Code No: 135CU **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, December - 2019
NON-CONVENTIONAL POWER GENERATION
(Common to CE, ME, ECE, CSE, MCT, MMT)

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 as sub questions.

PART – A

(25 Marks)

1.a)	Define solar radiation.	[2]
b)	What is meant by solar spectrum? Is solar spectrum continuous?	[3]
c)	Explain the importance of solar tracking?	[2]
d)	Explain how photovoltaic cell and photovoltaic module are related.	[3]
e)	What is the efficiency of a wind turbine?	[2]
f)	List out the advantages and disadvantages of wind turbines.	[3]
g)	Define gasifiers and digesters	[2]
h)	Compare dry process and wet process.	[3]
i)	List out the applications of fuel cells.	[2]
j)	Classify the types of electrodes.	[3]

PART – B

(50 Marks)

2.a) Explain the working of flat plate collector with the help of a neat sketch.
b) Explain any one solar radiation measuring instrument with a neat sketch. [5+5]

OR

3.a) Explain the industrial applications of solar ponds and solar heating / cooling techniques.
b) How solar radiation effect on tilted surface. [5+5]

4.a) Discuss in detail about the solar thermo electric conversion.
b) Why tracking is needed and what advantages does MPPT give in the real world? [5+5]

OR

5.a) Draw the I-V characteristics of PV cell and describe the system configuration for maximum power extraction from PV system.
b) Describe the principle of solar photovoltaic conversion. [5+5]

6.a) How do you measure the speed and the direction of a wind? Explain in detail.
b) Discuss about the classification and applications of wind energy conversion systems. [5+5]

OR

7.a) Explain the working of vertical axis wind mill with a neat sketch.
b) Discuss in detail about the aerodynamics of wind turbine. [5+5]

8.a) Write a short note on:
i) Geo-pressure resources
ii) Magma resources

b) List out the factors affecting the generation of biogas. [6+4]

OR

9.a) Explain in detail about anaerobic digestion and the different phases and the processes involved in it?

b) Explain the working of petro-thermal systems. [5+5]

10.a) Explain the construction and working of Lead acid battery.

b) Expand OTEC. Define the principles of OTEC and discuss the need for setting of OTEC plants. [5+5]

OR

11.a) Estimate the energy produced in double basin systems.

b) Distinguish between battery and fuel cell. [5+5]

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