R13

Code No: 118ED

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, June - 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)	What is the difference between terrestrial and extraterrestrial solar radiation?	[2]
b)	Define solar constant.	[3]
c)	What is the need for storage of solar energy?	[2]
d)	List any two significant differences between a flat plate and concentrating collector.	[3]
e)	Give the equation for energy available in wind.	[2]
f)	List the various applications of biogas.	[3]
g)	What are geothermal wells?	[2]
h)	What is the difference between tidal and wave energy?	[3]
i)	What is the principle involved Direct Energy Conversion (DEC)?	[2]
j)	What is the need for DEC?	[3]

PART - B

(50 Marks)

2.a) Explain how solar energy can be converted into useful thermal and electrical forms?
b) Discuss the energy conversion principle of any two alternative energy resources. [5+5]

OR

3. Explain how energy from the sun reaches the earth, bringing out the difference between beam and diffuse radiation. [10]

4.a) Explain with a sketch the working of a solar Flat Plate Collector.
b) What are the different methods of thermal energy storage? [5+5]

OR

5.a) Explain the principle behind the orientation of solar collectors.
b) Explain the solar distillation process with a simple sketch. [5+5]

6.a) Classify and discuss wind turbines applications.
b) Explain with sketch the working of floating drum biogas plant. [5+5]

OR

7.a) Discuss the parameters influencing wind turbine performance.
b) Explain the differences in constructional features of biogas plants. [5+5]

8.a) Discuss the different types of geothermal resources.
b) Explain with a line diagram the working of any type of OTEC system. [5+5]

OR

9.a) Explain how energy can be extracted from hot dry rock geothermal resource?
b) Discuss the conditions favorable for locating a mini hydel power plant. [5+5]

10.a) Discuss Carnot cycle with suitable diagrams.
b) Explain the reasons as to why DEC not limited by thermodynamic conditions. [5+5]

OR

11.a) What are the limitations of Carnot cycle?
b) What are practical applications of DEC? [5+5]

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