

Code: 20EE2701A

IV B.Tech - I Semester – Regular Examinations - DECEMBER 2023**NON-CONVENTIONAL ENERGY RESOURCES**
(Common for ALL BRANCHES)

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Define the following with respective units. i) Solar Radiation ii) Solar Irradiation iii) Solar Constant	L3	CO2	7 M
	b)	Illustrate the important role of renewable energy sources to meet the electricity demand to sustain in current scenario.	L3	CO3	7 M
OR					
2	a)	Explain the working principal of pyranometer to measure solar radiation with neat sketch.	L3	CO3	7 M
	b)	Describe the working principle of sunshine recorder with necessary diagrams in detail.	L3	CO3	7 M

UNIT-II					
3	a)	Illustrate the working principle of solar water heating mechanism with neat sketch.	L3	CO3	7 M
	b)	Analyze the solar cell voltage and current (V-I) characteristics with necessary graphs and its equivalent electrical circuit.	L4	CO5	7 M
OR					
4	a)	Discuss in detail about the solar photovoltaic effect with necessary diagram.	L3	CO3	7 M
	b)	Explain any one method for drying food items by solar energy in detail with neat sketch.	L3	CO3	7 M
UNIT-III					
5	a)	Explain the working principle of mini-hydel power plant with suitable diagram.	L3	CO3	7 M
	b)	Define Betz limit and outline the expression for Betz criteria.	L4	CO5	7 M
OR					
6	a)	Compare and contrast HAWT and VAWT wind mills in various aspects.	L4	CO4	7 M
	b)	Classify the OTEC power plants and explain the working principle of closed loop OTEC with neat sketch.	L3	CO3	7 M
UNIT-IV					
7	a)	Define aerobic digestion and Illustrate about floating drum type biogas plant with neat sketch.	L3	CO3	7 M

	b)	Explain about Fixed Dome type biogas plant with neat sketch.	L3	CO3	7 M
OR					
8	a)	Discuss the various methods to harvest geothermal energy from geothermal resources with neat sketch.	L3	CO3	7 M
	b)	Explain liquid dominated high temperature type geothermal power plant with neat diagram.	L3	CO3	7 M
UNIT-V					
9	a)	Define Hall effect and explain working principle of open loop MHD generator with neat sketch.	L4	CO4	7 M
	b)	Explain working principle of closed loop MHD generator with neat sketch.	L4	CO4	7 M
OR					
10	a)	Explain the working principle of fuel cell with neat sketch.	L3	CO3	7 M
	b)	Illustrate the various applications of fuel cell in detail.	L3	CO3	7 M