENERGY SOURCES

(Electrical and Electronics Engineering)

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) Explain what is meant by Heliostat. [2]
b) What is the significance of Zenith angle? [3]
c) Classify the concentrating collectors. [2]
d) Explain the working of solar drying. [3]
e) What is meant by gradient height and velocity? [2]
f) Explain with basic equations the concept of photo synthesis. [3]
g) What is hyper thermal field in geothermal energy and explain? [2]
h) Draw cloud cycle of OTEC system. [3]
i) Explain the concept of DEC and Seebeck effect. [2]
j) Explain the principle of Thermoionic generator. [3]

PART - B

(50 Marks)

2.a) How to calculate solar radiation on tilted surfaces?
b) Calculate the angle made by the beam radiation with the normal to a flat- plate collector, pointing due south located in New Delhi (28^0 38′ N, 77^0 17′, E) at 9:00 hour, solar time on December 1. The collector is tilted at angle of 360 with the horizontal. [5+5]

OR

3.a) Explain what is meant by sun shine recorder and solar radiation data?
b) Calculate the angle made by beam radiation with the normal to a flat collector on December 1, at 9.00 A.M., solar time for a location at 28^0 35′ N. The collector is tilted at an angle of latitude plus 10^0, with the horizontal and is pointing due south. [5+5]

4.a) What is the significance of collectors with porous absorbers.
b) Draw the line diagram and explain the working of paraboloidal point focusing collector. [5+5]

OR

5.a) Explain different methods of latent heat storage techniques with line diagrams.
b) What are different approaches of thermal electric conversion system from solar energy? [5+5]

6.a) Describe horizontal axis type aero generators.
b) How are WEC systems are classified? Discuss in detail. [5+5]

OR

7.a) How do you produce biogas and explain the methods in detail.
b) What is meant by energy plantation? What are its advantages and limitations? [5+5]

8.a) Draw the line diagram and explain the working of Binary fluid geothermal power system.
b) With the help of line diagram explain the heat extraction from hot dry rocks. [5+5]

OR

9.a) Draw line diagram and explain the Hybrid cycle and its working.
b) Explain different components of Tidal power plants in detail. [5+5]

10. Explain the principles of Direct Energy Conversion and with the help of line diagram, explain the working details of thermoelectric generator. [10]

OR

11. Explain the working of open cycle MHD system generation and its advantages and limitations. [10]

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