Code No: 5421AD

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Examinations, June/July - 2018

RENEWABLE 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) Explain the role of new and renewable energy sources. [5]
b) Explain about resources of geothermal energy. [5]
c) Write short notes on Thermoelectric generators. [5]
d) What are the desirable properties required in bio gas. [5]
e) Discuss some of the limitations of synchronous generator used in wind turbine system. [5]

PART - B

5 × 10 Marks = 50

2.a) Describe the constructional details of flat plate collectors.
b) Explain about constructional details of photo voltaic solar cells. [5+5]

OR

3.a) Explain how the solar radiation is measured with neat diagram.
b) Explain Stratified Solar Storage system. [5+5]

4. Explain various thermodynamic cycles used in geo-thermal energy. [10]

OR

5.a) Explain the difference between geothermal plant and thermal plant.
b) Explain the various methods to extract geothermal energy [5+5]

6. What is a fuel cell? Describe the principle of working of a fuel cell with reference to H_2-O_2 cell. [10]

OR

7. Explain about thermo-electric generators with the help of neat sketch and its merits. [10]

8.a) Classify the bio gas plants and give examples and applications of each in Indian scenario.
b) Explain the process of anaerobic digestion. [5+5]

OR

9.a) Write a short note on bio-gas plant.
b) What are biomass conversion technologies? Draw a schematic diagram to explain various conversion technologies and products. [5+5]

10. Derive the kinetic energy equation associated with wave power. [10]

OR

11. State the basic principle of tidal energy production and write major components of tidal power plant. [10]

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