Code No: 5221AD

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. Tech I Semester Examinations, February - 2016
NON CONVENTIONAL ENERGY RESOURCES
(Thermal Engineering)

Time: 3hrs **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

5 × 5 Marks = 25

1.a) Give a brief account of energy scenario in India. [5]
b) Write a brief description on geothermal regions of the world. [5]
c) Differentiate thermionic and thermoelectric generation. [5]
d) What are the properties and composition of biogas? [5]
e) What are the differences between a horizontal and vertical axis wind turbines. [5]

PART - B

5 × 10 Marks = 50

2.a) Briefly explain the major conventional energy sources.
b) What is diffused radiation and what are the reasons for variation in solar radiation reaching the earth than received at the outside of atmosphere. [4+6]

OR

3.a) List the various energy storage devices.
b) Explain the working of a solar pond with a neat sketch. [4+6]

4.a) Discuss about different geothermal energy resources.
b) Classify geothermal energy harnessing techniques and explain the working of hot dry rock geothermal source power plant. [4+6]

OR

5.a) What is the potential of geothermal resources in India?
b) Explain the working of Binary fluid hydrothermal system with a neat diagram. [4+6]

6. Describe the working of fuel cell and compare the advantages and disadvantages of different fuel cells. [10]

OR

7. What are the advantages and disadvantages of hydrogen as a fuel and explain any two methods of production of hydrogen gas [10]

8. Explain the anaerobic digestion process and state the advantages and applications of biogas. [10]

OR

9. Explain the factors that affect the production of biogas [10]

10. What is Betz coefficient and show that the ideal maximum theoretical efficiency is 59 % for a horizontal wind turbine [10]

OR

11.a) How tides are formed and differentiate spring tide and neap tide.
b) Explain the working of closed cycle OTEC power plant. [4+6]

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