Code No: 135CU

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2018
NON-CONVENTIONAL POWER GENERATION
(Common to CE, 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)	What is the basic difference between active and passive solar heating system ?	[2]
b)	Explain solar pond. Write its applications.	[3]
c)	What is PV cell? What type of energy will be obtained from it?	[2]
d)	Draw the equivalent circuit of PV system and explain briefly.	[3]
e)	What are the principles used for measurement of wind speed ?	[2]
f)	Explain the major application of wind power?	[3]
g)	Describe the factors that affect bio digestion.	[2]
h)	Classify geothermal sources.	[3]
i)	List the applications of fuel cells.	[2]
j)	Explain briefly the components of tidal power plant.	[3]

PART - B
(50 Marks)

2. What are the losses affecting the efficiency of flat plate collector? Explain how do you reduce the same? [10]

OR

3.a) With the help of schematic diagram explain technique of solar heating and cooling.
b) How the solar radiation effect on titled surface? [5+5]

4.a) Describe the principle of solar photo voltaic energy conversion?
b) Explain how inverters are used to maximize the efficiency of a solar power system. [5+5]

OR

5.a) Explain the method of solar thermal energy storage using sensible heat.
b) Why Tracking is needed and what advantage does MPPT give in the real world? [5+5]

6. Using Betz model of a wind turbine, derive the expression for power extracted from wind? What is the maximum theoretical power that can be extracted and under what condition? [10]

OR

7.a) Discuss the advantages and disadvantages of both horizontal and vertical axis wind mill.
b) Explain how the energy produced by a wind turbine can be stored for re-use. What are the arrangements used for starting a Darrieus wind turbine? [5+5]

8.a) Explain the simple digester system used for bio- conversion, with a neat sketch.
b) Classify Wet and Dry Processes. [5+5]

OR

9.a) Discuss about Magma Resources?
b) Enumerate the Prime movers used in Geo thermal power stations. [5+5]

10.a) Discuss the scope of utilizing ocean wave energy to generate electricity.
b) What are the various methods of tidal energy generation? Explain in detail. [5+5]

OR

11. Explain the advantages of fuel cell power sources. Draw a simple sketch of H_2,-O_2, fuel cell and explain its working. [10]

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